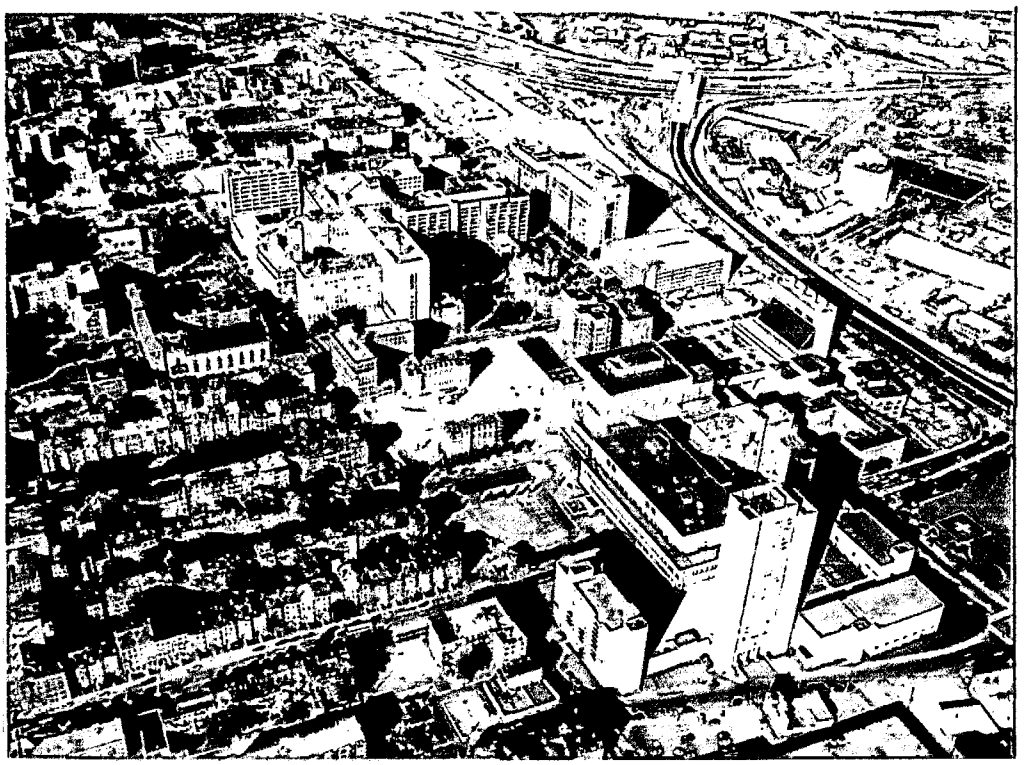
Boston University's National Biocontainment Laboratory Economic Opportunity or Environmental Injustice?



Field Project Report
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Alternatives for Community and Environment
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Executive Summary

There are many pressing issues connected with the future of biotechnology research and development in the city of Boston. Among these is the planned siting of a National Biocontainment Laboratory (NBL) in Boston University's "Biosquare" research park. This NBL, funded by a US Government grant, will be performing research on deadly organisms and diseases for which there is no known cure. Although the lab is planned to potentially bring numerous economic benefits to the city, many Boston residents and organizations are concerned with the possible security risks, public safety hazards and economic implications of siting such a lab in their community.

This report has been prepared to help inform stakeholders and communities surrounding the Melnea Cass corridor about the employment possibilities associated with the proposed NBL. Boston University has stressed that one of the main benefits of building such a lab in the Roxbury/South End area is that the lab will bring new jobs to these neighboring areas. Our research has investigated the possible jobs that will be created and compared those to the employment needs of the citizens of Roxbury and the South End. Our findings have led us to conclude that the jobs that Boston University claims will be available to local citizens will not address the employment needs of these communities.

We have organized the following report into sections that clearly explain the results and analysis of our findings and serve as a usable tool for community members and future researchers. First, we present a brief history and background of the biotechnology industry in the Boston area and explain the events leading up to Boston University's proposed National Biocontainment Laboratory. Next, we provide a section that details Boston University's claims regarding the benefits of this lab in the context of the demographics of the surrounding area, followed by a section that reviews the views and position of community organizations who oppose the lab, such as Alternatives for Community and Environment (ACE) and Safety Net. In order to better understand the employment structure of the proposed NBL, research was conducted on the three currently operating National Biocontainment Laboratories in the United States. This section provides a basis for comparison and gives perspective on the number of jobs that can be created in such a high security NBL, including what level of education, experience, and training are required for an applicant from the local communities. In addition, we present findings from other local biotechnology research facilities in order to provide a broader basis for comparison and understanding of employment within the increasingly expanding field of biotechnology. A section of analysis is also included that presents evidence of why some of BU's claims regarding potential employment may be

exaggerated, and therefore a great cause for concern and further research. Finally, our conclusion section synthesizes the information that we collected and provides additional analysis on why a National Biocontainment Laboratory and facility of this nature is not a beneficial provider of jobs to the surrounding communities. Given the nature of the report, we have initiated a set of recommendations for future research to aid in the continued efforts of those seeking to better understand the economic, social and physical implications of a development project such as this.

It is our hope that this report will serve as an informative tool, not only for our client, ACE, but also for those citizens who would like to be better informed of the possible employment outcomes from this National Biocontainment Laboratory.

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List of Acronyms

ACE	Alternatives for Community and Environment
BEID	Biodefense and Emerging Infectious Diseases Research
BRA	Boston Redevelopment Authority
BSL	Biosafety Level (1-4)
BU	Boston University
BUMC	Boston University Medical Center
CDC	Centers for Disease Control and Prevention
CORI	Criminal Offender Record Information
CRG	Council for Responsible Genetics
DEIR	Draft Environmental Impact Report
DPIR	Draft Project Impact Report
FBI	Federal Bureau of Investigation
MBC	Massachusetts Biotechnology Council
NACI	National Agency Check Information
NBL	National Biocontainment Laboratory
NERCE	New England Regional Center for Excellence
NIAID	National Institute of Allergy and Infectious Diseases
NIH	National Institutes of Health
PILOT	Payments in Lieu of Taxes
RBL	Regional Biocontainment Laboratory
RFP	Request for Proposals
SFBR	Southwest Foundation for Biomedical Research
USAMRIID	United States Army Medical Research Institute of Infectious Diseases
USAMRMC	United States Army Medical Research and Material Command

INTRODUCTION

This report is a component of the graduate level course, "Field Projects," in Tufts University's department of Urban and Environmental Policy and Planning (UEP). Field Projects is a course where graduate students are exposed to the realities of the urban and environmental planning practice by working in teams for community groups or public agency clients. This report is the product of the second field project conducted in conjunction with Alternatives for Community and Environment.

In 2003, a team of UEP students investigated the potential effects of future biotechnology development in the Roxbury area. The aim of that project was to provide the information necessary for residents to better understand biotechnology and its implications to their community. This year, the project has served as a continuation of their effort to investigate the implications of future local biotech development, yet with a specific focus on Boston University's proposed National Biocontainment Laboratory. There are several economic, safety and social factors that concern the communities surrounding the proposed NBL, and this project focuses on what types of employment opportunities could be offered and the subsequent impact to the community.

The following report has been prepared for *Alternatives for Community and Environment (ACE)*, an organization that is dedicated to addressing issues of environmental justice in Roxbury, Massachusetts, and other low income communities and communities of color. ACE asked our team (henceforth Team) to perform research and analysis concerning the economic impacts of Boston University's proposed National Biocontainment Laboratory (NBL) in the South End/Roxbury area of Boston. The objective of this report is to research and analyze BU's claim that the NBL will provide positive employment opportunities to the surrounding community.

In September of 2003, the National Institute of Allergy and Infectious Diseases (NIAID) awarded Boston University a $120 million grant to construct a National Biocontainment Laboratory in Boston's South End. The NBL will perform research at Biosafety Levels 2, 3, and 4, with Level 4 handling research on the most deadly organisms and viruses for which there is no known cure. Boston University claims that the new NBL will bring economic benefits to Boston in the form of newly created jobs, tax revenue for the city, and scientific recognition. Community members have expressed serious concern,

> ***"The facility must be utilized for biomedical research purposes as determined by the NIAID program needs for at least 20 years beginning 90 days following completion of the construction project. Any lease agreement must cover a time period sufficient for the usage requirement and be a minimum of 20 years in length from the completion of the facility. Federal interest in the facility must be acknowledged as a condition of this award. Failure to comply with the 20-year utilization requirement will result in recovery of the Federal share of the value of the facility in accordance with Federal Regulations at 45 CFR 75.32."***
> ***-NIAID BAA, 2003***

and have raised questions that include: Is this the most suitable facility to promote growth and provide jobs to the residents of the South End/Roxbury neighborhoods? What are the environmental, health, and safety issues associated with the construction of such a high-risk facility in an extremely densely populated metropolitan area? Also, who is ultimately liable for the facility? Several local activist groups have formed in opposition to the proposed NBL and are actively seeking

answers to such questions. This report specifically addresses the question of job creation, and presents the Team's findings and subsequent analysis from various methods of data collection, interviews and comparison of currently operating facilities.

The following report also defines our methodology and outlines our recommendations for future research and study. It analyzes the job opportunities that biotechnology facilities with Biosafety level 3 and 4 laboratories have historically provided for their surrounding communities, and to what extent these jobs have reached people without advanced degrees beyond a high school diploma. This report includes the demographics of the South End/Roxbury neighborhoods so that the reader can understand the employment needs of the communities in question, as well as the potential impacts that such a development project will have on the employment opportunities of nearby residents.

BACKGROUND

The changing political climate, the events of September 11th, the subsequent signing of the Patriot Act, increased Homeland Security, and the development of a strategic plan to further expand Biodefense research and combat rising fears of bioterrorism, have all contributed to a steady increase in federal funding for research and development in the field of biotechnology over the past two decades, and particularly over the past four years. The word *biotechnology* was first coined in 1919 by Karl Ereky to apply to the interaction of biology with human technology.[1] Usage of the word, however, in the United States "has come to mean all parts of an industry that knowingly create, develop, and market a variety of products through the willful manipulation, on a molecular level, of life forms or utilization of knowledge pertaining to living systems."[2] The Bush Administration has dedicated more federal money toward the development of new research facilities, as well as the expansion of current laboratories. The federal bioterrorism budget has increased from $305 million in 2001 to a proposed budget of nearly $6 billion for 2004.[3] In accordance, the National Institute of Health (NIH) has proposed an overall budget estimated at $28.8 Billion for FY 2005 *(see Graph 1)*.

> ***"The recent bioterrorist events made it very clear that from a strategic national perspective, a serious shortage of BSL-3 and BSL-4 laboratory space exists. This problem has been well documented by the Institute of Medicine, and it has repeatedly been identified in NIAID's strategic plan process. Thus, NIAID's research agenda for biodefense and emerging infectious diseases includes plans to construct and renovate BSL-3 and BSL-4 laboratories around the country. To be most effective, these laboratories must be located where established teams of researchers already work side-by-side on related scientific problems."***
> ***-NIAID, Feb. 2004***

Boston has consistently attracted biotechnology institutions to the area over the past decade and as a result, in the year 2003 alone, area institutions received $1.2 billion in funding from the National Institute of Health (NIH).[4] The biotechnology industry has expanded substantially since the early nineties, bringing with it the promise of increased job growth, economic development and the unquantifiable prestige of being at the forefront of research and development in the ever-growing biotech industry.

The unique concentration of pre-eminent institutions specializing in health care, medical research, and life sciences make the city of Boston extremely appealing to the biotech industry. The city's academic and research infrastructure (universities, academic medical institutions and research labs) alone has served to attract and support the biotech industry to the metro Boston area. The amount of job growth provided, however, for workers with a high school education level in relation to the biotech industry is uncertain. When considering employment opportunities for workers who hold a high school degree in a high-security Biosafety Level 4 facility, the potential is even less certain. It is important to consider both the benefits and the costs (environmental costs, risks to public, liability issues, economic impacts) when evaluating the use and development of land for the biotech industry.

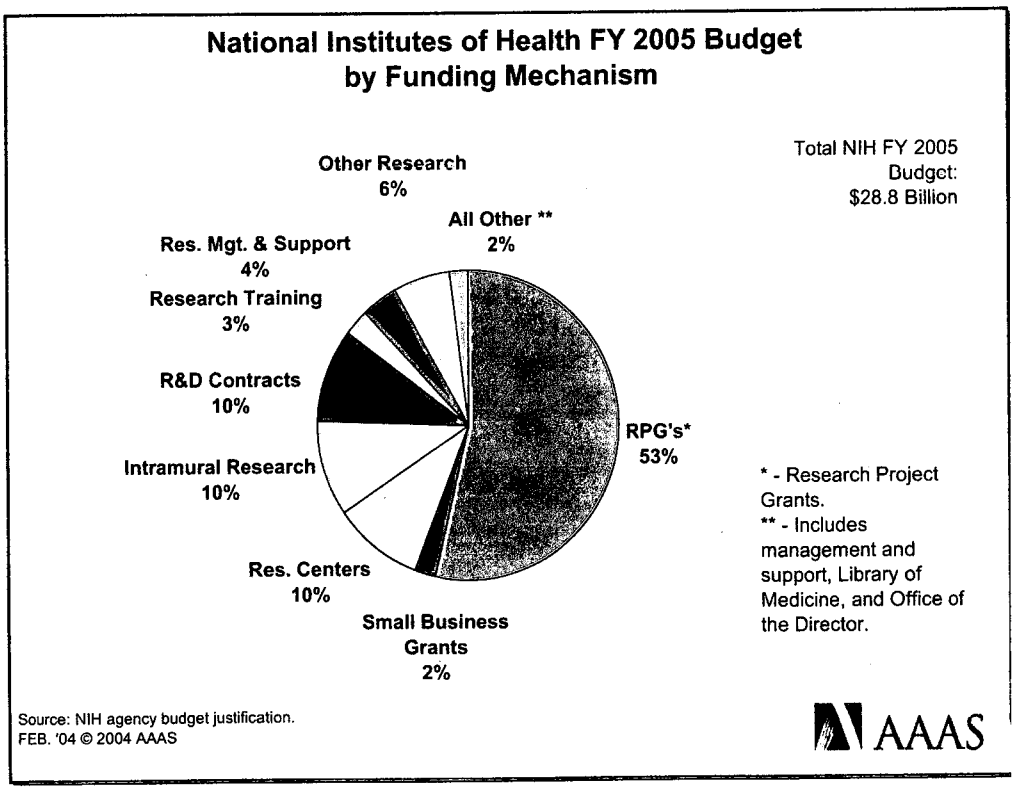
The National Institute of Allergies and Infectious Diseases (NIAID) stresses the importance of having a secure research facility where science, technology and biological advances can converge, bringing together and utilizing local students,

[1] www.biotechterms.org
[2] www.biotechterms.org
[3] Council for Responsible Genetics, CRG Statement on U.S. Bioweapons Initiatives. www.genewatch.org.
[4] Boston Redevelopment Authority, 2004.

academics, scientists and researchers[5]. In early 2003 the National Institute of Allergy and Infectious Diseases (NIAID) accepted proposals for up to $150 million grant for the construction of a Biosafety Level 4 Facility (BSL4). As previously mentioned, Boston University was one of two institutions awarded funds for the construction of a National Biocontainment Laboratory. The University of Texas Medical Branch at Galveston was awarded the other NBL grant, while nine awards were given to expand, renovate and construct Regional Biocontainment Laboratories (RBL) The BU project is to be completed as "Phase II" in a two-phase development known as "Biosquare" and located next to the BU Medical Center Campus (BUMC) in Boston's South End/Roxbury neighborhood. According to the NIAID, funding and construction of Boston University's National Biocontainment Laboratory is based on the need for effective therapies, vaccines and diagnostics for diseases caused by agents of bioterrorism. In addition, "NBLs will serve as a national resource for efforts in conducting clinical and laboratory (*in vitro* and *in vivo*) research and testing on hazardous biological agents in support of the NIAID's Biodefense Agenda."[6]

Phase I of Biosquare has been completed with two laboratories currently operating. The proposed three buildings in Phase II will include an NBL integrated research facility to house Biosafety Level 2, BSL-3, and BLS-4 laboratories, animal research facilities, administrative support offices, and conference rooms. Research will include pathogenesis, immune response, vaccine, diagnostics and therapeutics studies, and will focus on vector-borne pathogens. Boston University Medical Center (BUMC) states that it does not and will not conduct research to develop offensive biological weapons. According to Boston University, the facility will guarantee safety and security measures that would keep the area safe to employees and surrounding communities.

Graph 1: NIH FY 2005 Budget



Source: NIH 2004

[5] National Institute of Allergy and Infectious Diseases (NIAID), The Need for Biosafety laboratory Facilities, February 2004. http:://www.niaid.nih.gov/factsheets/facility_construction.htm (April 30, 2004)

[6] NIAID's RFP Section 1, 5.

HISTORY

Biotechnology and Massachusetts, and more specifically metro Boston, have been closely linked with one another for a number of decades. As a result, Massachusetts has been home to a great deal of public controversy and debate, and subsequently, groundbreaking and influential legislation. Two cases deserve brief mention in this section to provide the reader with a basic understanding of the local legislation, background and history that has formed the general policy upon which research and development activities in the area have been assessed, considered, and regulated.

The first controversy surrounds a two-phase regulation of recombinant DNA (rDNA) molecule technology, in 1977 and 1981, in the city of Cambridge, Massachusetts. The second case involves "the handling and testing of certain chemical warfare agents" by the Arthur D. Little (ADL) firm, again, located in Cambridge, kindled in 1983 and litigated in 1984.[7]

In the spring of 1976 Harvard University was considering a proposal for the renovation of one of its biological laboratories to construct a space that was expected to meet the specifications, currently being defined and issued by the NIH, of a BSL-3 facility (then called P3) and would perform certain classes of rDNA experiments.[8] The announcement was met with tremendous controversy and public debate. The Harvard Corporation authorized the construction of the P-3 laboratory and a frustrated city council voted to establish the Cambridge Experimentation Review Board (CERB). In addition, Harvard and the Massachusetts Institute of Technology (MIT) were asked to accept a 3-month, good faith moratorium, to enable the newly established review board the opportunity to evaluate the risks.[9]

In February 1977 Cambridge passed an ordinance that directly regulated "basic scientific research which used recombinant DNA."[10] In addition, the ordinance included the creation of a Cambridge Biohazards Committee (CBC) to oversee all rDNA research in the city.[11] The committee later became the Cambridge Biosafety Committee.

The second case centers on Arthur D. Little, Inc. (ADL), "a multi-faceted management and technology consulting firm with its world headquarters in Cambridge, Massachusetts."[12] In June 1982 ADL decided to renovate one of their existing labs to allow for the handling of highly toxic chemicals. The Department of Defense (DOD) approved the laboratory for operation on September 19, 1983. The public received knowledge of the project and at the October 24 Cambridge council meeting the nature of the toxic chemicals was disclosed and the community voiced "a strong protest against ADL's testing of chemical nerve and blister agents adjacent to a densely populated area."[13] Following a lengthy battle that culminated in the Supreme Judicial Court (SJC) of the State of Massachusetts, the city passed a regulation banning the testing, storage, transportation, and disposal within the city of five specified nerve and blister agents.

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[7] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science: A Technical Memorandum*, Ch 7 (Feb. 1986), 99.

[8] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science: A Technical Memorandum*, Ch 7 (Feb. 1986), 99.

[9] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science*, Ch. 7 (Feb. 1986), 100.

[10] Council for Responsible Genetics, www.genewatch.org/generwatch/articles/16-5lipson.html

[11] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science*, Ch 7 (Feb. 1986), 100.

[12] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science*, Ch. 7 (Feb. 1986), 101.

[13] US Congress, Office of Technology Assessment, *The Regulatory Environment for Science*, Ch. 7 (Feb. 1986), 101.

METHODOLOGY

To research the possible economic impact of the proposed Boston University NBL this report utilizes two methods of analysis. The first method reviews the employment impact of the three currently operating BSL-4 labs in the United States, the Center for Disease Control (CDC) in Atlanta, Georgia, the Southwest Biomedical Research Foundation (SFBR) in San Antonio, Texas, and USAMRIID at Fort Detrick, Maryland. In light of the information gathered in the first step, the second method involved in-depth investigations of the demographic make up of the communities surrounding Boston's proposed NBL. This approach allows for the comparison of the estimated economic impact on job creation with the needs and assets of the local community.

The sources used for this report include personal interviews, census data, GIS data, and background data from both internet and print resources, including, but not limited to, journalistic accounts, as well as, public records. In order to promote uniformity in our interviews and research for each lab, a standard set of questions was drafted and utilized as a foundation for comparison. These questions included:

- How many permanent jobs did the facility in question create?
- What education levels are required for these positions?
- What security checks are required for employment?
- What is the size and age of the facility?
- What kinds of materials are researched at the facility?

After these base questions were answered, additional research queries formed as appropriate and necessary. Further research expanded to include demographic information of the Roxbury and South End neighborhoods.

In addition to interviewing lab personnel from the existing NBL's (biosafety level 4) as well as biosafety level 3 labs, the Team also contacted academics and journalists who have studied and/or commented on the issue. These individuals include:

1. James Jennings: A Tufts faculty member, Professor Jennings has completed preliminary research on the community surrounding the proposed BU facility.
2. Sheldon Krimsky, Professor of Urban and Environmental Policy & Planning, Tufts University.
3. Glen Comiso, Boston Redevelopment Authority
4. Carla Richards, MPP, Director, Community Relations Boston University Medical Center
5. Alternatives for Community and Environment
6. Sujatha Byravan, Council for Responsible Genetics
7. Josh Karlin-Resnick, Editor, Boston University Daily Free Press

BOSTON UNIVERSITY'S POSITION

Boston University and Boston University Medical Center (BUMC), in conjunction with the Boston Redevelopment Authority, purport a number of quantifiable economic benefits to local residents that are associated with the construction of such a facility within the city. In addition, members of the BU community of proponents of the lab also emphasize the unquantifiable benefit and prestige that is associated with securing the city's role as *the* center for research and development in the field of biotechnology.

The following discussion reveals the 'claims' that spokespersons for Boston University have made with regard to the *quantifiable* economic and employment benefits of the construction, maintenance, and operation of the NBL.

Job Creation (temporary and permanent):

Construction, maintenance and daily operation of the NBL at BUMC will require 1,300 new construction jobs, and 660 new permanent positions. It is anticipated that 150 of the newly created permanent positions will consist of scientists and/or researchers. The remaining 500 positions fall under the category of "ancillary jobs," with positions requiring all levels of education. In addition, a Boston Residents Construction Plan will be submitted to secure compliance with the goal and requirements set forth by the Boston Residents Jobs Policy (BRJP). The BRJP sets forth goals to ensure an honest representation of residents, minorities and women in the pool of newly created job opportunities *(see Appendix for additional information BRJP requirements and recommendations).*

Employment Opportunities - Skills, experience, training, and necessary level(s) of education:

It is speculated that employment opportunities will be created at a range of education and experience levels, from science and research technicians to clerical and maintenance support personnel, as well as security officers. The positions anticipated and related benefits will provide for employment opportunities to community members at livable wages and with access to necessary education and training. BU maintains the claim that it will engage community residents, non-profit organizations, and others, around ideas and suggestions on ways to structure job training and support programs to enable local youth and residents to access these opportunities.

Economic impacts (projected contributions):

Initial figures surrounding the economic impact of the NBL include; construction costs at $178 million; annual research and operations at $72 million; and construction and one-year operation costs at $250 million - a 20-year total of $2.9 billion. Additionally, Boston University Medical Center (BUMC) will continue to make Payments in Lieu of Taxes (PILOT) to the City of Boston. BUMC currently makes PILOT payments in excess of $300,000 per year and Boston University makes annual PILOT payments of $3.2 million, in addition to tax payments of $3 million. The creation of the NBL will also contribute $1.9 million to the City of Boston for housing efforts and job training.

The BSL4 will provide the following benefits:

- Construction: $178 Million
- Annual Research: $78 Million
- Yearly Income: $250 Million

Reader's Note: Compiling the above information from Boston University required a great deal of time and patience. It should be noted that BU provided incomplete information and was unwilling to disclose any documents that might support their claims. Several unsuccessful requests were made to obtain a copy of their original application to the National Institute of Allergy and Infectious Diseases (NIAID).[14] *Two unsuccessful attempts were also made to contact the NIAID, first via email and then by phone.*

[14] E-mails and phone call to Valerie Nottingham, Division of Environmental Protection, The National Institute of Health

BOSTON DEMOGRAPHICS

Boston has become a majority minority city, whites now make up 49.5% of the total population and minorities make up 50.5%[15]. The site chosen for BU's proposed NBL sits on the fault line between two different phenomena. The site for the new lab is on the border of two changing Boston neighborhoods, the South End and Roxbury. The South End is one of only three Boston neighborhoods experiencing a rise in the population of white residents. Roxbury, on the other hand, is one of the three neighborhoods with the highest number of African American and minority residents in the city of Boston. Roxbury's newest residents are Hispanic/Latino rather than White-Americans. Although the South End remains predominantly populated by people of color, continued demographic shifts in this direction will drastically change the area's demographic makeup. In addition, the rising influx of white Americans is primarily comprised of higher income professionals. This change has fueled the fear in Roxbury that the proposed BU NBL will not only fail to help local residents, but will actually, in effect, displace them. *(See Tables 1 and 2 for a comparison of Roxbury, South End and Boston Demographics)*

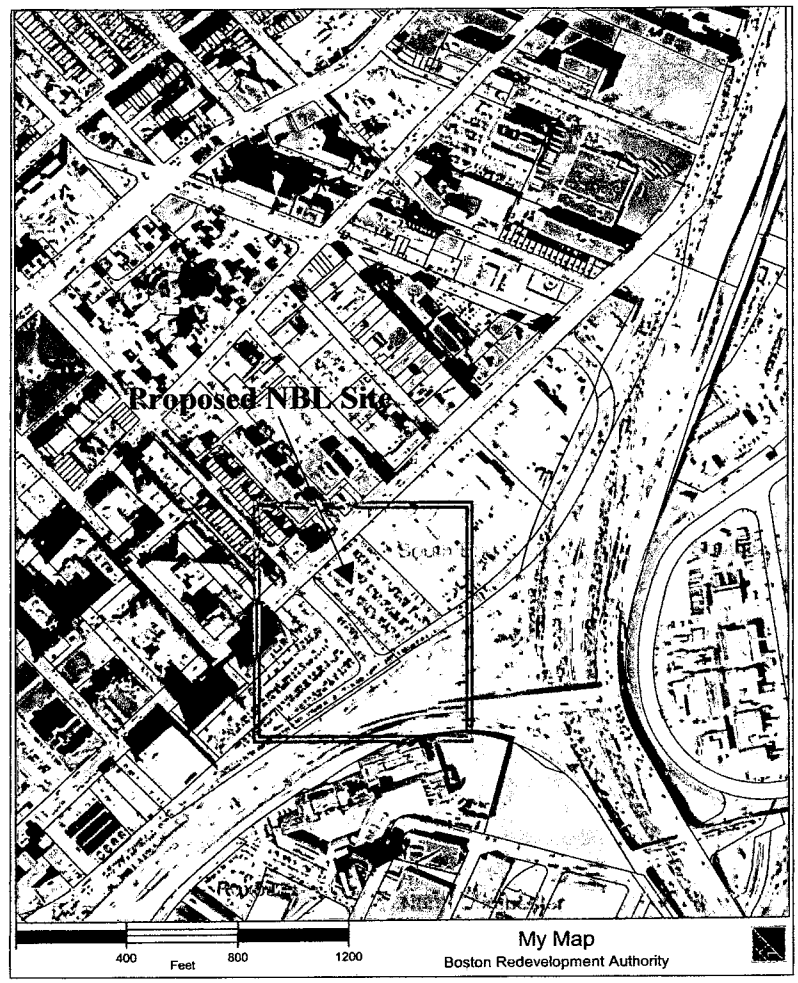


Table 1: Area Demographics (Population & Race)

	Roxbury	South End	Boston
Land Area (sq. mile)	3.94	1.03	48.4
Population	56,658	28,239	589,141
Population Density	14,380	27,417	12,172
African American	62%	22%	25.3%
Latino	24.4%	16.9%	14.5%
White	4.8%	45.3%	49.5%

Source: US Census 2000

Table 2: Area Demographics (Unemployment & Education)

	Roxbury	South End	Boston
Unemployment Rate	11.6%	6.9%	7.2%
Poverty Rate	27.1%	23.9%	19.5%
Median Household Income	$27,133	$41,590	$39,629
High School Diploma Only	18.4%	12.0%	15.4%
Some College/Assoc. Degree/Bachelors Degree	18.3%	29.5%	25.0%
Advanced Degrees	2.7%	16.7%	9.8%
Occupation/Service	26.2%	14.4%	17.8%
Occupation/Mgmt. Professional	26.8%	55.6%	43.3%

Source: BRA 2004/Census 2000, based on entire pop.

[15] Goetze, R., Perkins, G., and Selvarajah, E. (2002), Boston's Population 2000

ACE AND SAFETYNET: LOCAL WATCHDOGS

Alternatives for Community & Environment (ACE) is a 501(c)(3) non-profit organization that has worked since 1994 to provide legal and technical support, educational programs, and organizing assistance to community groups throughout New England. Their mission is to assist communities of color, minority communities, and low-income communities by helping them to address and solve local environmental problems, in addition to providing the impetus for local, grassroots initiative, and aiding in the development of local environmental leadership.

ACE and SafetyNet, a local community action group, have actively opposed the construction of the BSL-4 facility in Boston's South End/Roxbury neighborhoods. They have informed and educated the community as to the potential risks and hazards of such a facility, organized public hearings, formed discussion groups, and continue to challenge Boston University to provide information and publicly disclose the full essence of the project, its benefits, and potential risks. ACE, in concert with SafetyNet, have served as the mouthpiece for the community, demanding that BU actively pursue public participation, and provide full disclosure.

"Since beginning its public relations campaign in 2003, Boston University has provided much misinformation and partial information about the bioterrorism laboratory with a BioSafety Level 4 (BSL4) component that it wants to build near the Boston Medical Center in the South End/Roxbury"
-ACE/SafetyNet

The direct opposition of both SafetyNet and ACE to the proposed construction of a NBL stem's primarily from the perceived failure of BU to be open and honest with the communities directly impacted by the development project. This general lack of transparency has bred an atmosphere of mistrust and increased concerns that the accompanying risks to the community will not be mitigated by sufficient benefits. The specific reasons for opposing the BU proposal include SafetyNet and ACE's belief that:

- There was no resident input or involvement in BUMC's decision to place the facility in their community or in the city's and state's decision to support BUMC's application. The governor and other top state officials met with BUMC about the laboratory, but refused to meet with local residents about the laboratory.
- BUMC falsely claimed that the community supports the laboratory.
- BUMC falsely claimed that the laboratory would add to community safety.
- BUMC refused to provide information to support its claims that the laboratory would be safe and create new jobs. BUMC even refused to provide a redacted copy of its application to the federal government for the funding, even though applicants in other states had provided redacted copies of their applications to their local residents.
- The laboratory would be performing research with live viruses that cause diseases for which there is no known cure and that can be transmitted through the air. There will be a risk of accidental and intentional releases of deadly viruses from the lab and while the virus are in transit to the lab. The lab could also be a target for terrorists. Many of the deadly live

viruses would be in Boston only if BUMC builds the lab.

- The federal government may require the lab to perform secret research with deadly viruses that can be used to make bioweapons. That means no public disclosure of what goes on in the lab. That means no health, safety, and environmental oversight by state or local agencies to protect the public. The public may not even be told if there is an accidental or intentional release of viruses from the lab.
- There was no commitment that community residents would be trained or eligible for jobs in the laboratory. A study done a few years earlier had found that biotechnology research and development laboratories provide employment mostly to highly educated scientists and very few jobs to persons without college degrees.
- The laboratory would increase gentrification of their community with no community safeguards in place, and result in fewer good blue-collar jobs in the area if increasing real estate prices displaced local businesses that provide those good blue-collar jobs.

CURRENTLY OPERATING NATIONAL BIOCONTAINMENT LABORATORIES: A TOOL FOR COMPARISON

SAN ANTONIO, TEXAS:

SOUTHWEST FOUNDATION FOR BIOMEDICAL RESEARCH (SFBR)

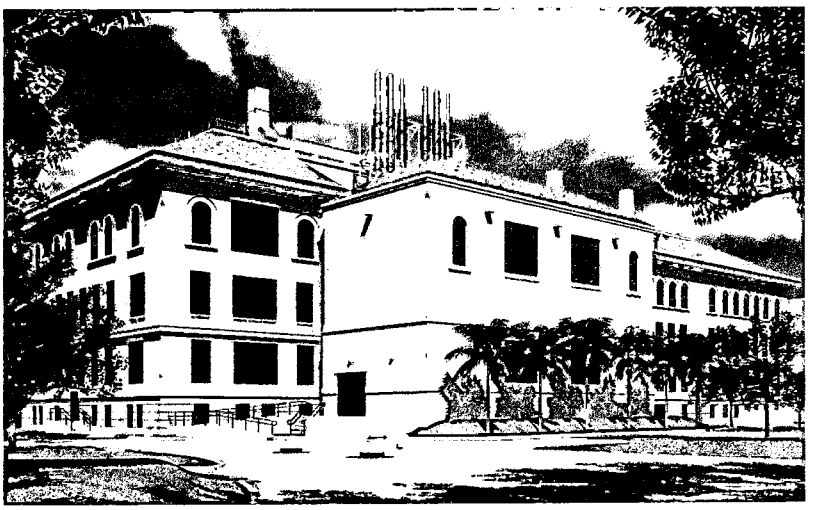
POPULATION: 40,502
POPULATION DENSITY: 2852

The San Antonio Biomedical Research Facility, like the anticipated Boston University lab is privately owned and operated. It is connected to the University of Texas at San Antonio, but is owned by the Southwest Foundation for Biomedical Research (SFBR). SFBR is one of the largest not-for-profit biomedical institutions in the United States. The Southwest Foundation (SFBR) was founded in 1941 as a nonprofit scientific institution by Mr. Tom Slick, a Texas philanthropist. At its founding SFBR was devoted "exclusively to basic biomedical research". The mission of SFBR is to use "basic and applied research, [to] develop vaccines and therapeutics against viral pathogens, and determine how viruses replicate and spread."

The foundation is funded by both NIH research grants and private donors[16]. Currently, the San Antonio NBL is the only privately owned and operated Biosafety Level-4 lab in the United States. Of the foundation's total of 332 employees, roughly 50 of them work in department of Virology and Immunology, which operates the Bio-safety labs. Of those 50 individuals, 9 are faculty members, with a technical support staff of approximately 37 persons. Only 5 individuals have less than a Bachelors degree, the department secretary and approximately 4 Veterinary Technicians. However these 5 people each have extensive post high school training, education, and/or military experience.

The security requirements of the facility – FBI background checks - further limit the individuals who are able to work there. When asked if a person with only a misdemeanor charge in their background would be able to find employment in the department of Virology and Immunology, the head of the department Dr. Jean Patterson replied "probably not".[17]

The entire foundation is housed in many buildings but the Virology and Immunology Department which contains 12 BSL2 labs, 3 BSL3 labs and 1 BSL4 labs is in its own building. Actual working lab space is 1300 sq ft. The entire building including redundant mechanics rooms is 32,000 sq. ft. The budget for the Biosafety level-4 lab is about $2 million; just a small portion of the entire foundations $48 million budget. Dr. Patterson explained that at SFBR researchers are responsible for actively seeking and acquiring funding for their research.



[16] Tumiel, C. (2000), San Antonio Express-News, http://www.SFBR.org acc. May 02, 2004

[17] Dr. Jean Patterson. Chair. Virology and Immunology Department. Telephone Interview 2004.

ATLANTA, GEORGIA:

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

POPULATION: 24,239
POPULATION DENSITY: 2,754

The "Communicable Disease Center" was opened in Atlanta, Georgia as part of the U.S. Public Health Service, in an attempt to aid local health officials in the fight against Malaria and other communicable diseases. The agency was renamed in 1970 to emphasize its broader mission in preventative health, and in 1978 the CDC opened an expanded, maximum-containment laboratory (BSL-4) to research and study viruses too dangerous to handle in an ordinary laboratory.

The Centers for Disease Control and Prevention with headquarters in Atlanta, Georgia, is the leading federal agency, under the Department of Health and Human Services, working to develop and apply disease prevention and control. The National Center for Infectious Disease (NCID), a division of the CDC, is home to the Bioterrorism Preparedness and Response Program. The CDC's Bioterrorism program conducts research with the mission to continually strengthen local, state, and national public health capacity to respond to growing threats from biological and chemical terrorism. The President's estimated $6 billion biodefense spending budget for FY2004 includes $1.1 billion for the bioterrorism preparedness program at the CDC.[18]

The CDC developed Biosafety Levels 1, 2, 3 and 4, 1 being the lowest and necessitating the least safety requirements and 4 being the highest and requiring the most safety restrictions to regulate research practices and protect against possible accidents and/or outbreaks in the community *(See Appendix for additional information on Biosafety Levels).* The Biosafety Level 4 (BSL4) facility in Atlanta handles deadly and dangerous viruses such as Ebola, Small Pox, Hantavirus, and Rift Valley Fever.

The Biocontainment Laboratory at the Centers for Disease Control and Prevention is a small entity of a much larger government agency working to create and promote public awareness and conduct research both in the United States and abroad to prevent the spread of infectious diseases. The CDC, in addition to conducting research, provides information to the public regarding outbreaks, surveillance, preparedness, and protection measures. The agency acts as educator and facilitator with regard to the exchange and distribution of information on infectious diseases.

The CDC Headquarters in Atlanta is home to approximately 1600 employees. The BSL-4 facility is located on the Roybal Campus in a relatively suburban area of the city. The facility is 100% federally funded. The facility has approximately 5000 usable square feet, in two BSL-4 suites. The Emerging Infectious Disease Laboratory is scheduled to open in 2005 and will have 13,177 net usable square feet, and will include BSL-3 and BSL-4 laboratories, as well as lab support space. Currently a dozen CDC employees routinely work in the BSL-4 lab, all have advanced degrees including, MD, MS, or PhD. All employees are subject to the federal NACI criminal background check and subject to denial of employment as a result of criminal records, regardless of how minor.

[18] Council for Responsible Genetics, 2004.

FORT DETRICK, MARYLAND:

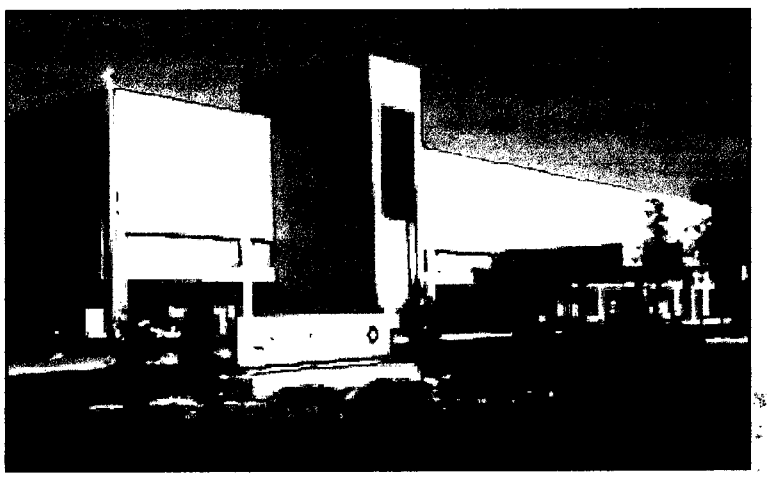
U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASE (USAMRIID)

POPULATION: 32,977
POPULATION DENSITY: 835

Fort Detrick is a United States Army base located approximately thirty miles outside of Washington, D.C., and home to several "tenants," including the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). USAMRIID was established in 1969 by General Order No. 6, from the Office of the Surgeon General of the Army. USAMRIID replaced the previous Army Medical Unit, which was established at Fort Detrick in 1956 for the purpose of biodefense research.[19]

The U.S. Army Medical Research Institute of Infectious Diseases conducts research to develop strategies, products, information, procedures, and training programs for medical defense against biological warfare threats and naturally occurring infectious diseases that require special containment. USAMRIID, an organization of the U.S. Army Medical Research and Materiel Command (USAMRMC), is the lead medical research laboratory for the U.S. Biological Defense Research Program. Currently operating as the largest biocontainment laboratory in the Department of Defense (DOD), the Institute plays a key role in national defense, infectious disease research, and the study of hazardous diseases. The current principal laboratory facility was constructed in two phases, with completion in 1971. USAMRIID's research facility has more than 10,000 square feet of Biosafety Level 4 (BSL 4) space, and 50,000 square feet of Biosafety Level 3 (BL3) laboratory space.[20]

USAMRIID employs approximately 700 military personnel and civilians working in BSL-3 and BSL-4 facilities with less than 50% military personnel. . The BSL-4 facility is home to approximately 25% or 200 researchers and scientists with a PhD or MD degree[21]. 430 of the total employed by USAMRIID are technical and/or support staff who are highly trained and have at least a Bachelors degree. About 10% or 70 employees at USAMRIID's BSL-3 and BSL-4 facility have less than a Bachelors degree.[22]



All employees of USAMRIID are subject to the federal NACI criminal background check and subject to denial of employment as a result. The facility is 100% federally funded.

[19] USAMRIID. www.detrick.srmy.mil/detrick/cutting_edge.2004

[20] USAMRIID. www.detrick.srmy.mil/detrick/cutting_edge.2004

[21] Vander-Linden, Caree. Public Affairs, USAMRIID. Personal interview. 2004.

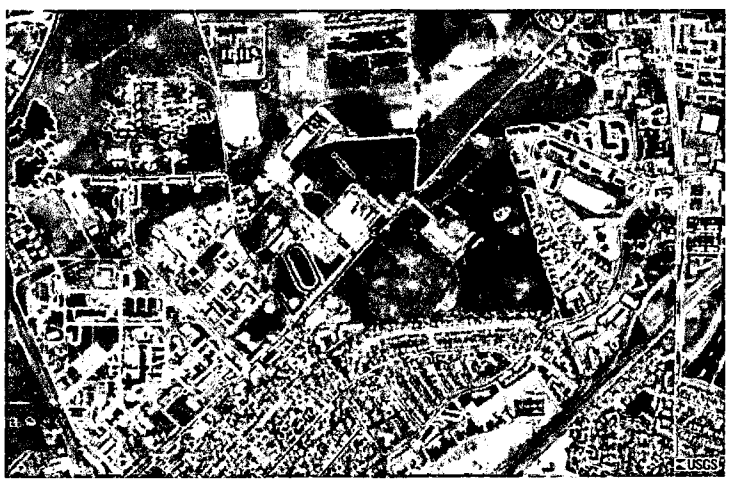
[22] Vander-Linden, Caree. Public Affairs, USAMRIID. Personal interview. 2004.

The following aerial photographs provide a striking visual overview and startling reflection of the tremendous disparity that exists between the population density of the currently operating facilities and that of the BU NBL located in the metro Boston area.

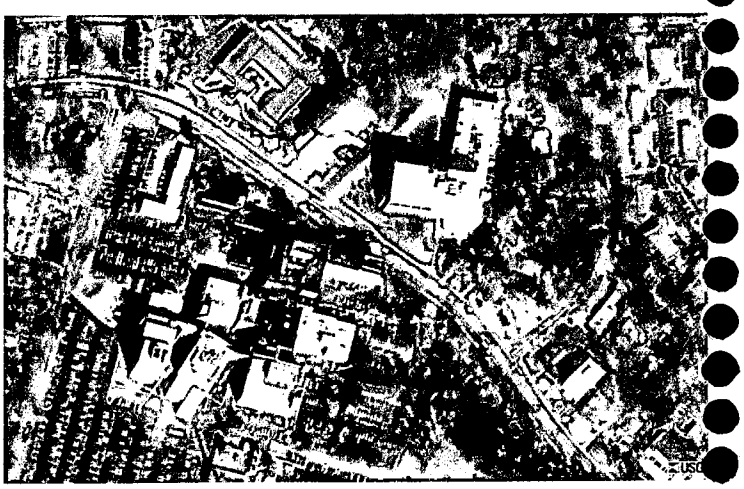
NATIONAL BIOCONTAINMENT LABORATORIES

SFBR - San Antonio, TX

BUMC – Boston, MA



USAMRIID - Fort Detrick, MD



CDC - Atlanta, GA

Source: http://terraserver.microsoft.com

BIOSAFETY LEVEL 3 (BSL-3): EMPLOYMENT DEMOGRAPHICS

There are more than 480 bioscience companies in New England, of which 252 are biotechnology research facilities – the majority of which are in the Boston Area. These research facilities employ approximately 26,000 people. These statistics indicate that Massachusetts has one of the largest concentrations of biotechnology firms anywhere in the world.[23] The major biotech centers and research parks in the Greater Boston area include Universities such as: Massachusetts Biotechnology Research Park (adjacent to the University of Massachusetts Medical Center), BioSquare (Affiliated with the Boston University School of Medicine and Boston Medical Center), University Park at MIT (Located next to MIT), and Harvard Research Facilities. There are also private biotechnology firms in Greater Boston; most of these are located in research parks in the Cambridge area.[24] Three of these firms (Amgen, Genzyme, and Biogen) are among the top five selling biopharmaceutical companies worldwide. Amgen leads the way with over three billion dollars in sales as of 1999.[25] *(See Appendix on other labs in the Boston Area).*

Similar BSL-3 Facilities in Massachusetts

According to sources from Fort Detrick's USAMRIID, as well as from Harvard's School of Public Health, the employment levels needed in a Biosafety level 3 lab are very similar to those of a BSL – 4 lab. Therefore, it is both useful and valid to investigate and compare the employment characteristics of local Biosafety Level 3 facilities with those proposed by BU's BSL level 4 facility.

The New England Regional Center for Excellence/Biodefense and Emerging Infectious Diseases Research (NERCE/BEID) is also a NIAID-funded research center that supports basic research and development of preventive and therapeutic interventions against microbes that pose the most immediate threats to the general population, either as weapons of bioterrorism or as causes of naturally occurring biological emergencies. This is a Center with three BSL-3 Labs that conduct research in biodefense and emerging infectious diseases. The services include Biosafety Level 3 animal model support, genomic-scale proteomics, high-throughput screening for chemical inhibitors, large-scale biological molecule production, and clinical investigation of vaccines, therapeutics, and diagnostics.

This center, controlled by Harvard University, has 19 PhD coordinators with 8-10 researchers (the majority of which are PhD or post-PhD students) appointed to each coordinator. In administrative positions there are 5 Director/Coordinator positions and several administrative, veterinary, and other service positions, totaling approximately 500 people.

Lorenzo Benatuil, a Harvard researcher in the NERCE/BEID provides a useful approximation of employment needs for a "typical" Biosafety level 3 facility (*note: these numbers would vary greatly depending on the size of the lab*). With a total staff of 100, the lab can allow 1 Director, 8 to 10 PhD or Post-Doc researchers and/or scientists. The facility can accommodate 20 researchers, and 70 administrative personnel, security agents, and maintenance workers to care for the animals. A large lab, taking into account all administrative and support personnel, can have between 600 and 700 workers involved in the operations of the entire facility (not just BSL-3). NERCE/BEID is a large facility that includes BSL-1 and BSL-2 laboratories.

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[23] Biotechnology Industry Organization. *State Government Initiatives in Biotechnology 2001.* Available from http://www.bio.org/tax/battelle.pdf accessed March 25, 2004.

[24] Cambridge Chamber of Commerce. www.cambridgechamber.com.

[25] Penhoet, Edward. *The Biotechnology Enterprise: The State of the Industry.* Available from http://www.ehcca.com/presentations/Penhoet.pdf

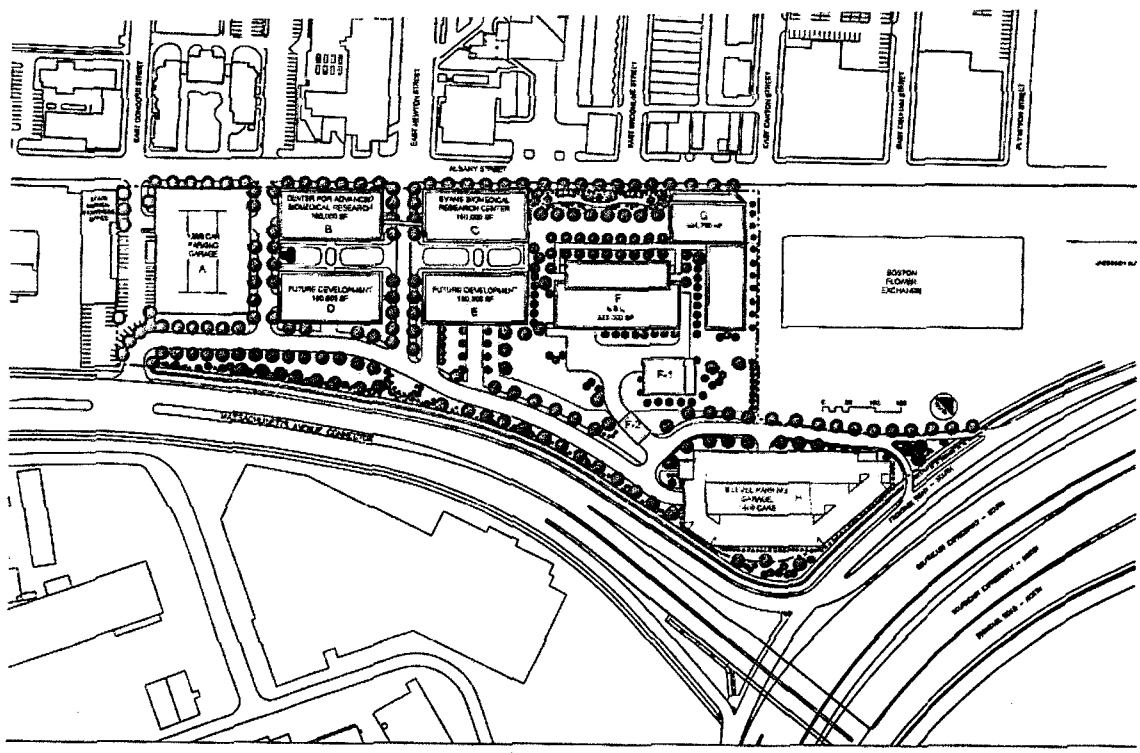
BOSTON UNIVERSITY'S BIOSQUARE:

Boston University Medical Center is currently operating two labs in their "Biosquare," which were completed in Phase I of the Biosquare plans. The additional three buildings planned are in PHASE II of Biosquare, which include the NBL (BSL-4). The NBL is scheduled to be finished in 2007.

The breakdown of the two currently operating laboratories provides some insight in to the potential employment characteristics of the proposed NBL. Funding for these labs is a combination of federal grants, as well as, BU's private funding. The characteristics of these labs are as follows:[26]

Lab 1: 200,000 square feet
500-600 employees
Biosafety levels 1-3
Also occupied by corporate tenants
Over 50-60% of employees have masters or PhD's
10% of employees have high school degrees and work as animal caretakers, lab technicians, security, housekeeping, etc

Lab 2: 192,000 square feet
5-600 employees
Biosafety levels 1-3
Also occupied by corporate tenants
Over 50-60% of employees have masters or PhD's
10% of employees have high school degrees and work as animal caretakers, lab technicians, security, housekeeping, etc



BIOSQUARE PHASE II
BOSTON, MASSACHUSETTS

Figure 2-4
BioSquare Medical Research Campus
source Sasaki Associates

ANALYSIS

Table 3 provides a comprehensive look at the employment opportunities and positions that Boston University anticipates the proposed NBL will provide. We have included our analysis and findings with regard to the amount of experience, background, training and education that is required for each of the positions cited.

Table 3: Proposed Job creation and concurrent education requirements

POSITION	REQUIREMENT
Administrative Asst.	Requires a high school diploma, a BA/BS is preferred, and a minimum of 1-3 years administrative experience
BioSafety Officer	Requires a high school diploma, BS, and a minimum of 3-5 years' experience in law enforcement or security management. It also requires special training in biosafety.
Clinical Research Coord.	Requires a BS or MS in a scientific or health care field and 5-8 years plus experience in relevant clinical research.
Control Center Engineers	Require Mechanical Engineering degree and Engineering License. Minimum 10 years with HVAC and Controls related to Biomedical and Laboratory Building construction.
Custodial Workers	Graduation from high school and two years experience in performance of semi-skilled work
Grounds Maint. Keeper	Requires a high school diploma, preferably a biotechnology certificate, AS or equivalent experience with a scientific background. A minimum work experience of 1-2 years' related laboratory experience.
Lab Animal Caretaker	The Federal laws and guidelines for persons working with lab animals contain certain requirements for training of personnel to ensure competent and humane treatment for the experimental animals. Basically, the law requires HS, bachelor degree and annual training in laws, biology, and handling of lab animal species and specific training for investigators be offered annually by the institution.
Laboratory Asst.	Requires a high school diploma, preferably a biotechnology certificate, AS or equivalent experience with a scientific background. A minimum work experience of 1-2 years' related laboratory experience.
Licensed Maintenance Operators	HS diploma, Graduate Degree not required. 5 to 10 years field experience
Maintenance Helpers	HS diploma, Graduate Degree not required
Project Manager	Requires a PhD in a scientific discipline and a minimum of 12 years' experience in a research environment.
Receiving Clerks	Must have high school diploma or equivalent and 3-5 years of experience working in a materials management environment, preferably pharmaceutical or biological. Will also need two years of supervisory experience in a warehouse operation. Must have demonstrated mathematical skills, attention to detail, and analytical skills.
Research Accountant	5 years experience. Degree in accounting or finance required. Excellent supervisory ability. Experience in laboratories.
Research Accounting Clerk	Requires BS in Accounting or Finance, CPA and/or MBA preferred, and a minimum of 7-10 years senior financial management

	experience and background in a biotechnology/pharmaceutical environment.
Research Asst.	Requires a certificate, AS/BS or equivalent in a scientific discipline and a minimum of 0-2 years' related laboratory experience.
Research Associate	Requires a BS in a scientific discipline and a minimum of 5-8 years' related laboratory experience, or MS with 2-5 years' experience.
Research Committee Coord	Requires a PhD, BS/MS and 5-8 years' regulatory affairs experience in the development of biological or pharmaceutical products or 2-5 years with a Masters and demonstrated working knowledge of scientific principles. Normally the job is for post doctorate students with more than 5 years of working experience and a PhD.
Research Coordinator	Requires a BS in a scientific discipline and a minimum of 5-8 years' related laboratory experience, or MS with 2-5 years' experience.
Research Diet Technician	A high school diploma or GED. Prior experience, training, or education in animal care. AALAS certification as a laboratory Animal Technician
Research DNA Technician	This position requires a PhD in the area of Molecular Genetics, Molecular Biology, Human Genetics.
Research Interviewer	3-4 years interviewing experience and research experience required Related licenses or degrees in Sociology, Psychology, or Education
Research Technician	A bachelor's or master's degree in a biological field with an understanding of the fundamentals of molecular biology, as well as two or more years of experience with molecular biological and/or sequencing techniques.
Security Officer	High School education or equivalent with preferably some college level training in the area of fire prevention, surveys, hazard detections, law enforcement and public relations.
Senior Research Asst	Requires a PhD in a scientific discipline and 8-10 years' experience in a research environment. Expert knowledge of scientific principles and concepts and post doctorate experience.
Special Police Officers	High School education or equivalent with preferably some college level training in the area of fire prevention, surveys, hazard detections, law enforcement and public relations.
System Technicians	Requires MS or PhD in Bioinformatics, Statistics, Biochemistry, Mathematics, Molecular Biology or Computer Science, Computational Chemistry, or related field and 1-4 years of industry experience
Security Officers	High School education or equivalent with preferably some college level training in the area of fire prevention, surveys, hazard detections, law enforcement and public relations.

JOB CREATION: LOCAL LIMITATIONS AND FALSE PROCLAMATIONS?

Security Limitations:

Although the Criminal History Systems Board (CHSB) which administers the Criminal Offender Record Information (CORI) "may not give legal advice on whether or not to hire or fire an individual based on the results of his/her CORI" the appearance of a criminal record will most likely prohibit an individual from working at a BSL4 lab. This may be true even for individuals with only a minor misdemeanor charge.

The CORI law impacts every Massachusetts criminal justice agency and virtually every person who comes into contact with the criminal justice system. The CORI law (M.G.L. c.6, S167 through S178B) was designed to upgrade the quality of criminal records in the Commonwealth to eventually reach a system of complete automation. In the case of biolabs in Massachusetts, BU must comply with the Department of Public Health regulations. Federal and State regulations established mandatory criminal record check of any personnel that work in BSL-2, BSL-3 and BSL-4. Depending on the security level of the lab, different screening processes are required and subsequent hiring restrictions are strictly enforced. The Criminal background check requirements for each bio safety level are as follows:

BSL-1: Low Risk Checking – requires normal pre-employment screening.

BSL-2: Moderate Risk Public Trust – requires performing a risk assessment of any applicant.

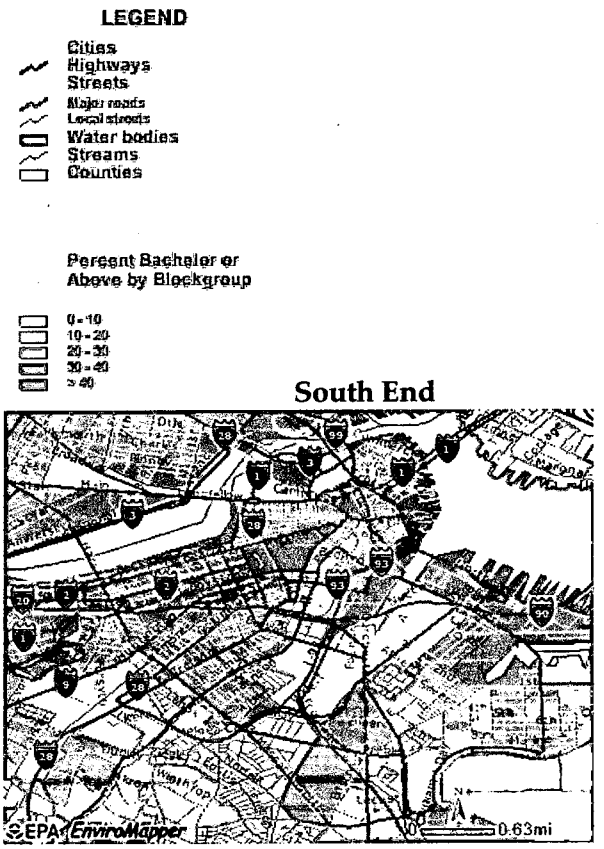
BSL-3: High Risk Public Trust – requires a security risk assessment, personnel security clearance, criminal record checking and permanent review process.

BSL-4: High Security Level – requires a security risk assessment, personnel security clearance, criminal record checking, FBI checking (now Homeland Security check) and permanent review process and establishing a permanent personnel reliability program.

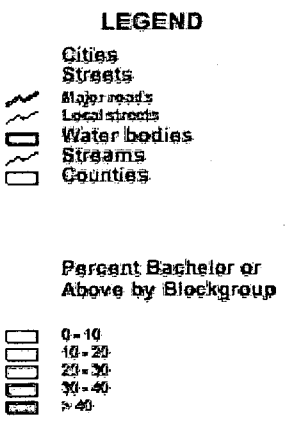
It is clear that if a person wishes to apply to work in a BSL-level 3 or 4 facility, they face a stringent background check, which could be a limitation for many unemployed people surrounding Biosquare. The percentage of people with a criminal background for the South End is 6% and for the city of Boston it is 5%. Although this is certainly not a majority of the citizens in the area, such high-security background checks, even for the lowest-level entry jobs, completely rule out the option of working in this NBL for any persons with a past criminal record. Moreover, even if an applicant has a degree and proper training in the biotechnology field, it is possible that any past record of any type of crime could very well limit them from being hired, especially when competing with applicants without any record.

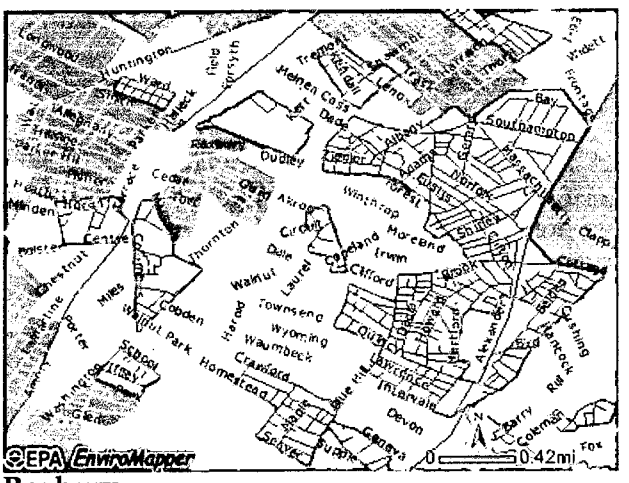
Employment Limitations

As we have noted, the majority of the jobs available in the NBL will require at least a graduate degree. Even among the highly educated residents of the South End only 22.6% of the population achieved an education level equivalent to these requirements. In Roxbury, the percentage is even smaller, with 4.7% achieving advanced degrees. This brings us to the conclusion that the majority of the permanent jobs that the NBL anticipates it will provide to the community, will, in fact, not be geared toward the residents of the Roxbury/South End neighborhoods, but rather to those researchers, scientists and academics from other areas of Boston and Cambridge and even far reaching parts of the country. In Roxbury 69.5% of the population have earned a high school diploma yet 32.4% of the residents *only* have a High School degree.[27] This is the group of residents who stand to be excluded from the jobs offered by BU. These maps reveal the percentage of people in the area surrounding the facility who have earned at least a Bachelors degree.



South End





Roxbury

[27] Based on population age 25 years or older

Possible False Proclamations

One of the most prominent reasons for ACE's concern about the proposed NBL is BU's lack of detailed, transparent data to support their claims that the NBL will provide economic benefits to the local communities. At the time of this report, BU has not publicly specified all of the positions for which it intends to hire. However, in its grant application for NIAID funding, they did itemize some of the jobs intended for the new NBL. (*See Appendix on BU's NIAID application*). Such an absence of exact data on which jobs will be created, along with educational qualifications and requirements led the Team to make some comparisons of similar development projects. Areas in which BU's information does not match with other parallel projects are divided into their claims made regarding construction jobs, permanent jobs, and economic benefits for the city:

Construction Jobs:

BU stated that more than 1,300 construction jobs will be created by the development of the 225,000-square-foot laboratory with a goal that 50% of the construction workers will be Boston residents.

Comparing BU employment numbers for construction jobs with similar construction initiatives reveals an exaggerated estimate. For example, the University of Illinois at Chicago in its proposal to built a UIC National Center for Biodefense and Emerging Infectious Diseases on Chicago's West Side (same size as BU's proposed lab), estimated that construction will be a three-year project, bringing as many as 600-800 jobs."[28] This is at least 500 jobs less than BU's claim, even though both facilities are roughly the same size and each received federal funding. (The government will provide $150 million for construction of UIC's lab and additional funds annually for operations and research).

According to UIC, "Once the facility is complete, there will be some 300 people working there, many in high-tech research positions." Again, this is a big difference from the 660 permanent jobs promised by BU, despite the similarity of the two projects. Another similar project is that of the Eli Lilly Company. They plan to build a drug manufacturing plant in Prince William County,VA, investing up to $1 billion in the area with its 600,000-square-foot building. The construction of the facility only provided 700 construction jobs, even though the size of this building is almost three times the size of BU's 225,000-square-foot NBL.[29]

The UW Medicine South Lake Union could create more than 800,000 square feet of biomedical research space. Currently under construction is phase one, a $51.7 million renovation of the so-called Blue Flame Building.[30] The four-story building is being renovated to provide state-of-the-art lab facilities. This project could create 200 construction jobs.

Merck's new Biocontainment Laboratory (196,000 sq. Feet) in Rahnway N.J. (a US 110,000 million project with an award from U.S. Department of Agriculture of $70 million) will provide 230 construction jobs.

Permanent Jobs:

BU asserts that the jobs in the NBL facility include different types of jobs in various levels including: environmental services, lab technicians, scientists, and administrative staff. BU Medical Center states that they are committed to working with city agencies to ensure that Boston residents are trained to work in this kind of laboratory. The BUMC project promises jobs to the local people, however, high security requirements at the facility and the need for specific experience and technical skills excludes many people in the surrounding communities that may not meet such requirements. (*See Table 3 on p. 22*)

Economic Benefits for the City:

Boston University quotes the following figures regarding the benefits the NBL will provide the city of Boston:

[28] Dr. Savage, UIC National Center for Biodefense and Emerging Infectious Diseases, http://www.uic.edu/depts/biodefense/eac_report.shtml

[29] http://www.lilly.com/

[30] http://seattle.bizjournals.com/seattle/stories/2004/03/29/focus6.html?page=2

1. Construction and one-year operation costs are $250 million - a 20-year total of $2.9 billion.

2. Annual research and operations are estimated at $72 million

3. Boston University Medical Center (BUMC) will continue to make Payments in Lieu of Taxes (PILOT) to the City of Boston. BUMC currently makes PILOT payments in excess of $300,000

4. The NBL will contribute $1.9 million to the City of Boston for housing efforts and job training.

One reason the above claims are cause for concern is that BU's numbers are based on support from the NIAID (Federal Government) for 20 years in grants for the research and operation of the Lab. The application and funds from the NIAID only promise the institution the $120 million in construction funds - the rest of the money depends on further considerations, grant applications and budget restrictions. The research team was never able to access the documents that are supposed to prove BU's claims. In addition, there is not an additional compromise from BU to increase their PILOT program; the numbers they present are for the payments already established for the operational buildings. Perhaps other uses of this land could provide more in terms of taxes to the city.

Other Inconsistencies and Alternatives:

In the year 2002, BU elaborated a Draft Project Impact Report/Draft Environmental Impact Report (DPIR/DEIR) for BioSquare Phase 2, which includes constructing an unrelated lab building, a parking garage, the Biosafety Lab (BSL-1, BSL-2, BSL-3 and BSL-4), and one Hotel and Conference Center (in the parcel F). BU never spoke again of the other planned developments for the property, yet they recently confirmed that these plans no longer exist. Ironically, the differences of the project with or without the Hotel represent a great difference for the community. According to our comparative research of other Universities running similar hotel facilities, it seems clear that other use of the land – such as a hotel - can provide the same or better economic impacts for the community and for the city.

First, the jobs available in a hotel/conference facility will be accessible to the majority of the people from the area. Such a facility is estimated to be about 185,000 square feet, with 250 guest rooms. Once operational, it would employ approximately 250 people with an annual payroll of roughly $5 million. The cost of constructing the hotel and conference center is estimated to be between $30 - $40 million. Such a project would employ some 200 construction workers with a payroll in excess of $8 million. The construction funds and salaries will produce additional spending and jobs in both the local and state economies.

Overall, the original hotel/conference project could produce $22.5 million in additional income for the area each year and impact as many as 600 jobs in the local economy. It is estimated that the property tax alone would exceed $400,000 per year on the hotel and conference center space, which is greater than BU's current PILOT payment of $300, 000.

Although researching alternatives for local employment other than BU's NBL was outside the scope of this project, it is noteworthy that BU's original plan to build a hotel would have provided stronger evidence of their commitment to providing jobs to neighboring communities.

CONCLUSIONS

It is generally accepted that communities housing dangerous facilities may legitimately expect to receive some benefit in return[31]. It has been the purpose of this research project to investigate whether or not substantial benefits would be produced for the communities surrounding the proposed NBL.

While it is clearly beyond the abilities of this research team to determine conclusively that the proposed Boston University National Biocontainment Laboratory will not create jobs for the local community, ample evidence has been found to support suspicions that it will not. The research reveals that BU's claims of tremendous job creation may in fact be exaggerated. In addition, despite the large size of the facility the Team is, to date, not convinced that the need or potential economic benefits of the development are as great as claimed considering the already large number of biotechnology firms in the area. Boston is already the nearly undisputed national leader in the field of Biotechnology.[32] BU's failure to be forthright about this matter only helps to encourage this perception. This is in sharp contrast to the openness of the only other private facility, SFBR, where the staff and faculty were open, informative, and helpful.

This research also reveals a great need for more objective research. As the future research section of the report indicates, there remain many more aspects of this matter to be studied. In addition, the data provided by BU appears to be the basis of all support for the proposed facility. The Team was unable to find any significant study to support BU's claims about the proposed NBL facility. When the Team requested information about the proposal from city officials at the BRA, they were instructed to contact BU. Clearly the group expecting to profit directly from a development should not be the only entity actively studying the potential impact of the development.

The problems revealed in this paper could be lessened by alternative development projects. Other developments should be considered to lessen the possible harmful impacts of the proposed facility on the surrounding communities. One alternative mentioned in the previous section is the creation of a hotel on or near the site. This development would employ more local residents and additional revenue could be raised for the City of Boston, with fewer of the many safety, security, and economic issues that surround the lab.

In the event that the proposed facility continues as planned some measures should be taken in order to make the available jobs more accessible to the members of the surrounding community. Among the varying types of biotechnology facilities, research facilities like the proposed BU facility offer the least accessible jobs, if "accessible" is defined as jobs available to individuals with less than a Bachelor's degree.[33] Data from other BSL 3 and 4 laboratories around the country clearly shows that these facilities only hire people with considerable education and specialized experience. The likelihood that many individuals in the surrounding area would fit these criteria is rather small. Of the two affected areas, the South End and Roxbury, demographic data reveals that the Roxbury area would benefit the least from the laboratory as designed.

A job-training program aimed at the local community might be a partial solution. A basic model for this program might be the current BUMC City Lab Academy or the Cambridge Biomedical Careers Program. Both are nine-month long training programs. The Cambridge program is conducted by Just A Start Corp., in conjunction with Bunker Hill Community College, in Cambridge, MA. The programs are designed to qualify graduates for entry-level jobs in biotechnology companies, hospitals, laboratories and research institutions[34]. The

[31] Lofstedt, R, (2002) Good and bad examples of siting and building biosafety level 4 laboratories: a study of Winnipeg, Galveston and Etobicoke

[32] Kahn, C; Pradhan, G. (2003) creativity and Innovation: *A Bridge to the Future*

[33] Boston Redevelopment Authority, 2004 (see appendix)

[34] http://www.bumc.bu.edu acc. May 2, 2004 and http://www.bhcc.edu acc. March 16, 2004

researchers would encourage the expansion of theses programs so that more local residents could find employment at the proposed facility. In addition to the educational requirements, employment is limited by criminal background checks. Alternative development plans might ease this restriction.

Another concern is the possibility that the facility might not always have access to the extensive funding sources currently available. The expected facility is to be built and maintained primarily with funds from large government grants. Although future research is needed, past experience has shown that government funding is often insecure, and dependent upon the direction of political trends at any given time. One must ask what will happen if in the future biotechnology is replaced as the hot industry. It could possibly have the same future as general public health agencies whose budgets have been drastically slashed in recent years. At this point it is unclear whether or not the facility is adaptable for other uses, leaving one to wonder what will happen to the local community if the facility loses large scale funding in the future.

It is the determination of the Team that it cannot be proven that the proposed BU NBL facility will economically benefit the surrounding communities by providing significant job creation. An assessment of proposed available jobs does not appear to match, or reflect the needs of the surrounding communities. No effort has been made to incorporate local residents in the employment schemes of the development project. The closest thing to a guarantee is BU's goal to dedicate 50% of the temporary construction jobs to Boston residents.[35] Potential negative impacts have been inadequately studied. It can also be concluded that the proposal, if altered to better represent the interests of the affected communities, could have benefits for the local communities.

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[35] biosquare.org "Facts about the BU Medical Center Laboratory"

FUTURE RESEARCH

The issue of the economic impact of the proposed BU Biosafety lab is far more complicated and far-reaching than can be adequately handled within the scope of this project. Future research will be required to explore the many additional impacts the proposed NBL site could have on the surrounding communities. One very important issue that might be explored is the impact the site will have on the rental rates and land prices of the surrounding communities. The concern is whether or not the placement of the facility will price local residents out of the community. Later studies might explore the role residency requirements will have on possible gentrification. In addition, it would be useful to investigate how the impact of a BSL-4 laboratory compares to the impact of a BSL-3 lab, and other locally undesirable land uses (LULU). A future research project might explore the economic impact of an accident at the facility, looking specifically at the cost of decontamination. In a similar vein a project could explore the chain of liability, asking, "what liability would the local community assume by placing such a facility within its borders?" The current site is also vulnerable to political changes. Future research should investigate the potential impact on the community if the political winds change and federal funding for biosafety projects decreases, or ends completely. This is comparable to the boom/bust experience of the dot.com industry. A Content Analysis approach might also be a helpful analytical tool. During the process of reviewing the published materials supporting the proposed lab considerable mention was made of the benefit that would accrue to the nation as a whole, the state of Massachusetts, and the City of Boston. Very little mention was made, however, of the specific benefits for the local residents.

The need for development in the Roxbury/South End area is nearly universally agreed upon. Therefore the ultimate question remains, if the proposed biosafety lab is an inappropriate land use what then is a more suitable alternative development plan? These alternatives might include other biotechnology industries such as those that focus on manufacturing rather than research and development.

In order to adequately answer these questions more information as well as more research is required. In order to better understand the impact that high security checks will have on employment opportunities it would be extremely advantageous for future researchers to acquire data on the average criminal background of the populations of both the city of Boston and the neighborhoods of Roxbury and the South End. In terms of the skills required to work in the proposed facility, it would be helpful to explore the impact limited English proficiency will have on potential employees. This is especially pertinent in Roxbury considering its significant number of immigrants and linguistic minorities. The most important documentation needed by future researchers is the economic analysis used by BU to determine the number and type of job they claim the proposed facility will create.

List of Appendices

1. Memorandum of Understanding
2. IRB Application and Exemption
3. Matrix/Comparison Chart of BSL4 NBLs
4. BSL Comparative Chart
5. GIS: Environmental Justice Impact Areas
6. Chart of Job Potential for Boston Residents
7. BU's NIAID Application and Positions Available
8. Other Labs in the Boston Area
9. Boston Residents Job Policy (BRJP)
10. Criminal Offenders Record Information (CORI)
11. City of Boston Reported *Part One Crime*
12. Ordinance Proposal
13. Large Biotechnology Company Personnel Chart
14. Specific Areas of Biotechnology Jobs
15. BU's School of Medicine Letter to NIH
16. BU's space Tabulation by Room Type

MEMORANDUM OF UNDERSTANDING BETWEEN THE STUDENT TEAM FROM THE DEPARTMENT OF URBAN AND ENVIRONMENTAL POLICY AND PLANNING AT TUFTS UNIVERSITY AND ALTERNATIVES FOR COMMUNITY AND ENVIRONMENT

This document describes the scope of work, products (deliverables), timeline and work processes agreed to by the parties for the mutually satisfactory completion of this project. The project entails research and analysis to assess the economic impacts of a National Biocontainment Laboratory (NBL) on the neighborhoods of Roxbury and the South End and the City of Boston.

Client:

Eugene B. Benson, Staff Attorney
Alternatives for Community and Environment (ACE)
2343 Washington Street, 2nd Floor
Roxbury, MA 02119
Phone: 617-442-3343 x26
Fax: 617-442-2425
E-mail: gene@ace-ej.org
ACE: http://www.ace-ej.org

Project Goal:

Alternatives for Community and Environment (ACE) would like Tufts students to perform research and analysis concerning the economic impacts of the proposed BU National Biocontainment Lab (NBL). The overall goal is to research BU's claim that the NBL will be positive economically for the surrounding community. If we find substantial evidence to counteract this claim, such evidence could help ACE's efforts to get an anti-NBL Ordinance passed by the City Council.

Method:

The research method will include, but is not limited to, researching the economic impacts of the other Biosafety level 4 laboratories in the U.S.A. The ACE team will also compare the potential economic impacts of the original BU plan with the current plan.

Products/Deliverables:

The ACE team will produce a comprehensive report on the probable economic impact of the proposed biotechnology development.

The report will treat the following topics as priority research areas:

- How many and types of jobs will this NBL provide? How does this compare to the original proposal?
  - How will heightened security and background checks (CORI) impact the potential for hiring local residents?

- What education and qualifications will be needed for these newly created jobs? How will these requirements affect the ability of the NBL to hire local residents?

- What number and type of employment opportunities currently exist along the Melnea Cass corridor, including Newmarket Square?
  - What are the possible impacts of the new NBL on these jobs and the people they employ?

- What are the histories behind the other three BSL-4 laboratories in the US (MD, TX, GA)? Compared to the experiences at the other sites, is it likely that the BU NBL site will encourage the creation of a Biotechnology corridor as boasted by BU?
  - If so, what economic impact will this have on the surrounding community?
  - Is this a fair comparison?

The following additional areas of research will be considered (or made into a priority) only if time permits:

- What are the possible impacts of the new NBL on local housing prices?
- What are alternative development proposals for that site that might benefit residents more than the NBL?

Task	Target Completion Date	Actual Date
Initial Meeting with Client – Provide Draft MOU For comment	February	February 10th
Conduct research on current BSL4 bio-terror labs Compiling contact information, background Websites, etc. with ongoing weekly Team Discussions and evaluation of research/findings	February	
Summarize/Compile results of research and submit to Gene @ ACE for review and evaluation of Progress	Week of Feb. 23	
Outline Due	Mar. 3	
Interim Meeting with Gene to discuss outline and Evaluate progress	Week of March 7	
Spring Break	Mar. 22-26	
Draft Report Due	Mar. 31	
Final Revisions/Editing	Week of April 5	
Presentation	TBA	
Deliver Final Report	Apr. 28	

Work Processes and Communication

The Tufts Team will report exclusively to client Gene Benson at ACE.

This MOU can be revised and renegotiated with the agreement of all members of the Tufts Team ACE and the Client.

Considerations and Expenses:

Each team member will spend approximately 8-10/hrs per week on this project. No payment is expected from ACE. A small expense account for project related expenses such as, photocopying, travel, and long distance calls will be provided by the department of Urban and Environmental Policy and Planning at Tufts University.

ACE Team Members:

Kirstin Henninger	[redacted]	[redacted]
Carlos Ponce-Silen	[redacted]	[redacted]
Ericka Stallings	[redacted]	[redacted]
Halida Hatic	[redacted]	[redacted]

Client Signature **Date**

ACE Team Representative **Date**

Tufts Faculty Representative **Date**

Work Processes and Communication:

The Tufts Team will report exclusively to client Gene Benson at ACE.

This MOU can be revised and renegotiated with the agreement of all members of the Tufts Team ACE and the Client.

Considerations and Expenses:

Each team member will spend approximately 8-10/hrs per week on this project. No payment is expected from ACE. A small expense account for project related expenses such as, photocopying, travel, and long distance calls will be provided by the department of Urban and Environmental Policy and Planning at Tufts University.

ACE Team Members:

Kirstin Henninger	[redacted]
Carlos Ponce-Silen	[redacted]
Ericka Stallings	[redacted]
Halida Hatic	[redacted]

2.23.Bo 2/25/04
Client Signature **Date**

Ericka Stallings 2/26/04
ACE Team Representative **Date**

Tufts Faculty Representative Date

Project Title:___**Boston University National Biocontainment Lab (NBL)** _____
Principle Investigator(s):_**Halida Hatic, Kirstin Henninger, Carlos Ponce, Ericka Stallings** ___

Principle Investigator(s) Signature:_Halida Hatic_____

Faculty Advisor if Student:___**Veronica Eady and/or Rusty Russell** _____

Funding Source:_____**N/A**_____

Today's Date:___**2/18/04**_____ Date submitted to funding source:_____**N/A**____

Campus Phone:_**513-237-6603**__ Email:_**Halida.Hatic@tufts.edu** Campus Address: **283 Summer Street Somerville, MA 02144**

Location of Research:_**Continental United States** _____

1. Do you use human subjects in your research? __**X**__YES _____NO
(if yes, follow the instructions below)

2. Has this research been reviewed by Tufts' IRB? ____YES ___**X**__NO
(if you answer no, but you think your project is exempt, select the exemption category from this form and explain why)
2

3. If the answer to number 2 was YES, then when was your proposal last reviewed (it must be within a year)?
Date_____.

If this is an annual continuation, go to number 9.

If you answered NO to question two or the review was greater than one year ago then you must answer the remaining questions on this form (use additional sheets if necessary). Even if your project is eventually ruled exempt by the IRB you still must complete this form. In addition, you must provide the following information:

(a) a description of what the subjects will do (an abbreviated version of your proposal may suffice for this, but be sure that enough information is provided so that the IRB can adequately judge the potential risks to human subjects):
The subjects of our interview(s) will be answering questions regarding the existing National Biocontainment Labs and their economic impact on jobs, housing, and industry to the surrounding communities. Please see list of sample questions Attached.

(b) How many subjects you will be using;
25

(c) How they will be recruited;
Through research and referral we will interview individuals based upon their knowledge, background, and connection to the topic.

(d) Any specific characteristics of your population (e.g., age and gender):
No

(e) A copy of your consent form: and

(f) a copy of your debriefing statement.

4. Is there any possibility of physical harm or pain to participants? _____YES ___**X**___NO. If YES, please detail the potential source of this harm/pain and the justification for including the manipulation.

5. Is there any possibility of psychological harm to the participant? _____YES __**X**___NO. If YES, please detail.

6. Does the research involve deception of the participants? _____YES ___**X**____NO. If YES, please detail.

7. Will the data and subject information be kept confidential? _____YES ___**X**____NO. If NO. please detail.
Our findings will be documented in a final report. We will only be documenting/gathering public information.

8. Does your research involve the use of any potentially "compromised" population (e.g., children/minors, cognitively impaired individuals)? _____YES____**X**___NO. If YES there may be additional concerns regarding the safeguarding of these individuals. Please read D.H.H.S 45 CFR 46 carefully, particularly subparts B, C and D. Below describe the precautions you are taking to insure that these subjects will be adequately protected.

9. For Continuing Review Either Annually or Earlier: Please provide the protocol summary and a status report on the progress of the research, including (i) the number of subjects accrued; (ii) a summary of any adverse events or unanticipated problems involving risks to subjects or others and of any withdrawal of subjects from the research or complaints about the research since the last IRB review: (iii) a summary of any relevant recent literature, findings obtained thus far, amendments or modifications to the research since the last review, any relevant multi-center trial reports, and any other relevant information, especially information about risks associated with the research: and (iv) a copy of the current informed consent document.
<Start typing here>

Six categories of exemption.

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to

the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

(5) Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine: (i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

(6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

CONSENT TO PARTICIPATE IN A RESEARCH STUDY
TUFTS UNIVERSITY

Title: BU National Biocontainment Lab

PRINCIPAL INVESTIGATOR:

Name: Halida Hatic
Dept.: Urban and Env. Policy & Planning
Tel: 513-237-6603
Email: Halida.Hatic@tufts.edu

Advisor:
Name: Rusty Russell/Veronica Eady
Dept.: Urban and Env. Policy & Planning
Tel: 617-627-3394
Email: [redacted]

INTRODUCTION:

You are being invited to volunteer as a subject in a research study being conducted at Tufts University. This consent form provides you with the information you will need when considering whether to participate in this research study. All research studies carried out at Tufts are governed by federal and state laws regulating human subjects research. Pursuant to these laws and regulations, the researcher will first explain the study, and then he or she will ask if you would like to participate. If you decide to participate, you will be asked to sign this consent form which states that the study has been explained, that your questions have been answered, and that you agree to participate. You will be given a copy of this form to keep for your records.

STUDY PURPOSE:
You are invited to participate in a research study that will focus on the economic impacts (housing, jobs, and industry) of a National Biocontainment Laboratory (NBL) on the neighborhoods of Roxbury and the South End and the city of Boston.

Your expected duration of participation is approximately 30 minutes.

You qualify as a possible participant in this study because you have experience with and/or knowledge about either Boston University's proposed National Biocontainment Laboratory or other established NBL's. Both males and females are eligible to participate, but must be 18 years of age or older. Tufts University is the only institution participating in this research.

STUDY PROCEDURES:

If you decide to participate in the study you will be asked a series of interview questions regarding your knowledge and understanding of either current NBL's or BU's proposed NBL to aid in our research and understanding of the possible economic impacts that such a lab will incur on the surrounding neighborhoods.

STUDY RISKS:

Your participation in this study involves minimal risks. There are no risks to participating in this study.

STUDY BENEFITS:

Benefits to you may include further understanding of issues surrounding biotechnology research in general, as well as, the economic impacts such a facility might incur on local communities.

Benefits to society may include more effective proposals for development in the said communities and a better understanding of the impact(s) of a National Biocontainment Laboratory on these local communities.

ALTERNATIVES TO PARTICIPATING IN THE RESEARCH STUDY:
You may choose not to participate in this study at no costs.

COSTS TO THE SUBJECT:

There are no costs for participating in this research.

COMPENSATION:

There is no compensation for your participation in this study.

CONFIDENTIALITY:
If you consent to participate in this research, your personal information will be kept confidential and will not be released without your written permission, except as described in this paragraph or as required by law.

Your name is kept confidential and will not be recorded with your interview responses. You will have a participant code in place of your name. Your personal information shall be stored separately from your coded consent form and interview responses.

Your name will not be reported in any publication; only data obtained as a result of your participation in this study that does not identify you individually will be made public.

FUNDING:

This research is funded by the Department of Urban and Environmental Policy & Planning at Tufts University.

This study has been reviewed by the Human Subjects Review Board at Tufts University. The Board is responsible for making sure that risks (if any) to the subject will be

outweighed by the potential benefit to the subject and/or to the importance of the information to be gained, that the rights and welfare of each person is adequately protected and that informed consent will be obtained.

VOLUNTARY PARTICIPATION IN, AND WITHDRAWAL FROM, THE STUDY:

The decision whether to be in this study is entirely up to you. Participation is voluntary. You can refuse to participate, or withdraw from the study at any time, and such a decision will not affect your relationship with Tufts University, either now or in the future. Nor will a refusal or withdrawal of participation result in the loss of any other benefits to which you are otherwise entitled. Signing this form does not waive any of your legal rights. During the course of the research study, you will be told of any significant new findings that may influence your willingness to continue to participate in the research. Should you decide to withdraw from the study as a result of those findings or for any other reason, you should contact the Principal Investigator and let him/her know about this decision. The Principal Investigator will discuss with you any considerations relating to your welfare involved in discontinuing your participation in the study.

Your participation in the research study may be discontinued if you feel uncomfortable and/or compromised by the questions.

CONTACTS:

Whom to contact about the research: Halida Hatic; Kirstin Henninger; Carlos Ponce; Ericka Stallings – Department of Urban and Environmental Policy & Planning.
If you have any questions, please ask, and we will do our best to answer them. If you have additional questions in the future, you can reach me at 513-237-6603. Copies of this consent form are available by request.

Whom to contact about the subjects' rights: Halida Hatic; Kirstin Henninger; Carlos Ponce; Ericka Stallings – Department of Urban and Environmental Policy & Planning
If you have any questions on your rights as a research subject, you can call the Institutional Review Board at (617) 627-3417 for information.

Whom to contact in the event of a research related injury Halida Hatic; Kirstin Henninger; Carlos Ponce; Ericka Stallings – Department of Urban and Environmental Policy & Planning

STATEMENT OF CONSENT:

I have discussed this study with (PI) to my satisfaction. I understand that my participation is voluntary and that I can withdraw from the study at any time without prejudice. Signing this form does not waive any of my legal rights.

By signing below, you are indicating that this form has been explained to you, that you understand it, and any questions you have about the study have been answered. You are indicating that you understand the ways the study data may be used and how your privacy will be protected. By signing this form, you are agreeing to participate in the study *at this time only*.

I have been informed that if I believe that I have sustained injury as a result of participating in a research study, I may contact the Principal Investigator, Halida Hatic, at 513-237-6603, or the Institutional Review Board at (617) 627-3417. I understand that:

a) Tufts University will arrange for any emergency medical care determined to be necessary;
b) I will be responsible for the cost of such care, either personally or through medical insurance or other forms of medical coverage; and
c) No monetary compensation for wages lost as a result of injury will be paid to me by Tufts University.

I ACKNOWLEDGE THAT I HAVE READ THE ABOVE EXPLANATION OF THIS STUDY, THAT ALL OF MY QUESTIONS HAVE BEEN SATISFACTORILY ANSWERED, AND I AGREE TO PARTICIPATE IN THIS RESEARCH STUDY.

_____ Signature of study volunteer/authorized representative (such as parent or guardian) providing legal consent_____
Date

_____ Signature of study volunteer assenting to participation if between the ages of 7 and 18 or otherwise incompetent to provide legal consent._____ Date

I ACKNOWLEDGE THE PROCESS AND/OR SIGNATURE OR STATEMENT SET FORTH ABOVE

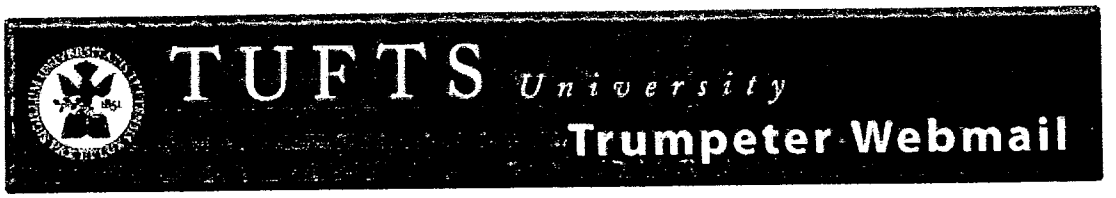
_____ Signature of witness_____ Date

I CERTIFY THAT I HAVE EXPLAINED FULLY TO THE ABOVE SUBJECT THE NATURE AND PURPOSE, PROCEDURES AND THE POSSIBLE RISK AND POTENTIAL BENEFITS OF THIS RESEARCH STUDY.

_____ Signature of researcher or designate_____ Date

Sample Questions

1. What kind of jobs were, or will be, created by the NBL?
2. What level of education is, or will be, required for these jobs?
3. What efforts will be made, or have been made, to incorporate local labor into the employment pool?
4. How long is the government funding for the lab guaranteed?
5. From where will funding be secured following the above time period?
6. What was the population density of the surrounding area before and after the construction of the lab?
7. How has the NBL affected the price of housing in the surrounding area(s)?



INBOX: Your IRB Protocol (126 of 331)

Date: Fri, 05 Mar 2004 14:10:26 -0500
From: Theodore Liszczak <theodore.liszczak@tufts.edu>
To: "Halida A. Hatic" <Halida.Hatic@tufts.edu>
Subject: Your IRB Protocol

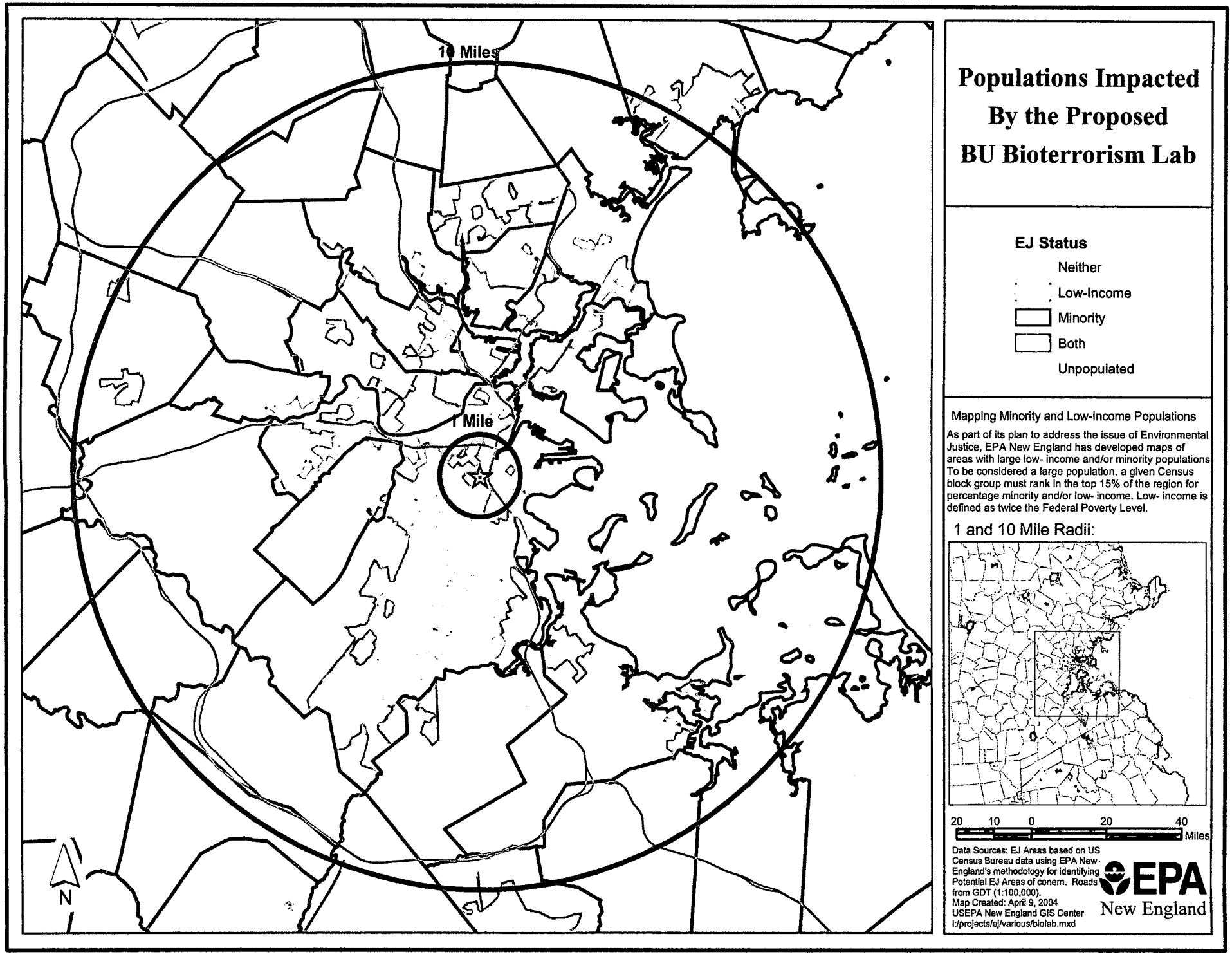
Halida,
Your protocol "Boston University National Biocontainment Lab" is exempt from IRB review. It falls under category (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
If I may be of any assistance, please contact me.
Sincerely,

Location		USAMRIID - Fort Detrick, MD	CDC - Atlanta, GA	SFBR - San Antonio, TX	BUMC - Boston, MA Proposed Facility
Population/Pop. Density		32,977 / 835	24,239 / 2754	40,502 / 2852	29,592 / 14,091
Year built		1971/2006	1978/2005	2000	2007
Sq. Footage facility		50000/100000 (BSL2-4)	*	32000	225000
Sq. Footage of BSL4		10000	5000/13177	1300	29250
Viruses		Venezuelan Equine Encephalitis, Staphylococcol Enterotoxins, Ricin, Anthrax, Plague, Botulism, Hemorrhagic Fevers, Arboviral Illnesses	Anthrax, Smallpox, Ebola, Marburg Fever, Congo-Crimean Fever, Hantavirus, Rift Valley Fever (HIV & SARS-BSL3)	Hepatitis. B-C, herpes B, Leishmaniavirus, hantavirus, SARS, HIV-Human and Simian, Mosquito and Rodent born viruses	Anthrax, Smallpox, Ebola, West Nile, etc.
Urban/Suburban/ Rural		30 miles outside of Washington, DC	Suburban/Outskirts	Suburban/Outskirts	urban
Criminal Record Check		Yes (NACI)	Yes (NACI)	NACI	CORI (NACI)*
Plans for expansion?		Yes (2006)	Yes (2005)	none aware	new facility
Funding		Federal	Federal	Federal & Private	Federal & Private
Job demographics		#'s apply to BSL3&4 facility	#'s apply to BSL4 Facility	#'s apply to BSL2-4 Facility	#'s apply to Phase II development
	PhD, MD	200	12	45**	160**
	MS	360**		*	**included in advanced degree #
	BS	**included in MS #		*	*
	Tech	**included in MS #		37	*
	Adm./Support	70		5	*
	Security	*		*	*
	Other	70			*
	Total	700	12	50	660

*denotes information that is pending further research. **Denotes BA and above

BSL COMPARATIVE CHART

BSL:	AGENTS	PRACTICES	SAFETY EQUIPMENT	FACILITIES
1	Not known to consistently cause disease in health adults	Standard microbiological practices.	None required	Open bench top Sink required
2	Associated with human disease. Hazard = percutaneous injury, ingestion, mucous membrane exposure.	BSL-1 practices plus: ●Limited access ●Biohazard warning signs ●"Sharps" precautions ●Biosafety manual defining any needed waste decontamination or medical surveillance policies	**Primary Barriers:** Class I or II BSCs or other physical containment devices used for all manipulations of agents that cause splashes or aerosols of infectious materials; **PPE:** Lab coats, gloves, face protection as needed	BSL-1 plus: ●Autoclave available
3	Indigenous or exotic agents with potential for aerosol transmission; disease may have serious or lethal consequences	BSL-2 practices plus: ●Controlled access ●Decontamination of all waste ●Decontamination of lab clothing before laundering ●Baseline serum	**Primary Barriers:** Class I or II BSCs or other physical containment devices used for all open manipulations of agents; **PPE:** Protective lab clothing, gloves, respiratory protection as needed.	BSL-2 plus: ●Physical separation from access corridors ●Self-closing, double-door access ●Exhausted air—not recirculated ●Negative airflow into lab
4	Dangerous/exotic agents that pose high risk of life-threatening disease, aerosol-transmitted lab infections, or related agents with unknown risk or transmission.	BSL-3 practices plus: ●Clothing change before entering ●Shower on exit ●All material decontaminated on exit from facility.	**Primary Barriers:** All procedures conducted in Class III BSCs or Class I or II BSCs <u>in combination with</u> full-body, air-supplied, positive pressure personnel suit.	BSL-3 plus: ●Separate building or isolated zone ●Dedicated supply and exhaust, vacuum, and decon systems ●Other requirements outlined in BMBL



Populations Impacted By the Proposed BU Bioterrorism Lab

EJ Status

- Neither
- Low-Income
- Minority
- Both
- Unpopulated

Mapping Minority and Low-Income Populations

As part of its plan to address the issue of Environmental Justice, EPA New England has developed maps of areas with large low- income and/or minority populations. To be considered a large population, a given Census block group must rank in the top 15% of the region for percentage minority and/or low- income. Low- income is defined as twice the Federal Poverty Level.

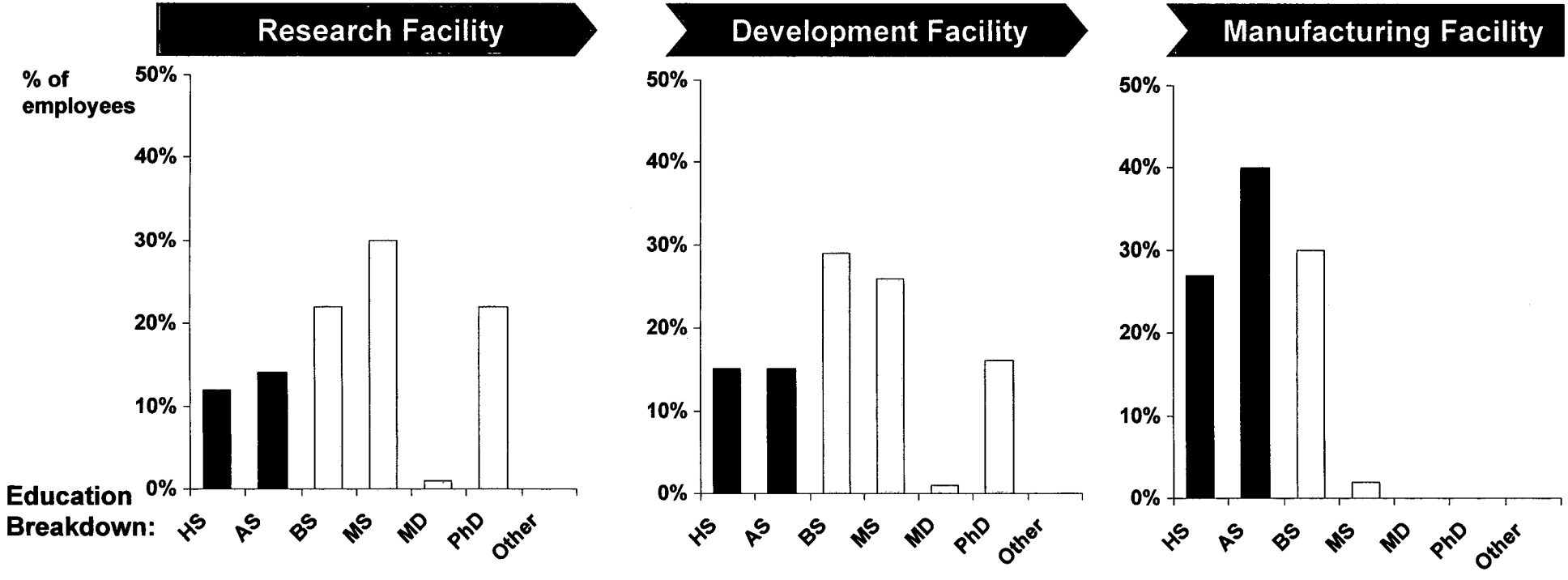
1 and 10 Mile Radii:

20 10 0 20 40 Miles

Data Sources: EJ Areas based on US Census Bureau data using EPA New England's methodology for identifying Potential EJ Areas of conern. Roads from GDT (1:100,000).
Map Created: April 9, 2004
USEPA New England GIS Center
I:/projects/ej/various/biolab.mxd

EPA New England

GOOD JOB POTENTIAL FOR BOSTON RESIDENTS



26% High School or Associate degree

- **Includes research and lab assistants**

30% High School or Associate degree

- **Includes handlers and lab techs**

60% High School or Associate degree

- **Includes mfg technicians and QA**

Source: MBC, Genzyme, biotech interviews, Ernst & Young, BCG analysis

BOSTON UNIVERSITY MEDICAL CENTER

At-a-Glance - National Emerging Infectious Diseases Laboratories

In 2003, Boston University Medical Center (BUMC) was awarded $128 million by the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health, to construct one of two National Biocontainment Laboratories (NBL) as part of its Biodefense Research Agenda.

The NBL is part of a national network to develop diagnostics, drugs, vaccines, and treatments against emerging and re-emerging infectious diseases.

The facility will be located within BioSquare, a state-of-the-art biomedical research and business park located at BUMC in Boston's South End.

The laboratory will be 223,000 square feet and 9 stories tall.

The building design includes a secure perimeter with a building setback of 150' from Albany Street as required by the federal government.

Construction costs for the facility total $178 million. Construction costs and operation for one year will total $250 million.

More than 1,300 construction jobs will be created by the construction of the laboratory with a goal of 50% of all construction workers being Boston residents.

An anticipated 660 jobs will be created to operate the facility.

Jobs will be created at all levels including:

- Administrative Asst.
- BioSafety Officer
- Clinical Research Coord.
- Control Center Engineers
- Custodial Workers
- Grounds Maint. Keeper
- Lab Animal Caretaker
- Laboratory Asst.
- Licensed Maintenance Operators
- Maintenance Helpers
- Project Manager
- Receiving Clerks
- Research Accountant
- Research Accounting Clerk
- Research Asst.
- Research Associate
- Research Committee Coord.
- Research Coordinator
- Research Diet Technician
- Research DNA Technician
- Research Interviewer
- Research Technician
- Security Officer
- Senior Research Asst.
- Special Police Officers
- Systems Technicians
- Security Officers

The laboratory will contribute $1.9 million in job training and housing linkage payments to the City of Boston.

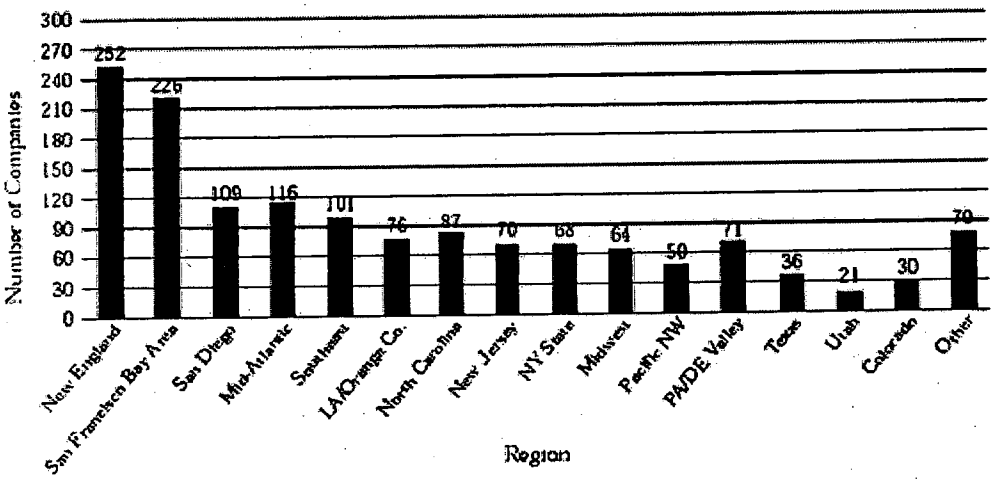
BUMC and Boston University will continue to make Payments in Lieu of Taxes (PILOT) to the City of Boston. Currently, BUMC makes PILOT payments in excess of $300,000 per year and Boston University makes annual PILOT payments of $3.2 million and tax payments of $3 million.

For further information, contact, Carla Richards, Director of Community Relations
Boston University Medical Center
715 Albany Street, M-4 * Boston, MA 02118
Phone: 617-638-8491 * Fax: 617-638-8044
Carla.Richards@bmc.org

Other Labs in the Boston Area

There are more than 480 bioscience companies, from which 252 are Biotechnology research facilities in New England (the majority in the Boston/Massachusetts Area), which employ approximately 26,329 people[1]. Massachusetts has one of the largest concentration of biotechnology firms anywhere in the world.[2]

Private and Public Biotech Companies by Region



Source: Ernst & Young LLP. *Global Biotechnology Industry Report: Beyond Borders.* 2002

Biotechnology centers/research parks in the Greater Boston area include:

- Massachusetts Biotechnology Research Park (adjacent to the University of Massachusetts Medical Center)
- BioSquare (Affiliated with the Boston University School of Medicine and Boston Medical Center)
- University Park at MIT (Located next to MIT)
- Harvard Research Facilities
- Biotechnology firms in Greater Boston; most of these are located in research parks in the Cambridge area.[3] Three of these firms (Amgen, Genzyme, and Biogen) are among the top five selling biopharmaceutical companies worldwide. Amgen leads the way with over three billion dollars in sales as of 1999.[4]
    - ***Amgen:*** Human therapeutics company.

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[1] Massachusetts Biotechnology Council. Available from http://www.massbio.org accessed March 28, 2004.
[2] Biotechnology Industry Organization. *State Government Initiatives in Biotechnology 2001.* Available from http://www.bio.org/tax/battelle.pdf accessed March 25, 2004.
[3] Cambridge Chamber of Commerce. www.cambridgechamber.com.
[4] Penhoet, Edward. *The Biotechnology Enterprise: The State of the Industry.* Available from http://www.ehcca.com/presentations/Penhoet.pdf

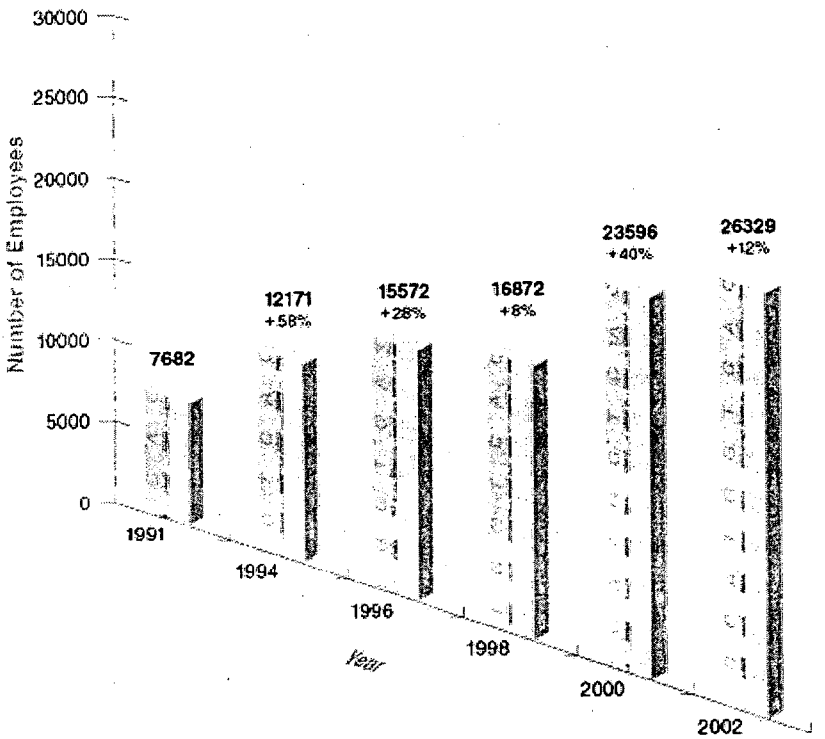
- ***Alkermes:*** They claim that they are world leader in the development of products based on sophisticated drug delivery technologies.
- ***BioPro, Inc.:*** Focus on development phases of drug discovery including lead optimization, process development, preclinical and clinical research.
- ***Biogen:*** Works in the areas of oncology, neurology, dermatology and rheumatology.
- ***Twenty First Century Biochemicals LLC:*** provides bioactive peptides, phosphospecific antibodies, as well as tools for MS and capillary LC for research laboratories in the life sciences.
- ***Transkaryotic*** Therapies, Inc.: biopharmaceutical company with a major focus on developing products for the treatment of rare diseases
- ***Whitehead Institute:*** it has research program with pathfinding activities in cancer and HIV research, structural biology, genetics, infectious disease research, developmental biology, and transgenic science. Personnel: 555 people (15 Faculty, 3 Whitehead Fellows, 226 Research Staff, 71 Graduate Students, 35 Undergraduate Students, 16 Management, 76 Administrative, 41 Support, and 72 Service)
- ***Genzyme*** (more than 5,000 employees): It's objective is discover and develop innovative products and services to improve the lives of patients with debilitating diseases (25% PhD/Researchers, Administrative 20%, Others 55%)
- **Vertex Pharmaceuticals Inc.:** developing human therapeutics through the integrated application of structure-based rational drug design.
- ***Wyeth:*** Developments in pharmaceuticals and biotechnology, with leading products in the areas of women's health care, neuroscience, musculoskeletal disorders, cardiovascular therapy, vaccines and infectious disease, hemophilia, immunology, and oncology.

- **New England Regional Center of Excellence:** Our research showed us that the New England Regional Center of Excellence/Biodefense and Emerging Infectious Diseases Research (NERCE/BEID) is also a NIAID-funded research center that supports basic research and the timely development of preventive and therapeutic interventions against microbes that pose the most immediate threats to the general population, either as weapons of bioterrorism or as causes of naturally occurring biological emergencies. This is a Center with three BSL-3 Labs that research in biodefense and emerging infectious diseases. The services include this Biosafety Level 3 animal model support, genomic-scale proteomics, high-throughput screening for chemical inhibitors, large-scale biological molecule production, and clinical investigation of vaccines, therapeutics, and diagnostics. It also contains BSL-2 and BSL-1 labs. This center, controlled by Harvard University develop research in a less dangerous laboratory type. This facility has 19 PhD coordinators with approximately 10 researchers each one, the majority PhD or post-PhD students. In administrative positions it has 5 Director/coordinator positions and several positions for administrative, veterinary, and other services, approximately 500 people.

Employment

The number of jobs provided by the biotechnology sector has been growing in the Boston Area, now offer 26,329 jobs.

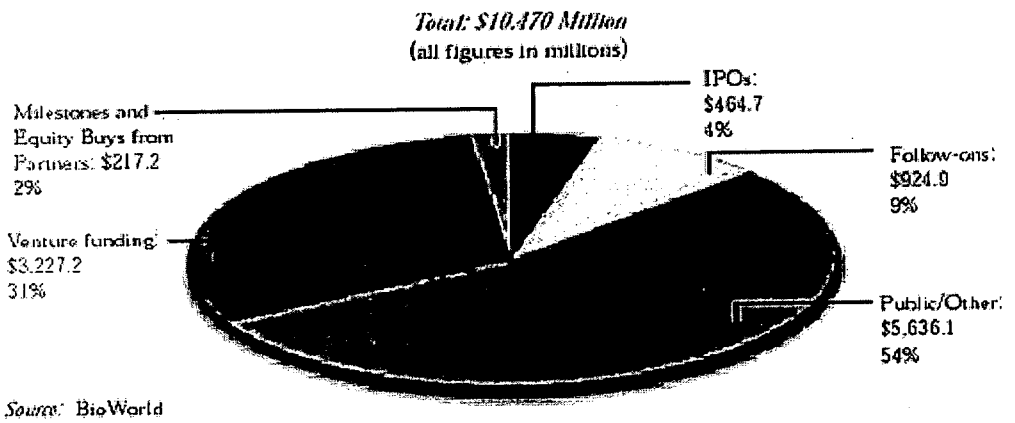
Growth by Number of Employees



Funding

The majority of funds for the biotechnology companies or labs came from the Federal Government.

Biotech Industry Financing, 2002



Source: BioWorld

Boston Residents Jobs Policy[1]

A 1983 Ordinance establishing the Boston Residents Job Policy was passed to insure that Boston residents, minorities, and women receive job preference in projects that have City, State, or Federal funds administered by the City. By law, **50%** of the contractors working on these projects must be residents of the City of Boston; **25%** of contractors must be men of color; **10%** of contractors must be women. The ordinance requires contractors on all city assisted construction projects to make "best faith" efforts to achieve work force goals of 50% Boston residents, 25% minorities and 10% women.

History

Chapter 30 of the Ordinance of l983 established the Boston Residents Jobs Policy.

The Mayor's Executive Order of July l2, l985, entitled The Executive Order Extending the Boston Residents Jobs Policy, requires the Developer to prepare, and submit, and the authority to approve, a construction employment plan.

The Boston Employment Commission has been established by an ordinance passed by City Council on July 30, l986 and signed by the Mayor of the City of Boston. The Commission was created for the purpose of ensuring that findings may be determined with respect to compliance of the Boston Residents Jobs Policy in a manner that is comprehensive, consistent, and fair for all parties involved.

Employment Standards

The Boston Residents Construction Employment Standards as set forth in the Mayor's Executive Order of July, l985 entitled The Executive Order Extending the Boston Residents Jobs Policy, attached hereto as Exhibit A and adopted by the Boston Redevelopment Authority on July 26, l985. Specifically, the Executive Order requires that the Developer's Construction Employment Plan shall ensure that on a craft by craft basis for construction employment for the Project, the following Boston Residents Construction Employment Standards are met:

1. at least fifty (50) percent of the total employee worker hours in each trade shall be by bona-fide Boston Residents.
2. at least twenty-five (25) percent of the total employee worker hours in each trade shall be by minorities; and
3. at least ten (l0) percent of the total employee worker hours in each trade shall be by women.

For the purpose of this Plan, employees shall include persons filling apprenticeship and on-the-job training positions.

Excerpt From The Boston Residents Jobs Policy Boston Employment Commission Ordinance

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[1] http://www.cityofboston.gov/brjp/

Best Faith Efforts

Developers and Contractors may rely on traditional referral methods in the hiring of journeymen, apprentices, advanced trainees and helpers. Developers and contractors also shall implement affirmative action steps which include the following to the extent that such steps do not conflict with any collective bargaining agreement:

Contractor's Best Efforts

- The contractor shall designate and shall require each subcontractor to designate an individual to serve as a compliance officer for the purpose of pursuing the Boston Residents Construction Employment Standards.
- Prior to the start of construction, the contractor and each subcontractor then selected shall meet with appropriate representatives of the construction trade unions, representatives from the Boston Residents Jobs Policy Office, and the awarding or contracting authority for the purpose of reviewing the Standards and the estimated employment requirements for construction activity over the construction period of the Covered Project.
- Whenever any person involved in the construction of a Covered Project makes a request to a union hiring hall, business agent or contractor's association for qualified workers, the requestor shall ask that those qualified applicants referred for construction positions be referred in the proportions specified in the Boston Residents Construction Employment Standards and shall, further, contain a recitation of such Standards. However, if the requesting party's workforce composition at any time falls short of any one or more of the proportions specified in the Standards, the requesting party shall adjust his or her request so as to seek to more fully achieve the proportions as specified in the Standards. If the union hall, business agent or contractor's association to whom a request for qualified employees has been made fails to fully comply with such a request, the requesting party's compliance officer shall seek written confirmation that there are insufficient employees in the categories specified in the reqrequest and that such insufficiency is documented on the unemployment list maintained by the hall, agent or association. Copies of any confirmation so obtained shall be forwarded to the Commission. Copies of any requests for qualified employees made at the time that the requesting party's workforce composition falls short of any one or more of such Standards shall be forwarded contemporaneously to the Boston Residents Jobs Policy Office.
- All persons applying directly to the Contractor or any subcontractor for employment in construction of a Covered Project who are not employed by the party to whom application is made shall be referred by said party to the Boston Residents Jobs Policy Office, and a written record of such a referral shall be made by said party, a copy of which shall be sent to said Compliance and Enforcement Division.
- Contractors shall maintain a current file of the names, addresses, and telephone numbers of each Boston Resident, Minority and Woman who has sought employment with respect to a Covered Project, or who was referred to the contractor by the Boston Residents Jobs Policy Office but was not hired. The contractor shall maintain a record of the reason any such person was not hired. (Amendment inclusion 9/26/86) If the construction of a Covered Project is subject to any union collective bargaining agreements, it shall be required that the

employee complies with any lawful union security clauses contained in such agreement. (Amendment inclusion 9/26/86 ends)

- The contractor shall in a timely manner complete and submit to the Commission a projection of the workforce needs over the course of construction of the Covered Project. Such a submission shall reflect the needs by trade for each month of the construction process.
- The contractor shall obtain from each worker employed in the construction of the Covered Project, a sworn statement containing the worker's name and place of residence.
- One week following the commencement of construction of the project, and each week thereafter until such work is completed, the contractor shall complete and submit to the Boston Residents Jobs Policy Office for the week just ended a report which reflects (a) for each employee, the employee's name, place of residence, race, gender, trade and total number of worker hours he or she worked, and (b) the total worker hours of its total workforce.
- The contractor and each subcontractor shall maintain records reasonably necessary to ascertain compliance with the steps detailed in clauses (l) through (8) hereof for a least one year after the issuance of a Certificate of Occupancy for the Covered Project. In its review of records of a construction project submitted to demonstrate compliance with these steps, the Commission shall take into consideration any affirmative action outreach programs and affirmative action job training programs of the particular trades participating in the Covered Project.

Developer's Best Efforts

- Developers of the Covered Project shall incorporate in every general construction contract or construction management agreement an enumeration of the Standards and shall impose a responsibility upon any such general contractor or construction management to take all steps enumerated in clauses (l) through (9), and to incorporate such Standards in all subcontracts and impose upon all subcontractors the obligation to take such steps.
- The developer shall meet with the contractor no less frequently than weekly throughout the period of construction of the Covered Project to review the contractor's compliance with such Standards and steps. The developer shall maintain minutes of such meetings and shall forward a copy of such minutes to the Boston Residents Jobs Policy Office within ten (l0) days of such meeting.
- The developer shall comply with the escrow deposits as requirements of the Boston Employment Commission.

- DPH Home
- What's New
- Health Topics A-Z
- Publications and Statistics
- DPH Programs
- For Providers
- In the Press
- Employment
- Directory
- Related Sites
- Search

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105 CMR 950.000: CRIMINAL OFFENDER RECORD CHECKS
105 CMR: DEPARTMENT OF PUBLIC HEALTH

105 CMR 950.000: CRIMINAL OFFENDER RECORD CHECKS
105 CMR: DEPARTMENT OF PUBLIC HEALTH

950.001: Purpose

The purpose of 105 CMR 950.001 et seq. is to establish standardized procedures for the Department of Public Health (Department) and Department funded programs regarding the review of criminal records of candidates for employment or regular volunteer or training positions. The Criminal History Systems Board (CHSB) has authorized Executive Office of Health and Human Services (EOHHS) agencies and their vendor agencies to receive criminal record information regarding present or prospective employees in any program funded or operated by such agencies.

950.002: Policy

In order to ensure that employees or other persons regularly providing client or support services with the potential for unsupervised contact in any program or facility of the Department or in vendor agency programs funded by the Department are appropriate for serving in their positions, a Criminal Offender Record Information (CORI) check shall be performed on candidates for positions in such programs or facilities, as provided in these regulations. It is the policy of EOHHS and the Department that convictions of certain crimes presumptively pose an unacceptable risk to the vulnerable populations served by the Department and its vendor agencies. These regulations set forth minimum standards. Stricter standards may be set by vendor agencies.

950.003: Scope

These regulations apply to candidates seeking employment or regular trainee or volunteer positions, which entail the potential for unsupervised client contact in the Department and/or Department funded vendor agency programs. At the discretion of the hiring authority, the scope of these regulations may be expanded to include potential employees, including volunteers, interns, students or other persons regularly offering support to any program or facility in either a paid or unpaid capacity, whose services do not entail the potential for unsupervised client contact, upon appropriate certification by the CHSB.

950.004: Authority

105 CMR 950.000 is promulgated pursuant to M.G.L. c.111, ss. 3 and 5.

950.005: Definitions

Applicant: Any person seeking employment or a position as a regular volunteer or trainee to provide services for or on behalf of the Department or its vendor agency

programs, where such employment or position involves potential unsupervised contact with program clients. Employment includes but is not limited to placement in: state positions; federal positions; positions funded by grants, bonds or other capital outlay; and, vendor agency positions.

Candidate: Any person receiving a conditional offer for employment or a position as a regular volunteer or trainee, subject to consideration of any criminal record, to provide services for or on behalf of the Department or its vendor agency programs, where such employment or position involves potential unsupervised contact with program clients. Employment includes but is not limited to placement in: state positions; federal positions; positions funded by grants, bonds or other capital outlay; and vendor agency positions.

Community Service Worker: Any individual who, as a condition of probation, applies for a position.

Criminal History Systems Board (CHSB) EOHHS CORI Unit: The EOHHS sponsored unit within the Criminal History Systems Board which processes requests for CORI information from EOHHS agencies and offers technical assistance with any question arising from the results of a search.

Criminal Justice Official: Either the candidate's probation officer, parole officer or correctional facility superintendent (or designee), depending upon the person having the most recent responsibility for supervision of the candidate. In cases where the candidate was last supervised in a correctional facility, the candidate may advise the hiring authority of any employee of the correctional facility who may have specific information about the candidate that would assist the superintendent or designee in his/her assessment process.

Criminal Offender Record Information (CORI): Information regulated by the Criminal History Systems Board and maintained by the Board of Probation regarding criminal information of persons within the Massachusetts Court system.

CORI Cleared Employee: Any candidate hired as an employee after successfully satisfying the requirements of 105 CMR 950.000.

CORI Coordinator: The person designated by the hiring authority to send requests and receive responses from the CHSB EOHHS CORI Unit.

CORI Investigation: The process of requesting, receiving and evaluating CORI related to candidates for a position with DPH or a vendor agency program.

Department: The Department of Public Health, referred to as "Department".

Department Funded or Operated Program: Any program operated by the Department or contracted and funded by the Department with a vendor agency that provides services for or on behalf of Department clients.

Discretionary Disqualification: A candidate shall be ineligible for a position that entails potential unsupervised contact with persons receiving services at a Department funded or operated program if he or she has been convicted of or has pending any charge for any crime in Table B or Table C, unless the hiring authority has complied with the provisions of section 950.106.

Hiring Authority: The person legally authorized or designated to make hiring decisions within the affected agency, department, office, program, or facility.

Lifetime Presumptive Disqualification: A category of offenses specified in Table A, for which conviction of any included offense results in a presumption of a lifetime disqualification for employment or other service which entails potential unsupervised contact with persons receiving services in any Department funded or operated program, due to the presumed unacceptable risk posed by the nature of the crime to

persons receiving services. A lifetime presumptive disqualification shall become a discretionary disqualification if: (i) the candidate's criminal justice official concludes in writing that the candidate, within the position sought, does not pose an unacceptable risk of harm to the persons served by the program, or (ii) if the candidate's criminal justice official has been determined by the hiring authority to be unavailable or has indicated to the hiring authority that she has insufficient information to render an assessment, then the hiring authority shall, at the candidate's request, seek an assessment of the candidate's risk of harm from a qualified mental health professional. Upon assessment, the qualified mental health professional concludes in writing that the candidate, within the position sought, does not pose an unacceptable risk of harm to the persons served by the program.

No Record: The conclusion from a CORI search that convictions or pending charges relating to the candidate have not been found. A finding of "no record" does not necessarily mean, however, that criminal information is not present in the CORI database.

Pending: A criminal offense shall be considered pending if the CORI report indicates that the offense remains open and without final resolution, including a case continued without a finding.

Position: Employment, service by a regular volunteer, or trainee.

Potential Unsupervised Contact: Potential for contact with a person who is receiving or applying for services in a Department or vendor agency program when no other CORI cleared employee is present. A person having only the potential for incidental unsupervised contact with clients in commonly used areas such as elevators, hallways and waiting rooms shall not be considered to have the potential for unsupervised contact for purposes of the regulations. These excluded areas do not include bathrooms and other isolated areas (not commonly utilized or separated by sight and sound from other staff) that are accessible to clients.

Qualified Mental Health Professional: A psychiatrist, licensed to practice medicine under M.G.L. c. 112, § 2, a psychologist, licensed under M.G.L. c. 112, §§ 118-121, or a licensed independent clinical social worker, licensed under M.G.L. c. 112, §§ 130-132, provided that the psychiatrist, psychologist, or licensed independent clinical social worker has at least 1,000 hours of experience over a minimum of two years involving the assessment, treatment, and consultation concerning individuals with behavior that presents a risk of harm to others in the community, in the workplace, in treatment settings, or in correctional facilities; provided further that the psychiatrist, psychologist, or licensed independent clinical social worker has not provided treatment to the candidate.

Trainee: Any person enrolled in an academic program or participating in a pre or post-doctoral training program that is affiliated with an accredited educational institution or hospital, who receives a placement within the Department or a vendor agency program.

Vendor Agency Program: The provision of client services by any individual, corporation, partnership, organization, trust, association or other entity through funding by or contract with the Department.

Volunteer: Any person who works in an unpaid capacity for the Department or a vendor agency program. For the purposes of this provision, a current client at a facility or program who provides unpaid services at that facility or program shall not be considered a volunteer at that facility or program.

Work Release Program: A program of unpaid work performed by any individual who is under the custody of the state or county correctional system.

950.100: Applicant Disclosure of Criminal Record Information

All applicants for a position in DPH or a vendor agency program shall complete an application form that contains a section requiring the applicant to disclose whether or not he or she has a criminal record and what crimes, if any, he or she has been convicted of, consistent with the requirements of M.G.L. c. 151B, §4 (9).,,, The application shall not require an applicant to disclose: (i) an arrest, detention, or disposition regarding any violation of law in which no conviction resulted, or (ii) a first conviction for any of the following misdemeanors: drunkenness, simple assault, speeding, minor traffic violations, affray, or disturbance of the peace, or (iii) any conviction of a misdemeanor where the date of such conviction or the completion of any period of incarceration resulting therefrom, whichever date is later, occurred five or more years prior to the date of such application for employment or such request for information, unless such person has been convicted of any offense within five years immediately preceding the date of such application for employment or such request for information. No application for employment shall be considered complete unless the applicant completes this section.

950.101: Community Service and Work Release Workers

Any Department or vendor agency program that participates in either a criminal justice related community service program or a work release program shall require all individuals who participate to disclose his or her criminal record in conformance with section 950.100 on a form signed by the individual's criminal justice official. In addition, as a condition of participation, the criminal justice official must conclude in writing that the individual will not pose an unacceptable risk to program clients or that the community service or work release program will take responsibility for providing supervision at all times.

950.102: Hiring Authority Responsibilities

(1) The hiring authority shall ensure that each applicant provides consent to a CORI investigation as part of his/her application and to the periodic conduct of further CORI investigations during the course of employment with the Department or the vendor agency program. The hiring authority shall also inform the applicant that his or her CORI may be utilized by the criminal justice official or qualified mental health professional conducting themselves in conformance with sections 950.101, 950.105 and 950.106; and Department personnel responsible for carrying out the provisions of sections 950.106, 950.108 and 950.109. Such consent shall be required in the hiring authority's employment application form.

(2) The hiring authority shall require, as a condition of an offer of a position, the satisfactory completion of the CORI investigation. The hiring authority shall confirm an offer of a position only after the hiring authority receives written confirmation that the criminal record investigation has resulted in a finding of "no record" or until the hiring authority has complied with the requirements of sections 950.103, 950.104, 950.105 and 950.106.

(3) The hiring authority shall review positive findings from the CORI investigation.

(4) The hiring authority shall not permit any candidate to commence employment or other service until after the candidate is cleared as a result of the CORI investigation, in accordance with these regulations.

950.103: CORI Investigations

(1) All applicants shall complete the appropriate CORI request form.

(2) After the hiring authority makes a conditional offer of a position to an individual, subject to consideration of any criminal record, the completed CORI request form or electronic equivalent shall be forwarded to the CHSB EOHHS CORI Unit, in accordance with the policies of the CHSB.

(3) All CORI investigations that result in a finding of "no record" shall be transmitted

back to the hiring authority and shall provide sufficient evidence of suitability for hire for 60 business days. A "no record" finding may be used to establish suitability for other positions during this 60 day period.

(4) All CORI investigations that show findings of criminal records shall be sent immediately to the hiring authority for review consistent with 105 CMR 950.000

950.104: Findings from CORI Investigations

(1) If the CORI investigation reveals a finding of "no record," such finding shall be documented in the candidate's file.

(2) If the CORI investigation reveals:
(a) a "lifetime presumptive disqualification" on the candidate's record, as specified in section 950.105 (1), the candidate shall be informed by the hiring authority that he or she is ineligible for any position in a Department or a vendor agency program where there is potential unsupervised contact with persons applying for or receiving services unless there is compliance with the provisions of sections 950.105(1) and 950.106;
(b) a crime that is a "discretionary disqualification" on the candidate's record, the candidate shall be informed by the hiring authority that he or she is ineligible for any position in a Department or vendor agency program where there is potential unsupervised contact with persons applying for or receiving services, unless there is compliance with the provisions of section 950.106.

(3) If the CORI investigation reveals an outstanding warrant for any offense on the candidate's record, the candidate shall be informed by the hiring authority that he or she is ineligible for any position in a Department or a vendor agency program where there is potential unsupervised contact with persons applying for or receiving services until the warrant is removed.

950.105: Disqualifications

(1) Lifetime Presumptive Disqualification. A candidate shall be ineligible for any position involving unsupervised contact in a Department or vendor agency program if he or she has been convicted of any of the crimes listed in Table A, or has any pending charges involving crimes listed in Table A unless:

(a) (i) the candidate's criminal justice official concludes in writing that the candidate, within the position sought in a Department funded or operated program, does not pose an unacceptable risk of harm to the persons served by the program. The criminal justice official shall also refer to the criteria listed in section 950.106 (1); or (ii) if the candidate's criminal justice official has been determined by the hiring authority to be unavailable or has indicated to the hiring authority that she has insufficient information to render an assessment, then the hiring authority shall, at the candidate's request, seek an assessment (the cost of which shall be borne by the hiring authority) of the candidate's risk of harm from a qualified mental health professional. Upon assessment, the qualified mental health professional concludes in writing that the candidate, within the position sought in a Department funded or operated program, does not pose an unacceptable risk of harm to the persons served by the program. The qualified mental health professional shall also refer to the criteria listed in section 950.106 (1); and

(b) the hiring authority has complied with the provisions of section 950.106.

(2) Discretionary Disqualification. A candidate shall be ineligible for any position involving potential unsupervised contact in a Department funded or operated program if he or she has been convicted of or has a pending charge for any of the crimes listed in Table B or Table C, unless the hiring authority has complied with the provisions of section 950.106.

950.106: Provisions for Review of a Candidate in any Discretionary Disqualification Category

(1) Every candidate for whom the CORI investigation reveals a "lifetime presumptive disqualification," who has otherwise met the requirements for further consideration set forth in section 950.105, or a "discretionary disqualification" shall, unless the hiring authority has decided to withdraw the conditional offer of a position, receive additional review by the Department or the hiring authority to determine if the candidate poses an unacceptable risk of harm to the persons served by the program within the position sought. In reviewing the candidate's appropriateness for employment given the concern for client safety due weight shall be given the following factors:
(a) Time since the conviction;
(b) Age of the candidate at the time of the offense;
(c) Seriousness and specific circumstances of the offense;
(d) Relationship of the criminal act to the nature of the work to be performed;
(e) The number of offenses;
(f) Any relevant evidence of rehabilitation or lack thereof;
(g) Any other relevant information, including information submitted by the candidate or requested by the hiring authority.

Information considered pursuant to 105 CMR 950.106(1)(g) may include documentation from the candidate's criminal justice official, if not already supplied pursuant to 105 CMR 950.105(1), treating professional, or other knowledgeable source, such as the police, courts, or prosecuting attorneys.

(2) Following the review, the Hiring Authority shall determine whether:

(a) To hire the candidate based upon a determination that the candidate does not pose a danger to the program's clients; or
(b) To not hire the candidate.

Nothing herein shall be construed as preventing the hiring authority from deciding not to hire the candidate for any other reason.

(3) If a decision is made to hire the candidate, the hiring authority shall make a written determination of such decision, documenting the considerations outlined in 105 CMR 950.106(1) (a)-(g), and the rationale for the conclusion that the candidate does not pose a danger to the program's clients within the position sought.

(4) The hiring authority shall submit such written documentation to the Department immediately upon a decision to hire the individual.

(a) If the candidate has been convicted of or has a pending charge for any of the crimes listed in Tables A and B, the hiring authority shall not proceed to hire the individual for five business days during which time the Commissioner may, after review of the determination, disapprove the hire.

(b) If the candidate has been convicted of or has a pending charge for any offense in Table C, the hiring authority may proceed to hire the individual, unless the provisions of 105 CMR 950.106 (6) apply.

(5) The Department shall conduct an annual review of such written determinations for candidates with crimes listed in Table C to ensure compliance with the requirements of 195 CMR 950.104, 950.105 and 950.106.

(6) Based on the annual review pursuant to 105 CMR 950.106 (5) or other relevant information obtained by the Department that raises concerns about the hiring authority's compliance with these requirements, the Department may require the hiring authority to submit such written determinations prior to hiring the individual. The Commissioner shall have five business days following receipt of the determination to

disapprove the hire. The Department may require the hiring authority to follow such prior review process for as long a period as it determines is necessary to ensure that the hiring authority is complying with the requirements of 105 CMR 950.104, 950.105, and 950.106.

950.107: Exemption from Certain Requirements

The Commissioner may grant a funded or operated program an exemption from the requirements of sections 950.106 (4)(a), except for those candidates in the lifetime presumptive disqualification category, upon determination by the Commissioner that an exemption is warranted following consideration of the following criteria:

(1) The service needs and level of vulnerability of the clients served by the program;
(2) The potential benefits and risks to those clients as a result of the exemption;
(3) The hiring authority's capacity to perform the review required by 950.106.

Whenever the Commissioner grants the exemption, he shall document in writing the basis for determining that the exemption is warranted, including providing an assessment of the level of vulnerability of the clients served by the program. The Commissioner may revoke the exemption at any time without prior written notice. No program shall be eligible for an exemption pursuant to this section if it serves clients 16 years of age or younger or if it serves a population that is primarily 65 years of age or older.

950.108: Dissemination

CORI records may be disseminated only to individuals certified by the CHSB to receive such information, such as designated representatives of the hiring authority or the CORI Coordinator. The hiring authority shall maintain a listing of persons so certified. Willful dissemination of Criminal Offender Record Information to unauthorized individuals is punishable by a jail sentence of up to one year and/or a fine of $5,000 in addition to civil penalties, pursuant to M.G.L. c. 6 §178.

950.109: Incidents

Any hiring authority receiving an allegation that an employee with a positive CORI history has harmed a client in a Department or vendor agency program shall immediately report the allegation to the General Counsel of the Department. Such notification shall include documentation of the basis for the hiring decision.

950.110: Severability

If any provisions of 105 CMR 950.001 through 950.109, inclusive, or the applications of such provisions to any person or circumstance are held invalid, the other provisions of said 105 CMR 950.001 through 950.109, inclusive, or the application of such provisions to any person or circumstance other than that as to which it is held invalid, shall not be affected thereby.

950.200: Tables of Offenses

Table A	MGL
A&B, DANGEROUS WEAPON, VICTIM 60 AND OLDER	c.265 § 15A(a)
A&B CHILD W/ INJURY	c.265 §13J
A&B ON RETARDED PERSON	c.265 § 13F

ADMINISTERING DRUGS/SEX	c.272 § 3
ARMED ASSAULT W/INTENT TO MURDER OR ROB	c.265 § 18(b)
ARMED ASSAULT W/INTENT TO MURDER OR ROB, VICT 60+	c.265 § 18(a)
ARMED ASSAULT, DWELLING, W/FELONY INTENT	c.265 § 18A
ARMED CARJACKING	c.265 § 21A
ARMED ROBBERY	c.265 § 17
ASSAULT W/INTENT TO MURDER OR MAIM	c.265 § 15
ASSAULT W/INTENT TO RAPE	c.265 § 24
ASSAULT W/INTENT TO RAPE CHILD	c.265 § 24B
ATTEMPT ESCAPE OR ESCAPE BY PRISONER OR SEX/DANG	c.268 § 16
ATTEMPT TO MURDER	c.265 § 16
BURNING DWELLING HOUSE	c.266 § 1
DISTRIBUTE CONTROLLED SUBSTAN, MINOR	c.94C § 32F
EXHIBIT POSING CHILD	c.272 § 29A
EXTORTION	c.265 § 25
HOME INVASION	c.265 § 18C
INCEST	c.272 § 17
INDECENT A&B, CHILD 14 OR OVER	c.265 § 13H
INDECENT A&B, CHILD UNDER 14	c.265 §13B
INDECENT A&B, RETARDED PERSON	c.265 § 13F
INDUCE MINOR TO PROSTITUTION	c.272 § 4A
INTIMIDATION OF WITNESS	c.268 § 13B
KIDNAPPING	c.265 § 26
MALICIOUS EXPLOSION	c.266 §101
MANSLAUGHTER, NEGLIGENCE (MINOR/CHILD)	c.265 § 13
MANSLAUGHTER	c.265 § 13
MAYHEM	c.265 §14
MURDER	c.265 § 1
PERJURY	c.268 § 1
RAPE	c.265 §22(b)
RAPE AGGRAVATED	c.265 § 22(a)
RAPE, STATUTORY	c.265 § 23
TRAFFICKING IN COCAINE	c.94C § 32E (b) (4)
TRAFFICKING IN HEROIN	c.94C § 32E (c) (4)
TRAFFICKING IN MARIJUANA	c.94C § 32E (a) (4)
UNNATURAL ACTS W/CHILD UNDER 16	c.272 § 35A
CONSPIRACY TO COMMIT ANY OF ABOVE OFFENSES	
ACCESSORY BEFORE ANY CRIME IN	

THIS CATEGORY	
ATTEMPTS TO COMMIT ANY CRIME IN THIS CATEGORY	

Table B	MGL
A& B DANGEROUS WEAPON	c.265 § 15A
A&B INTIMIDATION, RACE/COLOR/RELIGION	c.265 § 39(a)
ACCESSORY BEFORE FACT	c.274 § 2
ACCESSORY AFTER FACT(VARIABLE)	c.274 § 4
AID ESCAPE FROM CUSTODY	c.268 § 17
ASSAULT BY DANGEROUS WEAPON	c.265 § 15B(b)
ASSAULT BY DANGEROUS WEAPON, VICTIM 60 AND OLDER	c.265 § 15B(a)
ATTEMPT TO BURN DWELLING HOUSE	c.266 § 5A
ATTEMPT TO COMMIT CRIME (VARIABLE)	c.274 §6
ATTEMPTED EXTORTION	c.265 §25
BOMB SCARE	c.269 § 14
B&E DAY, INTENT COMM FELONY	c.266 § 18
B&E DAY, INTEND COMM FELONY, FEAR	c.266 § 17
B&E NIGHT, BLDG/SHIP/M/V, INTEND COMM FELONY	c.266 § 16
B&E TRUCK, INTEND COMM FELONY	c.266 § 20A
BRIBERY OF A POLICE OFFICER	c.268A § 2
BURGLARY, ARMED	c.266 §14
BURGLARY, UNARMED	c.266 § 15
BURNING BUILDING	c.266 §2
BURNING M/V OR PERSONAL PROPERTY	c.266 § 5
BURNING TO DEFRAUD INSURANCE CO.	c.266 § 10
CARRYING DANGEROUS WEAPON, COMMITTING FELONY	c.269 § 10(b)
CARRYING DANGEROUS WEAPON, SUB OFFENSE	c.269 § 10(d)
CARRYING LOADED RIFLE/SHOTGUN, PUBLIC WAY	c.269 § 12D
CIVIL RIGHTS VIOLATION, BODILY INJURY	c.265 § 37
COMPOUNDING FELONY	c.268 § 36
CONTRIBUTE DELINQUENCY CHILD	c.119 § 63
DELIVER ARTICLES TO INMATE	c.268 § 31
DELIVER DRUGS TO PRISONER	c.268 § 28
DERIVING SUPPORT FROM PROSTITUTE	c.272 § 7
DISTRIBUTING OBSCENE PICTURES	c.272 § 28

DRUG PARAPHENELIA	c.94C § 32I(a)
ENTER W/O BRK, BLDG/SHP/M/V, INT FEL , FEAR	c.266 § 17
ENTER W/O BRK, NIGHT, DWELL, INTEND COMM FELONY	c.266 § 18
ENTICE FEMALE, SEX, INTERCOURSE	c.272 § 2
ESCAPE, FURLOUGH	c.268 § 16
ESCAPE BY PRISONER	c.268 § 16
FALSE INFORMATION FOR GUN PERMIT	c.140 § 129
FORGERY, ALTER PRESCRIPTION	c.94C § 33(b)
FUGITIVE FROM JUSTICE	c.276 § 20A
INDUCE PROSTITUTION	c.272 § 6
INDUCE SEX, MINOR	c.272 § 4
INVOLUNTARY MANSLAUGHTER	c.265 § 13
KIDNAPPING MINOR BY RELATIVE	c.265 § 26A
KIDNAPPING MINOR BY RELATIVE, ENDANGER SAFETY	c.265 § 26A
LARCENY, BANK EMPLOYEE OR OFFICER	c.266 § 52
LARCENY, CONTROLLED SUBSTANCE, FROM AUTHORIZED PERSON	c.94C § 37
LARCENY FIREARM	c.266 § 30
LARCENY, PERSON	c.266 § 25
LARCENY, PERSON 65+	c.266 § 25
MANUFACTURE/DISTRIBUTE CLASS A SUBSTANCE	c.94C § 32
MANUFACTURE/DISTRIBUTE CLASS B SUBSTANCE	c.94C § 32A
MANUFACTURE/DISTRIBUTE CLASS C SUBSTANCE	c.94C § 32B
MANUFACTURE/DISTRIBUTE CLASS D SUBSTANCE	c.94C § 32C
MANUFACTURE/DISTRIBUTE/DISPENSE CLASS B SUBSTANCE	c.94C § 32A
MFG/DIST/DISPENSE CL A W/IN 1000FT SCHOOL	c.94C § 32J
MFG/DIST/DISPENSE CL B W/IN 1000FT SCHOOL	c.94C § 32J
M/V HOMICIDE, NEGLIGENT OPERATION	c.90 § 24G(b)
M/V HOMICIDE, RECKLESS OPERATION	c.90 § 24G(b)
M/V HOMICIDE, UNDER INFLUENCE DRUGS, NEGLIGENT OR RECKLESS	c.90 § 24G(a)
M/V HOMICIDE, UNDER INFLUENCE LIQUOR	c.90 § 24G(b)
M/V HOMICIDE, UNDER INFLUENCE LIQUOR, NEGLIGENT OR RECKLESS	c.90 §24G(b)
OPERATE M/V UNDER INFLUENCE,	c.90 §24(1)(a)(1)

SERIOUS INJURY	
OPERATE M/V UNDER INFLUENCE, DRUGS, 3RD OFFENSE	c.90 §24(1)(a)(1)
OPERATE M/V UNDER INFLUENCE, LIQUOR, 3RD OFFENSE	c.90 §24
POSSESS BURGLARIOUS TOOLS	c.266 § 49
POSS CL A SUB W/INT TO DIST W/INT 1000FT SCHOOL	c.94C § 32J
POSS CL B SUB W/INT TO DIST W/INT 1000FT SCHOOL	c.94C § 32J
POSS CL B SUB W/INT TO DIST/MFG/CULT W/INT 1000FT SCHOOL	c.94C § 32J
POSSESS CLASS A SUBSTANCE	c.94C §34
POSSESS CLASS A SUBSTANCE, INTENT TO DISTRIBUTE	c.94C § 32(a)
POSSESS CLASS B SUBSTANCE	c.94C §34
POSSESS CLASS B SUBSTANCE, INTENT TO DISTRIBUTE	c.94C § 32A(a)
POSSESS CLASS B SUBSTANCE, W/INTENT DIST/MFG	c.94C § 32A
POSSESS CLASS C SUBSTANCE, INTENT TO DISTRIBUTE	c.94C § 32B(a)
POSSESS CLASS C SUBSTANCE, SUB OFFENSE	c.94C §34
POSSESS CLASS D SUBSTANCE, INTENT TO DISTRIBUTE	c.94C § 32C(a)
POSSESS CLASS D SUBSTANCE, SUB OFFENSE	c.94C §34
POSS CLASS D SUB W/INT TO DIST W/INT 1000FT SCHOOL	c.94C §32J
POSSESS CLASS E SUBSTANCE, INTENT TO DISTRIBUTE	c.94C § 32D
POSSESS CONTROLLED SUB W/INTENT DISTRIB, SUB OFF	c.94C § 32(b)
POSSESS FIREARM W/O LICENSE	c.269 §10(h)
POSSESS FIREARM, SERIAL/ID NUM OBLIT	c.269 § 11C
POSSESS FIREARM, SERIAL/ID NUM OBLIT, COMM FELONY	c.269 § 11B
POSSESS INFERNAL MACHINE	c.266 § 102A
POSSESS MACHINE GUN W/O LICENSE	c.269 §10
POSSESS MACHINE GUN OR SAWED OFF SHOT GUN, SUB OFFENSE	c.269 § 10
POSSESS MATTER HARMFUL MINOR	c.272 § 28
POSSESS M/V MASTER KEY	c.266 § 49
POSSESSION SHOTGUN, BARREL UND 18 "SAWED OFF".	c.269 § 10C

POSSESS SHOTGUN, BARREL UND 18 "SAWED OFF, SUB OFF	c.269 § 10D
RECEIVE/BUY STOLEN M/V	c.266 § 28(a)
SELL AMMUNITON W/O LICENSE	c.140 § 122B
SELL OBSCENE LITERATURE, UNDER 18	c.272 § 28
SELL FIREARM W/O LICENSE	c.140 § 128
THROW EXPLOSIVES	c.266 § 102
TRAFFICKING IN COCAINE W/ IN 1000FT SCHOOL	c.94C § 32J
TRAFFICKING IN HEROIN W/ IN 1000FT SCHOOL	c.94C § 32J
TRAFFICKING IN MARIJUANA W/ IN 1000FT SCHOOL	c.94C § 32J
UNARMED ASSAULT, INTENT TO ROB	c.265 § 20
UNARMED ROBBERY	c.265 § 19(b)
UNARMED ROBBERY, VICTIM 60+	c.265 § 19(a)
UNLAWFUL POSSESSION, BOMB	c.148 § 35
UNLAWFUL POSSESSION, FIREARM, COMMISSION FELONY	c.265 § 18B
UNLAWFULLY PLACE EXPLOSIVES	c.266 § 102
UNNATURAL ACTS	c.272 § 35
UTTER FALSE PRESCRIPTION	c.94C § 33
VANDALIZE CHURCH/SYNAGOGUE/CEMETERY	c.266 § 127A
VANDALIZE SCHOOL/CHURCH/EDUCATIONAL BLDG	c.266 § 98
VIOLATE DOMESTIC PROTECTIVE ORDER	c.208 § 34C
VIOLATE STALKING LAW	c.265 § 43(a)
VIOLATION OF PROTECTIVE ORDER (209A)	c.209A § 7
CONSPIRACY TO COMMIT ANY OF ABOVE OFFENSES	
ATTEMPTS TO COMMIT ANY CRIME IN THIS CATEGORY	
ACCESSORY BEFORE ANY CRIME IN THIS CATEGORY	

Table C	
A&B	**MGL**
A&B ON PUBLIC SERVANT	c.265 § 13A
A&B ON POLICE OFFICER	c.265 § 13D
A&B OR ASSAULT ON CORRECTIONAL OFFICER	c.265 § 13D
ABANDON W/O SUPPORT OF SPOUSE, OR MINOR CHILD	c.127 § 38B

ABANDON M/V	c.273 § 1(1)
ACCOSTING	c.90 § 22B
ADULTERATION ALCOHOLIC BEVERAGE	c.272 § 53
AFFRAY	c.138 § 16
ALIEN IN POSSESS OF FIREARM	c.272 § 53
ANNOYING PHONE CALLS	c.140 § 131H
ASSAULT	c.269 § 14A
ATTEMPT TO INJURE DEPOSITORY OF VALUABLES	c.265 § 13A
B&E, INTEND TO COMM MISDEMEANOR	c.266 § 16
B&E RAILROAD CAR	c.266 § 16A
B&E RECOGNIZANCE VIOLATION	c.266 § 19
BEING PRESENT WHERE HEROIN KEPT	c.276 § 82A
CIVIL RIGHTS VIOLATION, NO BODILY INJURY	c.94C § 35
CREDIT CARD, LARCENY OF	c.265 § 37
CRUELTY TO ANIMALS	c.266 § 37B
DISCHARGING FIREARM, 500FT	c.272 § 77
DISCHARGING WEAPON NEAR HIGHWAY/DWELL, HUN	c.269 § 12E
DISPENSE CONTROLLED SUBSTANCE, NOT REGISTERED	c.131 § 58
DISTRIBUTE CONTROLLED, SUBSTAN W/O PRESCRIPTION	c.94C § 25
ENGAGING IN SEX, PROSTITUTION, "JOHN"	c.94C § 25(1)
ENTER W/O BRK, TRUCK, INTEND COMM FELONY	c.272 § 53A
FAIL TO KEEP RECORDS ON CONTROLLED SUBSTANCE	c.266 § 20A
GAMING, IMPLEMENTS FOUND PRESENT, MANAGER	c.94C § 15
GAMING, IMPLEMENTS FOUND PRESENT, OWNER	c.271 § 17
HOUSE OF ILL FAME	c.271 § 17
ILLEGAL POSSESS CLASS C SUBSTANCE	c.272 § 24
ILLEGAL POSSESS CLASS D SUBSTANCE	c.94C § 34
ILLEGAL POSSESS CLASS E SUBSTANCE	c.94C § 34
INDECENT EXPOSURE	c.94C § 34
LARCENY BY CHECK	c.272 § 53
LARCENY MORE	c.266 § 37
LARCENY IN BLDG, SHIP, VESSEL, OR RR CAR	c.266 §30
LARCENY IN TRUCK/TRAILER	c.266 § 20

LARCENY, M/V OR TRAILER	c.266 § 20B
LEAVE COMM W/O SUPPORT MINOR CHILD OUT OF WDLOCK	c.266 § 28
LEAVE COMM W/O SUPPORT OF SPOUSE & MINOR CHILD	c.273 § 15
LEAVE SCENE AFTER PERSONAL INJURY, M/V	c.273 § 1
LEWD & LASCIVIOUS SPEECH & BEHAVIOR	c.90 § 24(2)(a1/2)(1)
MALICIOUS DESTRUC, PERS/REAL PROP, OVER $250	c.272 § 53
MANUFACTURE/DISTRIBUTE CLASS E SUBSTANCE	c.266 § 127
NON-SUPPORT OF MINOR CHILD OUT OF WEDLOCK	c.94C § 32D(a)
NON-SUPPORT OF MINOR CHILD(REN)	c.273 § 15
OBSCENE TELEPHONE CALLS	c.273 §1
OBSTRUCT JUSTICE	c.269 § 14A
OPEN & GROSS LEWDNESS	c.268 § 34
OPERATE M/V AFTER LICENSE REVOKED FOR DRUNK DRIVING	c.272 § 16
OPERATE M/V UNDER INFLUENCE, DRUGS	c.90 § 23
OPERATE M/V UNDER INFLUENCE, LIQUOR	c.90 § 24(1)(a)(1)
POSSESS ALTERED FID CARD	c.90 § 24
POSSESS COUNTERFEIT SUBS W/INTENT DISTRIBUTE	c.140 § 131I
POSSESS DANGEROUS WEAPON UNLAWFULLY	c.94C § 32G
POSSESS HYPODERMIC SYRINGE OR NEEDLE	c.269 § 10(b)
POSSESS OBSCENE "PORNOGRAPHIC" MATERIAL	c.94C § 27
PROCURE LIQUOR FOR MINOR	c.272 § 29
PROSTITUTION	c.138 § 34
RECEIVE STOLEN PROPERTY, OVER 250	c.272 § 53A
RIOT	c.266 § 60
SELL/DELIVER ALCOHOLIC BEVERAGES PERSON UNDER 21	c.269 § 1
SOLICITING PROSTITUTE	c.138 § 34
SHOPLIFTING, 3RD OR SUB OFFENSE	c.272 § 8
SODOMY	c.266 § 30A
TAKING M/V W/O AUTHORITY, STEAL PARTS	c.272 § 34
TELECOMMUNICATIONS FRAUD	c.266 § 28
UNAUTHORIZED USE, CREDIT CARD, OVER $250	c.166 § 42A

UNLAWFUL POSSESSION, SHOTGUN	c.266 § 37C
UNLAWFULLY OBTAIN CONTROLLED SUBSTANCE	c.140 § 129C
USE M/V, COMMISSION OF FELONY	c.94C § 33
UTTER FORGED INSTRUMENT	c.90 § 24(2)(a)
VIOLATE SUPPORT ORDER	c.267 § 5
VIOLATE SUPPORT ORDER, MINOR CHILD OUT OF WDLOCK	c.273 §1
WANTON DESTRUCTION, PERS/REAL PROPERTY	c.273 § 15
WILLFULLY & MALICIOUSLY BURN M/V	c.272 § 73
WILLFULLY & MALICIOUSLY KILL BEAST	c.266 § 127
CONSPIRACY TO COMMIT ANY OF ABOVE OFFENSES	c.266 §112
ATTEMPTS TO COMMIT ANY CRIME IN THIS CATEGORY	
ACCESSORY BEFORE ANY CRIME IN THIS CATEGORY	

950.201: Offenses Included

The above offenses include all violations of Massachusetts law or like violation of the law of the United States, or a military, territorial or Indian tribal authority. Nothing herein precludes the hiring authority from considering other criminal convictions not included in Tables A, B, and C in its hiring decisions. The hiring authority shall contact the CHSB EOHHS CORI Unit whenever a CORI investigation reveals an offense that is not included in Tables A, B, and C and it appears similar in seriousness to included offenses. The CHSB EOHHS CORI Unit, in consultation with the EOHHS General Counsel, shall determine, taking into account the purposes of these regulations, if the offense is similar to one of the included offenses. If it is determined to be similar, then it shall be considered to be included in the same category as the included offense. If it is determined to be not similar, then it shall be considered for inclusion into the appropriate category through the regulatory process.

Reported ***Part One Crime*** in the City of Boston
By Type, Time Period and Location
December 2003

CRIME	TOTAL Dec. 01	TOTAL Dec. 02	TOTAL Dec. 03	Chg. Dec. 01/03	Chg. Dec. 02/03	Calendar 2001	Calendar 2002	Calendar 2003	Calendar 01/03	Calendar 02/03
VIOLENT CRIME	*640*	*559*	*510*	*-20%*	*-9%*	*7,363*	*6,956*	*7,174*	*-3%*	*3%*
PROPERTY CRIME	*2,988*	*2,350*	*2,122*	*-29%*	*-10%*	*30,024*	*28,750*	*27,876*	*-7%*	*-3%*
HOMICIDE	7	8	7	0%	-13%	66	60	39	-41%	-35%
RAPE & ATTEMPTED	29	24	24	-17%	0%	361	369	263	-27%	-29%
ROBBERY & ATTEMPTED	251	286	205	-18%	-28%	2,524	2,533	2,759	9%	9%
AGGRAVATED ASSAULT	353	241	274	-22%	14%	4,412	3,994	4,113	-7%	3%
BURGLARY & ATTEMPTED	419	348	332	-21%	-5%	4,222	3,830	4,344	3%	13%
LARCENY & ATTEMPTED	1,497	1,422	1,397	-7%	-2%	17,608	17,824	17,069	-3%	-4%
VEH. THEFT & ATTEMPTED	1,072	580	393	-63%	-32%	8,194	7,096	6,463	-21%	-9%
TOTAL	3,628	2,909	2,632	-27%	-10%	37,387	35,706	35,050	-6%	-2%
LOCATION	**TOTAL Dec. 01**	**TOTAL Dec. 02**	**TOTAL Dec. 03**	**Chg. Dec. 01/03**	**Chg. Dec. 02/03**	**Calendar 2001**	**Calendar 2002**	**Calendar 2003**	**Calendar 01/03**	**Calendar 02/03**
District A1 (Downtown, Beacon Hill)	450	380	361	-20%	-5%	4,691	4,479	4,124	-12%	-8%
District A7 (East Boston)	169	99	99	-41%	0%	1,670	1,489	1,553	-7%	4%
District A15 (Charlestown)	93	77	91	-2%	18%	1,124	1,215	1,039	-8%	-14%
AREA A	712	556	551	-23%	-1%	7,485	7,183	6,716	-10%	-7%
District B2 (Roxbury, Mission Hill, Portions of the Fenway)	507	378	322	-36%	-15%	5,313	4,931	4,879	-8%	-1%
District B3 (Mattapan, Portions of Dorchester)	260	215	188	-28%	-13%	3,013	2,937	2,775	-8%	-6%
AREA B	767	593	510	-34%	-14%	8,326	7,868	7,654	-8%	-3%
District C6 (South Boston)	211	199	188	-11%	-6%	2,157	2,166	2,031	-6%	-6%
District C11 (Dorchester)	476	400	304	-36%	-24%	4,688	4,246	4,241	-10%	0%
AREA C	687	599	492	-28%	-18%	6,845	6,412	6,272	-8%	-2%
District D4 (South End, Back Bay, Portions of the Fenway, Portions of Roxbury)	717	562	549	-23%	-2%	7,028	6,321	6,856	-2%	8%
District D14 (Allston, Brighton)	246	183	174	-29%	-5%	2,517	2,679	2,347	-7%	-12%
AREA D	963	745	723	-25%	-3%	9,545	9,000	9,203	-4%	2%
District E5 (Roslindale, W. Roxbury)	94	99	67	-29%	-32%	1,252	1,253	1,203	-4%	-4%
District E13 (Jamaica Plain)	222	184	168	-24%	-9%	2,253	2,398	2,240	-1%	-7%
District E18 (Hyde Park)	183	133	121	-34%	-9%	1,680	1,592	1,762	5%	11%
AREA E	499	416	356	-29%	-14%	5,185	5,243	5,205	0%	-1%
TOTAL	3,628	2,909	2,632	-27%	-10%	37,386	35,706	35,050	-6%	-2%

Note: These figures are tabulated according to the reporting criteria established by the F.B.I.'s U.C.R. program. Unfounded and prior unfounded incidents have been factored out.

Offered by Councillor CHUCK TURNER, FELIX D. ARROYO, AND MAURA HENNIGAN

CITY OF BOSTON

IN THE YEAR TWO THOUSAND THREE

AN ORDINANCE REGARDING THE PROHIBITION OF RESEARCH DESIGNATED AS BIOSAFETY LEVEL 4 (BSL 4)

WHEREAS, Boston University Medical Center has submitted a proposal to the U.S. National Institutes of Health for $1.6 billion in federal funding over the next two decades to build a bio-terrorism defense research facility on Albany Street in the South End of the City of Boston; and

WHEREAS, The proposed network of laboratories will be designated to function at *Biosafety Level 4 (BSL 4)*, a level of security designed for research on the most dangerous and exotic categories of disease causing organisms; and

WHEREAS, Disease-causing organisms used in BSL 4 laboratories include viruses such as Herpesvirus Simiae, Central European Encephalitis virus, Ebola, Marburg, Lassa virus, Machupo, and other viruses that cause diseases for which there is no known cure; and

WHEREAS, These disease-causing organisms may be used as agents in weapons of biological warfare which have been termed, by President George W. Bush, as "Weapons of Mass Destruction" or "WMD"; and

WHEREAS, There are five Biosafety Level 4 facilities in the United States: The Center for Disease Control, Atlanta, GA; National Cancer Institute, Bethesda, MD; U.S. Army Medical Research Institute of Infectious Diseases (AMRIID), Fort Detrick, MD; Southwest Institute for Biomedical Research, San Antonia, TX; and Georgia State University, Atlanta GA; and

WHEREAS, Many experts agree that in biodefense research it is difficult to make a clear distinction between offensive and defensive research, which gets further complicated by its purported public health purposes; and

WHEREAS, There are at least six ways for the biological agents to be released:

(i) An accident during the transportation of the biological agents to the site;

(ii) A breakdown in security as occurred in December 2002 at a Biosafety Level 3 infectious disease laboratory at Plum Island, New York, where a

three-hour total power failure undermined the containment system of the biological agents;

(iii) An infection of a worker as occurred as occurred in March 2000 when a microbiologist at a Biosafety Level 3 facility at U.S.AMRIID in Fort Detrick, Maryland contracted glanders due to accidental exposure;

(iv) An intentional release of the biological agents as occurred with the September 2001 release of the anthrax strain; and

(v) An accidental release of animals injected with the virus.

WHEREAS, Such a facility could become an ideal target for terrorist attack; and

WHEREAS, The protection of the health and safety of the residents and visitors of the City of Boston and the surrounding region is more important than the economic development stimulus that could potentially result from Boston University receipt of the grant. THEREFORE

Be it ordained by the City Council of Boston, as follows:

CBC Chapter XVI is hereby amended by adding CBC 16-47 as follows

CBC 16-47 PROHIBITION OF BIOSAFETY LEVEL 4 (BSL 4) RESEARCH.

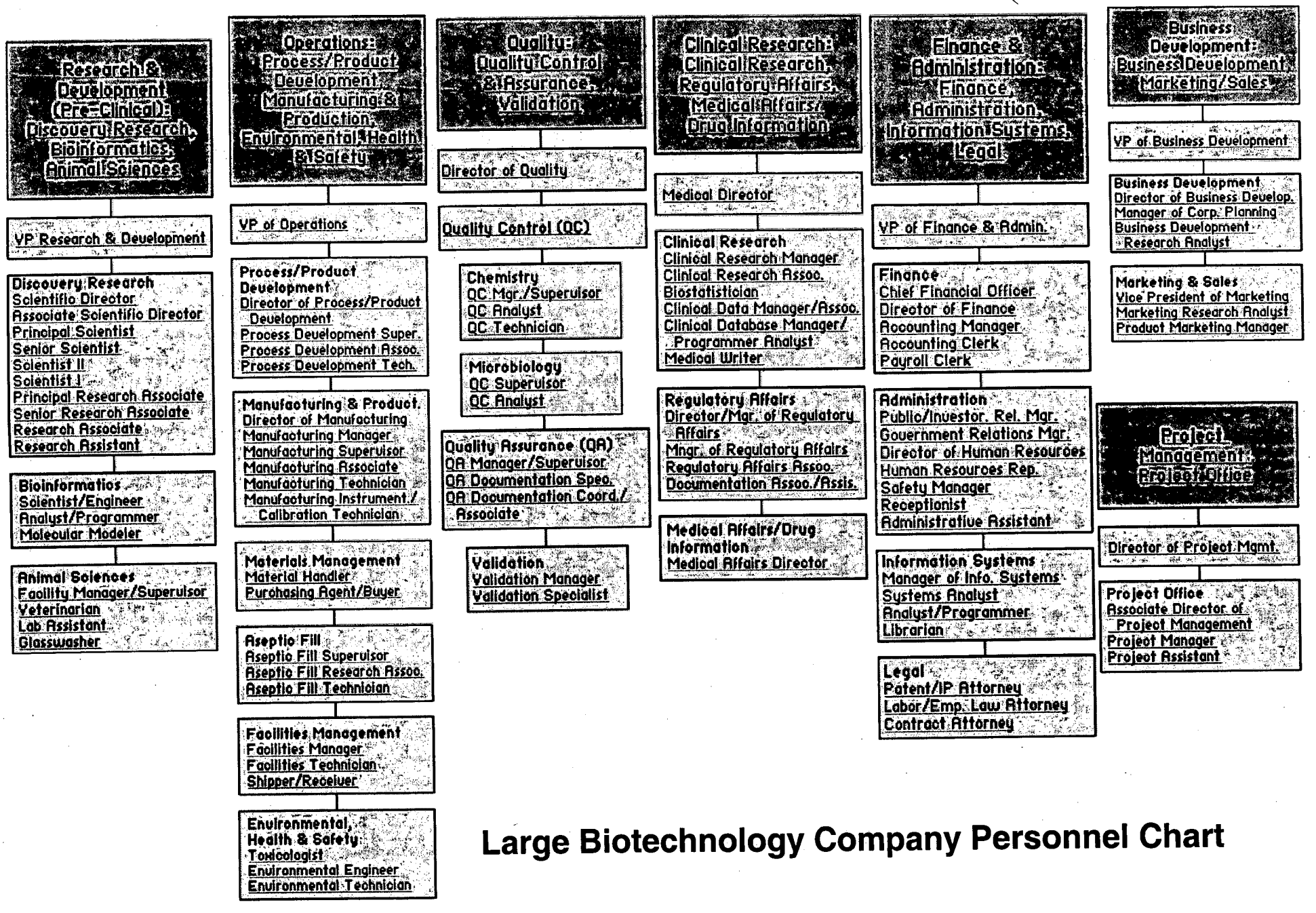
CBC 16-47.1 Prohibition.
No activities involving laboratory research Biosafety Level 4 (BSL 4) may be conducted within the City of Boston.

CBC 16-47.2 Enforcement and Regulatory Authority.
The Boston Fire Department, the Boston Police Department, and the Boston Public Health Commission shall have the authority to enforce these sections and to promulgate rules and regulations necessary to implement and enforce these sections.

CBC 16-47.3 . Severability.
If any provision of these sections shall be held to be invalid by a court of competent jurisdiction, then such provision shall be considered separately and apart from the remaining provisions, which shall remain in full force and effect.

CBC 16-47.4 Implementation.
The provisions of these sections shall be effective immediately upon passage.

Filed in City Council: May 20, 2003



Large Biotechnology Company Personnel Chart

Specific Areas of Biotechnology Jobs[1]:

Scientific Careers: The biotechnology industry's greatest growth areas are research and development (pre-clinical and clinical) and manufacturing. As companies search for new products, the need for research staff expands.

Non-Scientific Careers:
Biotechnology companies also offer non-scientific career opportunities in marketing and sales, finance and administration, and project management. As companies mature, positions in planning, public relations, investor relations, government relations, distribution management, material planning, accounting and finance, and legal counsel become available. Other occupations needed throughout the industry include engineers; mechanics, electricians; heating, ventilation and cooling (HVAC) technicians; welders; and security guards. Glass washers and media preparation personnel, packagers, and shipping and receiving clerks are also needed to manage the influx and efflux of materials and products

Research & Development (Preclinical):
Discovery Research, Bioinformatics and Animal Sciences

Vice President of Research and Development
Job Description Develops operating plan and develops strategic objectives that support the company's research and development strategies. Determines overall organizational structure and allocations of managerial responsibilities. Provides leadership to direct others in solving complex problems. Reviews and approves all major projects. Exercises authority to implement and initiate projects. Participates with senior management in developing and establishing organizational and company policies. Receives strategic guidance only. Make final decisions on administrative and operational matters. Directs all major functions and activities within the research area. Integrates these functions and activities with those of other major organizations. Has demonstrated management and strategic planning skills. Capable of representing the company in all related technical matters of high significance. Responsible for introduction of new technology enhancement into the research area. Responsible for the scientific and career growth of employees.
Education/Experience Requires a PhD in a scientific discipline and 15 years' management experience.
Approximate Salary Range $175,000+

Scientific Director
Job Description Responsible for directing the activities of multiple sections or an entire program area in the research department through subordinate managers. Undertakes long-term and short-term planning and supervision of projects that require interaction with business and manufacturing units. Makes decisions on work programs and monitors project and program costs. May conduct and collaborate with others on basic research relevant to long-term objectives and concerns. Collaborates on patent applications and manuscripts for publication. Develops strategies to ensure effective achievement of scientific/business objectives. Monitors and evaluates completion of tasks and projects. Develops budgets for capital expenditures, labor and contracts. Makes final decision on administrative or operational matters. Represents the organization as prime internal and customer contact on contracts or operations. Conducts briefing and technical meetings for top management and customer representatives. Instrumental in attracting and obtaining major new company business contracts.

[1] Massachusetts Biotechnology Council (MBC), http://www.massbio.org/directory/careers/, access March 28, 2004.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 12 years' experience in a research environment.

Approximate Salary Range
$120,000 - $175,000

Associate Scientific Director

Job Description
Responsible for planning, coordinating and managing the activities of one or more sections or projects in the research department. Undertakes long-term and short-term planning and supervision of projects, which generally require interaction with business and manufacturing units. Makes decisions on work programs and monitors project and program costs. May conduct and collaborate with others on basic research relevant to long-term objectives and concerns. Collaborates on patent applications and manuscripts for publication. Develops tactics to ensure effective achievement of scientific/business objectives. Monitors and evaluates completion of tasks and projects. Assists in developing budgets for capital expenditures, labor and contracts. Frequent contacts with equivalent inter-organizational managers and customer representatives concerning projects, operational decisions, scheduling requirements, or contractual clarifications. Conducts briefings and technical meetings for internal and external representatives including equivalent or above management.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 10 years' experience in a research environment.

Approximate Salary Range
$99,000 - $143,000

Principal Scientist

Job Description
Initiates, directs and executes scientific research and development that is critical to corporate strategies and image. Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions, products and problems. Makes major contributions to the scientific direction of the company including initiation of research that may lead to major new programs. Participates in development of patentable technology. May be responsible for management and professional development of research group. Plans and executes laboratory research. Maintains broad knowledge of state-of-the-art principles and theory. Makes important contributions to scientific literature and conferences. Exhibits an exceptional degree of sustained ingenuity, creativity and resourcefulness. Applies and/or develops highly advanced technologies, scientific principles, theories and concepts that may be new to the industry. May serve as consultant to top management in long-range corporate planning concerning new or projected areas of technological research and advancements. Key spokesperson to customer personnel on corporate capabilities and future efforts. May be instrumental in attracting and obtaining major new company business contracts and/or grants. Recognized as a scientific leader within the company.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 10 years' experience in a research environment. Expert knowledge of scientific principles and concepts is also required. As an alternative, post doctorate experience may be considered if combined with a minimum of 12-15 years related experience.

Approximate Salary Range
$99,000 - $132,000

Senior Scientist

Job Description
Initiates, directs and executes scientific research and development that is critical to corporate strategies and image. Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions, projects and problems. Plans and executes laboratory research. Maintains a broad knowledge of state-of-the-art principles and theory. Makes major contributions to scientific literature and conferences. Acts as spokesperson on corporate research and development. Participates in development of patent applications. May be responsible for management and professional development of research group.

Interfaces with various departments. Projects require expert and extensive knowledge of advanced principles, theories and concepts in area of expertise. Contributes to the development of principles and concepts new to the field. Often acts as project leader. Serves as organization consultant and spokesperson on specialized projects or programs. Acts as advisor to top management and customers on advanced technical research studies and applications.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 5-10 years' experience or MS with 8-10 years' experience in a research environment. Expert knowledge of scientific principles and concepts is also required. As an alternative, post doctorate experience may be considered if combined with a minimum of 12-15 years related experience.

Approximate Salary Range
$85,000 - $100,000

Scientist II

Job Description
Responsible for the initiation, design, development, execution and implementation of scientific research projects in collaboration with others, that are critical to corporate strategies and image. Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions and projects. Serves as in-house and outside consultant. Participates in development of patent applications. May manage and be responsible for professional development of research group. May coordinate interdepartmental activities and research efforts. Contributes to scientific literature and conferences. Projects require expert and extensive knowledge of state-of-the-art principles and theories in area of expertise. Uses professional concepts and company procedures to solve a wide range of complex scientific problems in creative and imaginative ways. May represent the organization as prime technical contact on contracts or projects requiring coordination across organizational lines. Provides intra/inter-group scientific leadership and training. Often acts as mentor and may act as project leader.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 2-5 years' experience or MS with 8-10 years' experience in a research environment.

Approximate Salary Range
$70,000 - $90,000

Scientist I

Job Description
Designs, implements and executes scientific research and development projects in collaboration with a larger research team. Investigates the feasibility of applying a variety of scientific principles and concepts to potential inventions and products. Demonstrates potential for technical proficiency, scientific creativity, collaboration with others and independent thought. May coordinate interdepartmental activities and research efforts. Contributes to scientific literature and conferences.

Projects require substantial knowledge of state-of-the-art principles and theories in area of expertise. Uses professional concepts and procedures to solve a wide range of difficult scientific problems in imaginative ways.

Involved in intra/inter-group teams regarding project design and implementation. Provides scientific guidance and training to more junior staff. May directly supervise one or more members of research group.

Education/Experience
Requires a PhD in a scientific discipline and a minimum of 0-2 years' experience or MS with 8-10 years' experience in a research environment.

Approximate Salary Range
$60,000 - $85,000

Principal Research Associate

Job Description
This position encompasses all the responsibilities of the Senior Research Associate, with either additional formal responsibility for supervising a distinct group, or additional technical responsibilities of a very independent nature that require the evaluation of tangible variance factors. If functioning in the more senior technical versus supervisory capacity this position would typically involve acting as the primary investigator in conducting his/her own experiments and would routinely exercise independent judgment in developing methods, techniques, and evaluation criteria for obtaining results.

Has expert understanding of and ability to apply principles, theories and concepts in specialized area of responsibility, together with working knowledge of related disciplines. Projects require a high level of familiarity with current scientific literature together with the capability to select methods and techniques of obtaining solutions including the development of new scientific techniques.

Typically leads department/project team in providing services or solutions to complex technical problems. Serves as consultant within area of expertise for other sections and/or divisions.

Education/Experience
Requires a BS/MS and 5-8 years' regulatory affairs experience in the development of biological or pharmaceutical products or 2-5 years with a Masters and demonstrated working knowledge of scientific principles. In-depth knowledge of FDA laws is desirable.

Approximate Salary Range
$60,000 - $70,000

Senior Research Associate

Job Description
Responsible for performing research and development experiments for projects and products in collaboration with others. Uses professional concepts in accordance with company objectives to solve complex problems in creative and effective ways. Investigates, creates and develops new methods and technologies for project advancement. Regularly exercises technical discretion in design, execution and interpretation of experiments that contribute to project goals. Contributes to project process within scientific discipline through innovative research. Prepares technical reports, summaries, protocols and quantitative analyses. May participate in scientific conferences and make contributions to publications and patents.

Has full understanding of and ability to apply established principles, theories and concepts in area of responsibility, together with a working knowledge of related disciplines. Projects require familiarity with current scientific literature together with capability to select methods and techniques for obtaining solutions within broadly defined practices and procedures.

May be involved in teams, which include participation from other sections and/or divisions. May provide guidance to less senior personnel. May assume leading role in providing solutions to difficult, though defined, problems associated with specific projects.

Education/Experience
Requires a BS in a scientific discipline and a minimum of 5-8 years' related laboratory experience, or MS with 2-5 years' experience.

Approximate Salary Range
$52,000 - $60,000

Research Associate

Job Description
Responsible for performing research and development experiments for projects and products, in collaboration with others. Regularly exercises technical discretion in the design, execution and interpretation of experiments that contribute to project goals. Contributes to project process within scientific discipline through innovative research. Prepares technical reports, summaries, protocols and

quantitative analyses. May participate in external seminars and scientific conferences.

Has full understanding of and the ability to apply established principles, theories and concepts in area of responsibility. Projects may require familiarity with current scientific literature together with the capability to select methods and techniques for obtaining solutions within generally defined practices and policies.

Contacts are primarily with direct supervisors and others in section or group for guidance and regarding status of work projects. May interact with other sections/divisions on routine matters.

Education/Experience
Requires BS in a scientific discipline and a minimum of 2-5 years' related laboratory experience, or MS with 0-2 years' experience.

Approximate Salary Range
$38,000 - $50,000

Research Assistant

Job Description
Responsible for performing research and laboratory tasks for projects and products, in collaboration with others. Projects may require the exercise of technical discretion in the design, execution or interpretation of experiments. Makes detailed observations, analyzes data and interprets results. Prepares technical reports, summaries, protocols and quantitative analyses. Has an understanding and/or application of fundamental principles, theories and concepts in the area of responsibility. Projects require the ability to read and understand relevant scientific literature.

Contacts are primarily with direct supervisors and others in section or group for guidance and regarding status of work projects.

Education/Experience
Requires a certificate, AS/BS or equivalent in a scientific discipline and a minimum of 0-2 years' related laboratory experience.

Approximate Salary Range
$32,000 - $48,000

Bioinformatics Scientist/Engineer

Job Description
Develops gene discovery algorithms for integrating sequence-based/functional knowledge about genes to help scientists analyze and interpret gene-expression data. Analyzes DNA information and identifies opportunities and needs for innovative solutions for the analysis and management of biological data in relevant databases. Assists in the development of software and custom scripts to automate data retrieval, manipulation, and analysis; application of statistics, and visualization tools. May mange some of the processes involved in database design, interface design, and information processing.

Provides leadership in the development, evaluation and deployment of gene centric information systems and works closely with scientists and other experimental departments in developing statistical and probabilistic methods for gene clustering/analysis.

Other responsibilities may include the initiation and management of external relationships and collaborations with academic and commercial parties, evaluation of third party products and technologies, and management of acquisition and implementation.

Education/Experience
Requires MS or PhD in Bioinformatics, Statistics, Biochemistry, Mathematics, Molecular Biology or Computer Science, Computational Chemistry, or related field and 1-4 years of industry experience.

Proficiency in programming languages like C/C++, Perl, SQL, HTML, and JAVA and knowledge of mixed

operating systems environments (e.g. UNIX, Windows NT, Sybase, Oracle etc.) is required.

Working knowledge of public domain bioinformatics data sources, public sequence databases, sequence assembly tools and gene expression analysis software is preferred.

Approximate Salary Range
$75,000 - $85,000

Approximate Senior Salary Range
$85,000 - $100,000

Bioinformatics Analyst/Programmer

Job Description
Designs and develops software, databases, and interfaces for analyzing and manipulating genomic databases. Collaborates with Production to develop high throughput data processing and analysis capability, design and implement data queries, novel algorithms and/or visualization techniques. Maintains large-scale DNA databases and prepares data for utilization by other scientists. Monitors new data from public databases and cleans loaded data to satisfy quality control criteria. Works with the entire life science team to diagnose and fix issues with bioinformatics software. Provides direct technical and scientific customer support and helps guide, implement and maintain further improvements to Bioinformatics software.

Education/Experience
Requires an MS/PhD or equivalent experience in Molecular or Computational Biology, Computer Science, Mathematics/Statistics, Bioinformatics, or related field and 1-3 years' experience developing computational biology applications.

Fluency in at least one of the following: C/C++, Perl, SQL, HTML, and JAVA and a working knowledge of relational databases and system administration is preferred.

Familiarity with public sequence databases and standard sequence analysis tools is highly desirable.

Approximate Salary Range
$60,000 - $100,000

Molecular Modeler

Job Description
Provides molecular modeling support for ongoing discovery research and applies computational techniques for the identification and optimization of hit/lead compounds. Other responsibilities include scientific leadership for the molecular modeling or computational design group, interaction with scientists of varied disciplines, new methods development, ligand design, pharmacophore development, library design and analysis, model development for virtual screening, and Quantitative Structural Activity Relationships (QSAR), protein structure and molecular simulations.

Education/Experience
Requires a PhD degree in chemistry, biochemistry, computational chemistry or a related field, 5+ years of industrial experience. Expertise in all aspects of molecular modeling of small molecules in rational drug design including QSAR and Structure based design, predictive Drug Absorption, Distribution, Metabolism and Excretion (ADME), and/or library design in a drug discovery setting is preferred.

Strong familiarity with principles of medicinal chemistry and knowledge of commercial modeling software packages, database searching, docking and scoring functions are also desirable. Systems administration knowledge and programming experience is a plus.

Approximate Salary Range
TBA

Facility Manager/Supervisor (Animal Sciences)

Job Description
Supervises all activities and staff of the animal facility. Sets and maintains a high standard of animal husbandry according to AALAC guidelines and optimizes animal handling techniques based on scientific requirements of animal projects and Good Laboratory Practices (GLP). Ensures a smooth-running animal facility including stability of the lab environment, proper functioning of all equipment, appropriate levels of all supplies, and environmental monitoring (e.g. live sentinel). Responsible for processing requests for animals to be purchased, and for allocating space, time and resources for the company's animals. Hires, develops, manages, and appraises the animal facility staff.

Education/Experience
Requires a BS in biological sciences or equivalent and a minimum 5 years experience in animal husbandry. Previous supervisory experience (3+ years) in an animal facility (biotech/pharmaceutical company) is required and AALAS certification at a technologist level is preferred.

Approximate Salary Range
$60,000 - $80,000

Veterinarian

Job Description
Responsible for diagnosing, treating and monitoring laboratory animals during the research stage of new drug therapies/discoveries. Other responsibilities include observing and documenting animal behavior, testing and vaccinating animals, performing autopsies, and working closely with scientists to analyze complications during new drug treatments/applications. Veterinarians may also consult on the breeding, feeding and maintenance of animals in a controlled laboratory environment.

Education/Experience
Requires Doctor of Veterinary Medicine (DVM or VMD) degree and a license to practice. Minimum of 2-3 years laboratory, veterinary and/or animal experience in a biotechnology or clinical research environment is required.

Approximate Salary Range
$100,000 - $150,000

Lab Assistant

Job Description
Performs a variety of research/laboratory tasks and experiments under general supervision. Works on assignments that are moderately complex and where judgment is required in resolving problems and making routine recommendations. Maintains laboratory equipment and inventory levels of laboratory supplies. May make detailed observations, analyze data and interpret results, write experimental reports, summaries and protocols. May be responsible for limited troubleshooting and calibration of instruments and assisting in training of entry-level employees.

Education/Experience
Requires a high school diploma, preferably a biotechnology certificate, AS or equivalent experience with a scientific background. A minimum work experience of 1-2 years' related laboratory experience with a high school diploma, or 1-2 years with an AS.

Approximate Salary Range
$24,000 - $33,000

Glasswasher

Job Description
Responsible for washing and drying glassware and distributing it to appropriate locations within the laboratories. Maintains glass washing facility and performs routine maintenance on glass washing equipment. May sterilize glassware and other laboratory items in an autoclave. Generally works on assignments that are semi-routine in nature, and requires ability to reorganize deviation from accepted practices.

Education/Experience

Requires a high school diploma or equivalent. Should have a minimum of 0-2 years' laboratory experience.

Approximate Salary Range
$22,000 - $29,000

Operations:
Process/Product Development, Manufacturing and Production and Environmental Health & Safety

Vice President of Operations

Job Description
Has overall responsibility for pharmaceutical product development/technology transfer and product manufacture according to Food and Drug Administration (FDA) guidelines, Good Manufacturing Practices (GMP) and ISO 9000 requirements for clinical trials of Investigational New Drugs (IND) and approved New Drug Applications (NDA) materials. Identifies personnel needs, trains, develops and motivates subordinates in product development, plant operations, facility maintenance, process and equipment validations. Is responsible for optimizing production of existing products manufacturing; assuring compliance with GMP and National Regulatory Commission (NRC) regulations; operations budget including capital requirements; improving productivity of the vial inspection process; facilitating technology and manufacturing process transfer; providing product for applicable clinical trials as required to support US NDA file; and supporting program development as appropriate to decisions regarding market opportunities.

Education/Experience
Requires PhD in engineering or other scientific discipline, 10-12 years' experience or MS in engineering and 15+ years' management experience.

Approximate Starting Salary Range
$150,000+

Director of Product/Process Development

Job Description
Directs the development, planning and implementation of product and process development for new products and technologies from the laboratory through pilot plant and manufacturing scale. Provides strategic direction, tactical oversight and technical expertise for all activities within the Product/Process Development area. Oversees production schedules, materials, equipment and manpower requirements. Formulates and recommends manufacturing policies and programs to maximize yields and reduce costs. Develops budgets for labor and capital expenditures. Represents departmental activities as needed, including project teams, task forces, audits and business or technical meetings with outside groups.

Education/Experience
Requires PhD in Chemistry, Biochemical Engineering, Biochemistry, Microbiology, or a related discipline with 7-10 years in all aspects of process/product development, or BS/MS degree with 12+ years of relevant experience. Experience with cGMP, GLP, process development/scale-up and methods/process validation is preferred.

Approximate Salary Range
$85,000 - $159,000

Process Development Supervisor

Job Description
Supervises one or more of the functional areas (such as fermentation or purification) within process development with responsibility for designing and scaling-up production processes from laboratory scale through pilot plant scale, and transferring production processes to the manufacturing department. Plans and implements the development of new process formulas, establishing instrument and operating equipment specifications and improving manufacturing techniques to maximize product yield and reduce manufacturing costs. May act as liaison with Research and Manufacturing to ensure processes and designs are compatible.

Education/Experience

Requires a BS/MS and 5-8+ years of experience implementing scale-up processes.

Approximate Salary Range
$49,000 - $85,000

Process Development Associate

Job Description
Responsible for evaluating, improving and scaling-up manufacturing processes in order to improve product yield and reduce overall costs of production. Executes small-to-medium scale production work, which may involve cell culture, fermentation, purification and/or chromatography. Additionally, assists with maintenance of production equipment. May research and implement new methods and technologies to enhance operations and may assist in validation of production processes.

Education/Experience
Requires a BS/MS degree in a scientific discipline or equivalent. A minimum of 2-5 years experience in the development and optimization of manufacturing processes is required with a Bachelors or 0-2 years relevant experience with a Masters.

Approximate Salary Range
$35,000 - $65,000

Process Development Technician

Job Description
Responsible for the definition, development and optimization of processes and equipment from the laboratory through pilot plant and manufacturing scale. Identifies and resolves issues with materials, processes, or equipment. Mixes compounds, prepares test samples, maintains inventory of materials on a regular basis and operates equipment as required. Executes process validation/equipment qualification processes and maintains files of lab tests, work procedures, formulations, calculations and assembly methods. Responsible for routine maintenance on all equipment used. Maintains records to comply with regulatory requirements, GMPs and standard operating procedures and assists in writing production procedures as necessary.

Education/Experience
Requires BS or equivalent in engineering or related discipline and a minimum of 2-5 years experience in process/product development preferably in a pharmaceutical or research development environment. Prior work experience with computerized instrumentation and micro measurement equipment is desirable.

Approximate Salary Range
$30,000 - $43,000

Director of Manufacturing

Job Description
Responsible for the development, implementation, and ongoing support of manufacturing business systems including clinical and commercial production activities. Ensures plans and resources (people, facilities, supplies etc.) are efficiently utilized to ensure uninterrupted supply of products produced. Oversees the hiring, development, retention and optimal performance of staff for the leadership and execution of manufacturing operations. Develops comprehensive operating plans and budgets and monitors achievement of business and financial goals. Responsible for the development of effective working relationships with both internal and external partners.

Education/Experience
Requires a BS in the sciences; MS is preferred and a minimum of 8+ years of experience in all aspects of the manufacturing process in a pharmaceutical or biotechnology environment. Previous management or project experience is required and knowledge of GMP and GLP is preferred.

Approximate Salary Range
$93,000 - $159,000

Manufacturing Manager

Job Description
Responsible for the production operations associated with the manufacture of all GMP products. Develops weekly/monthly goals and schedules for supervisors and manages activities through shift or unit supervisors. Oversees progress of supervisors' daily schedules to ensure safe and timely completion of releasable products. Point person for technical and compliance issues and liaisons with internal groups (QA, QC, Regulatory etc.) to facilitate issue resolution. Ensures functional unit's compliance with GMP and all its related elements such as facilities, documentation (SOPs and validation protocols etc.), training, reports and records. May be required to negotiate process-manufacturing agreements or manage external manufacturing contracts.

Education/Experience
Requires BS in a relevant science or engineering discipline and a minimum of 5-8 years experience in a biotechnology manufacturing/quality/development environment. Thorough knowledge and understanding of cGMPs and familiarity with FDA guidelines is required.

Approximate Salary Range
$60,000 - $93,000

Manufacturing Supervisor

Job Description
In small to medium size companies supervises the transference of cell culture/fermentation methods from research and development to manufacturing. Supervises and maintains purification production methods, processes and operations for new or existing products. Implements and maintains production schedules and manpower requirement. Directly provides guidance to employees to ensure operations meet GMPs. Provides general supervision over a work group, assigning tasks and checking work at regular intervals. Other key responsibilities may include interacting with outside vendors and departments, scheduling validation activities, training operators, and writing/approving Maintenance Work Requests, Engineering and Facility Change Requests, and Purchase Requisitions.

In large companies, separate supervisors will be used for cell culture/fermentation and purification processes.

Education/Experience
Requires BS and a minimum of 3-5 years' experience in all aspects of the manufacturing process in a pharmaceutical or biotechnology environment. Working knowledge of cell culture, aseptic and scale-up operations in accordance with cGMPs is required.

Approximate Salary Range
$46,000 - $68,000

Manufacturing Associate

Job Description
Performs a variety of complex tasks under general guidance and in accordance with current GMPs. Plays a role in implementing new technology into the manufacturing process or in starting up a new manufacturing area. Performs some or all of the following in strict accordance with Standard Operating Procedures (SOPs): fermentation, protein purification, solvent extraction, tissue culture, preparation of bulk solutions, non-critical aseptic fills of buffers, filling and labeling of vials under sterile and non-sterile conditions, large scale bioreactor operations, critical small or large volume sterile fills, aseptic manipulation of cell cultures.

Operates with minimal supervision complex systems and equipment and optimizes their use in manufacturing in accordance with defined goals. May participate in plant trials for evaluating process modifications. Troubleshoots processing problems, bringing unusual problems (i.e., potential deviations) to the attention of the supervisor. Assists in the implementation of production procedures to optimize manufacturing processes. Monitors processes and results and suggests methods to ensure process success. May attend research meetings related to the transfer process of new products. Organizes own daily workload schedule and relevant resource requirements. May provide training to new personnel in a specific

technical process. Participates in authoring complex, explicit documentation for manufacturing operations.

Education/Experience
Requires AS with 4-7 years' related work experience or BS in biology or related life science and a minimum of 2-3 years' experience. Detailed knowledge of purification systems and familiarity with regulatory and Standard Operating Procedures is required.

Approximate Salary Range
$35,000 - $60,000

Manufacturing Technician

Job Description
Responsible for assisting manufacturing in specific product-related operations in cell culture/fermentation. Operates and maintains production equipment as it relates to cell culture/fermentation (i.e., fermenters, bioreactors, cell harvests and separation operations). May also assist manufacturing in production-scale protein purification and manufacturing of final products. Weighs, measures and checks raw materials to assure proper ingredients and quantities. Prepares media and buffer components. Maintains records to comply with regulatory requirements and assists with in-process testing.

Education/Experience
An entry-level position requires a high school diploma, certificate in biomanufacturing, AS degree or equivalent experience plus a minimum of 0-2 years' related work experience in a manufacturing environment. A senior-level position requires BS in biology or related life science and 1-4 years' experience.

Approximate Salary Range
$28,000 - $44,000

Manufacturing Instrumentation / Calibration Technician

Job Description
Maintains, tests, troubleshoots and repairs a variety of circuits, components, analytical equipment and instrumentation. Calibrates instrumentation and performs validation studies. Specifies and requests purchase of components. Analyzes results and may develop test specifications and electrical schematics. Performs continuous monitoring of equipment status, condition and location. Prepares required documentation for the recording and notification of events and changes related to equipment such as calibration certificates, deviations, out of tolerances and installation reports.

Education/Experience
Requires an AS in electronics technology or equivalent technical training related to mechanics or instrumentation and a minimum of 2-4 years' experience with instrumentation, problem diagnosis and repair. Knowledge and understanding of measurement parameters and experience working in a GMP environment is preferred.

Approximate Salary Range
$35,000 - $60,000

Material Handler

Job Description
Responsible for the collection and distribution of materials between departments and the shipping department. Wraps and protects materials for safe transportation or warehouse storage. Loads and unloads materials on/ from freight vehicles, and stacks items in inventory. Other responsibilities may include lifting heavy loads (in excess of 70 lbs), operating a forklift, inspecting received goods, performing inventory reconciliation, updating inventory databases, weighing and dispensing materials for manufacturing.

Education/Experience
Requires a high school diploma or equivalent and a valid driver's license. Forklift experience and the ability to lift heavy loads is desirable.

Approximate Hourly Rate Range
$10.50 - $12.00

Purchasing Agent / Buyer

Job Description
Responsible for planning, organizing, directing and controlling purchasing activity for all production and non-production related goods and services required to support the manufacturing plant. Purchasing activities include supplier selection and the negotiations with suppliers for price, quality, timeliness of delivery, specifications, value improvement programs, contract administration, requisition review, and purchase order execution. Other responsibilities include maintaining knowledge of market conditions and advising management on purchasing alternatives to assure a continued flow of materials to meet production and sales requirements.

Education/Experience
Requires BS in Business, Material Management or related field with a minimum of 3 years experience in a purchasing and/or materials environment. Effective negotiation, persuasion and communication skills are also required.

Approximate Salary Range
$35,000 - $55,000

Aseptic Fill Supervisor

Job Description
Supervises all aseptic filling activities in accordance with GMPs, GLPs and SOPs regulations. Areas of responsibility include equipment/component preparation, sterilization and sanitation of aseptic filling rooms. Manages work group, assigns tasks and checks work. Reviews and processes Batch Production Records. Additional responsibilities include hiring, developing, and overseeing the training of new employees.

Education/Experience
Requires BS in Biology, Chemistry, or related area plus a minimum of 3-5 years of supervisory experience in a pharmaceutical environment preferably in aseptic filling.

Approximate Salary Range
$46,000 - $68,000

Aseptic Fill Research Associate

Job Description
Implement production procedures to optimize the aseptic fill manufacturing processes in accordance with GMP regulations. May assist process development in developing scalable processes to improve yield and reduce cost for aseptic fill manufacturing systems. Other responsibilities may include filling, labeling and packaging of products, or the operation/maintenance of production equipment.

Education/Experience
Requires BS in a scientific discipline or equivalent and a minimum of 0-2 years' experience in an aseptic fill, manufacturing environment.

Approximate Salary Range
$31,000 - $44,000

Aseptic Fill Technician

Job Description
Assists in the operation and maintenance of production systems. Other responsibilities may include setting up, changing-over and operating labeling and packaging equipment.

Education/Experience
Requires a BS in a scientific discipline for senior-level positions or an AS or certificate in Biomanufacturing for entry-level positions and a minimum of 0-2 years' work experience in an aseptic fill manufacturing environment. Knowledge of manufacturing procedures and federal regulations pertaining to manufacturing processes is preferred.

Approximate Salary Range
$28,000 - $44,000

Facilities Manager

Job Description
Manages the design, planning construction and maintenance of equipment, machinery, buildings and other facilities. May have responsibility for health and safety standards. Plans, budgets and schedules facility modifications including estimates on equipment, labor, materials and other related costs. Oversees the coordination of building space allocation and layout, communication services and facilities expansion.

Education/Experience
Requires BS or equivalent and a minimum of 5 years' experience in maintenance trades and knowledge of building codes.

Approximate Salary Range
$60,000 - $88,000

Facilities Technician

Job Description
Performs daily monitoring, repair, and preventative maintenance activities on critical systems and facility equipment. Also troubleshoots, install and modernizes new and existing systems, including refrigeration equipment, water systems, HVAC systems, and electrical systems. Documents repairs, adjustments, and replacement of equipment and/or components per GMP standards. May also provide input and corrections to Standard Operation Procedures (SOPs) and assist engineering in the evaluation of new equipment or technology.

Education/Experience
Requires an AA/AS or Certificate of Completion at a 2-year technical school in the mechanical/electrical field or a high school diploma with 5+ years of experience in GMP maintenance. Knowledge of major trades, such as carpentry, electrical, plumbing, and HVAC/refrigeration including the ability interpret blueprints, technical manuals and specifications are required. Experience in a pharmaceutical or bio pharmaceutical environment is preferred.

Approximate Salary Range
$25,000 - $46,000

Shipper/Receiver

Job Description
Responsible for loading or unloading, checking, storing, moving and recording the movement of supplies, raw materials, equipment and products to and from internal departments, external suppliers and/or customers. Other responsibilities include preparing bills of lading, invoices, requisitions and other documents, routing shipments, reviewing receipt of all materials and verifying quantities, and ensuring outgoing shipments are packaged according to specification.

Education/Experience
Requires a high school diploma or equivalent. Previous experience and knowledge of shipping and couriers is a plus. A valid driver's license may be required for some positions.

Approximate Salary Range
$25,000 - $40,000

Toxicologist

Job Description
Designs and oversees regulatory and investigative toxicology studies in support of product registration based on innovative drug delivery technologies. Participates in the review and assessment of products and initiates any needed testing. Provides interpretation and consultation in regard to safety data, and direction and guidance for managing risk assessment support programs. Prepares toxicological/human safety assessments pertaining to occupational, consumer and environmental exposures derived from manufacturing processes and product usage. Participates on internal committees/teams on product stewardship, product risk characterization and regulatory affairs matters. Tracks and monitors existing and pending legislation/regulations and serves as a representative on external trade and scientific associations.

Education/Experience
Requires an MS or Doctorate (PhD, MD or equivalent) in toxicology, biological sciences, or related health science field, and a minimum of 1-5 experience in toxicology studies. Working knowledge of US EPA regulations, international regulatory toxicology operations and a broad knowledge base in pharmacology of biotechnology products is highly desirable.

Approximate Salary Range
$70,000 - $140,000

Approximate Starting Salary Range for Director/Head of Toxicology
$140,000+

Environmental Engineer

Job Description
Responsible for the research, coordination, implementation, and management of environmental issues including waste disposal, air/water quality, pollution control, hazardous waste, and land management. Prepares permit applications and performs environmental regulatory reviews. Performs periodic inspections of facility operations, participates in reviews of other facilities' environmental activities and participates in environmental audits. Develops and maintains appropriate documentation to assure compliance with governmental regulations. Additional duties include the development and management of programs to meet regulatory requirements, including corrective actions, monitoring and reporting to environmental agencies when required.

Education/Experience
Requires a BS in Environmental, Civil or Chemical Engineering, or related discipline, MS is preferred, and a minimum of 3-5 years' environmental engineering experience. Thorough knowledge of engineering documentation including expertise in permitting, pollution prevention, environmental regulatory compliance, training and reporting is required. Experience working in a GMP facility is desirable.

Approximate Salary Range
$33,000 - $66,000

Environmental Technician

Job Description
Responsible for water and air sampling and monitoring, processing permits, calibration and maintenance of scientific monitoring, data collection, and routine analysis. Installs and services recording instruments; maintains physical stations where data is collected, inspects stations records to ensure quality assurance and preventative maintenance procedures are conducted properly. May conduct special studies such as toxic water monitoring, biological monitoring, and air/water pollutant investigations and recommend corrective actions. Records and maintains periodic data logs and information files. Typically works from drawings, specifications, diagrams, schematics and specific verbal and written instructions.

Education/Experience
Requires a high school diploma with some specialized or technical training in environmental sciences, chemistry, math, hydrology, ecology, toxicology or a related field. A two or three year community college program in environmental technology is preferred. Working knowledge in sampling, data collection and analysis, pollution complaint investigations, instrument calibration, environmental law or experience in assessing environmental conditions is desirable.

Approximate Hourly Rate Range
$14.00 - $24.00

Quality:
Quality Control, Quality Assurance and Validation

Director of Quality

Job Description
Responsible for short and long term goals of quality control (QC) laboratory efforts in support of IND, NDA and commercial products and other milestones. Formulates and recommends quality assurance (QA) policies and programs. Develops departmental budget for quality assurance and quality control, including

defining materials, equipment and personnel needs. Directs QC staff and daily operations to include: release and stability testing, in-process testing, QC inspections and audits, QC documentation, equipment maintenance and calibration and QC laboratory design and maintenance. Manages GMP material control program to include: QC materials management including labeling and storage, QC materials inventory and use and materials lot control. Oversees component and finished product stability program, transfer of validated methods to routine use, and participation of QC staff in support of validation of methods and equipment. Establishes and directs QC control programs and GMP training programs. Reviews and approves reports and other documentation prepared by QA and QC for regulatory submissions/inspections. Assures finished products conform to government and company standards and satisfies GMP regulations.

Education/Experience
Require BS or MS in chemistry or equivalent science and 6-10 years plus in chemistry, quality control and/or laboratory management positions plus experience in GMPs/GLPs.

Approximate Salary Range
$93,000 - $170,000

Quality Control (QC) Manager/Supervisor

Job Description
Supervises the development, implementation and maintenance of quality control systems and activities. Oversees development and implementation of standards, methods and procedures for inspecting, testing and evaluating the precision, accuracy, efficacy and reliability of products. Coordinates interdepartmental activities. Develops budgets and monitor expenditures. Provides guidance to employees and supervises the work group. Responsible for regulatory inspections and findings including all follow-up.

Education/Experience
Requires BS/MS in a related discipline or equivalent and a minimum of 3-5 years' experience with documentation and implementation of quality control systems.

Approximate QC Supervisor Salary Range
$47,000 - $65,000

Approximate QC Manager Salary Range
$67,000 - $90,000

Quality Control (QC) Analyst

Job Description
Conducts routine and non-routine analysis of raw materials, in-process and finished formulations under supervision and according to Standard Operating Procedures (SOPs). Compiles data for documentation of test procedures and prepares reports. Calibrates and maintains lab equipment. Reviews data obtained for compliance to specifications and reports abnormalities. Revises and updates SOPs. May perform special projects on analytical and instrument problem solving.

Education/Experience
Requires BS in a scientific discipline or equivalent and a minimum of 0-4 years' experience. Senior positions require BS/MS with 3-7 years relevant experience. Previous experience in microbiology, chemistry or biochemistry is required.

Approximate QC Analyst Salary Range
$40,000 - $48,000

Approximate Senior QC Analyst Salary Range
$47,000 - $60,000

Quality Control (QC) Technician

Job Description
Performs a wide variety of inspections, checks, tests and sampling procedures for the manufacturing process according to Standard Operating Procedures (SOP). Performs in-process inspection and documents results. Monitors critical equipment and instrumentation. Writes and updates inspection procedures and checklists as necessary.

Education/Experience
Requires a high school diploma, Biotech Certificate, AS degree or equivalent experience with a scientific background and a minimum of 0-5 years in quality control systems with knowledge of good manufacturing practices (GMPs). Entry-level positions require 0-2 years relevant experience. More experienced positions require a minimum of 2-5 years experience.

Approximate Entry-Level QC Technician Salary Range
$31,000 - $38,000

Approximate Experienced QC Technician Salary Range
$35,000 - $43,000

Quality Assurance (QA) Manager/Supervisor

Job Description
Assures that products, processes, facilities and systems conform to quality standards and governmental regulations; conducts internal audits to monitor processes, facilities and systems. Conducts raw materials audits. Reviews and approves operating procedures in Manufacturing and Quality Control departments. Assures that the Equipment Calibration Program complies with the GMPs requirements. Coordinates interdepartmental activities. Develops budgets and monitors expenditures.

Education/Experience
QA supervisory positions require BS in biological science and a minimum of 3-5 years' related experience in quality assurance and/or quality control. Managerial positions require BS/MS in a biological science with a minimum of 5-8 years plus related experience.

Approximate QA Supervisor Salary Range
$47,000 - $65,000

Approximate QA Manager Salary Range
$67,000 - $90,000

Quality Assurance (QA) Documentation Specialist

Job Description
Provides required documentation and implements documentation systems. Ensures the accuracy and completeness of the QA document system, performs daily filing, organizes contents and revises the table of contents. Processes, dates, issues and tracks batch record and other documentation. Maintains and updates the document control and tracking databases. Coordinates the review and revision of procedures, specifications and forms. Issues, distributes and updates controlled manuals. Assists in the compilation of regulatory filing documents and maintains computerized files to support all documentation systems. May assist the QA Manager in the training and orientation of Junior Documentation Specialists.

Education/Experience
Requires BS/MS in a related field and a minimum of 2 -5 years' experience in GMP Documentation Control documentation, quality assurance, or equivalent.

Approximate Salary Range
$36,000 - $52,000

Quality Assurance (QA) Documentation Coordinator/Associate

Job Description
Responsible for providing clerical and administrative support related to documentation system requirements/maintenance. Audits all documentation manuals to assure they are accurate and up-to-date, and available to appropriate personnel. Maintains filing of all master documents and assists in all microfilming and archiving activities.

Education/Experience
Requires a high school diploma, Biotech Certificate, AS or equivalent experience and a minimum of 2-4 years' experience, preferably in documentation or quality control/assurance.

Approximate Salary Range
$28,000 - $39,000

Validation Manager

Job Description
Is responsible for managing, developing and implementing validation protocols and test procedures to ensure products meet with appropriate regulatory agency validation requirements, internal company standards and industry current practices. Oversees and reviews validation area processes and procedures. Make recommendations for changes and improvements. May manage through subordinate supervisors the coordination of the activities of a section or department with responsibility for results in terms of costs, methods and employees.

Education/Experience
Requires BS/MS in a scientific discipline with 5-7 years' experience.

Approximate Manager Salary Range
$70,000 - $90,000

Approximate Director Level Salary Range
$90,000 - $115,000

Validation Specialist

Job Description
Responsible for developing and recommending validation strategies and designing studies for the purpose of providing documented evidence that a system, equipment, method, or process has been validated. Conducts and processes qualifications programs, writes detailed protocols and reports to document the validation of systems/ equipment and provides validation support for facility and utility expansion, compliance upgrades, etc. Develops and implements solutions to validation issues.

Education/Experience
Requires BS in a scientific, engineering or other related technical field with a minimum of 3 years experience in a regulated industry. Knowledge of current industry practices and cGMP requirements related to validation tasks is required.

Approximate Entry-Level Salary Range
$45,000 - $60,000

Approximate Senior Level Salary Range
$55,000 - $82,000

Clinical Research:
Clinical Research, Regulatory Affairs and Medical Affairs/ Drug Information

Medical Director/Associate Medical Director

Job Description
Designs, implements and monitors clinical studies of compounds designated for clinical development. Develops protocols and case report forms, which will provide adequate efficacy and safety information for Phases 1 to 3 of clinical trials. Interacts with data management personnel to plan data entry and analysis; recruits/screens/selects competent investigators; organizes investigators' meetings; assures that Good Clinical Practices (GCPs) are followed; assures timely completion of studies; monitors data for safety and efficacy trends by reviewing clinical data; and writes clinical reports upon completion or termination of studies (in cooperation with statistical staff). Reviews requests for results of Investigational New Drugs (IND) studies, and provides input for pharmacokinetics and pre-clinical studies. Prepares clinical portions of INDs, New Drug Applications (NDAs) and Biological License Applications (BLAs), including protocols, investigator brochures, medical reports, efficacy and safety summaries, scientific rationales and benefit/risk ratios.

Plans clinical programs and develops a timetable, budget and resource analysis for clinical programs and personnel administration. Establishes and maintains relationships with alliance partners, external companies, investigators and opinion leaders to optimize performance on clinical trial activities. Prepares manuscripts for technical journals and makes presentations at scientific meetings

Education/Experience

Medical Directors require a MD/PhD in a relevant scientific discipline and a minimum of 5-8 years' experience in clinical research. Associate Medical Directors require a MD/PhD and 0-3 years' clinical research experience. Pharmaceutical experience is desirable.

Approximate Medical Director Salary Range
$150,000 - $240,000

Approximate Associate Medical Director Salary Range
$125,000 - $165,000

Clinical Research Manager

Job Description
Supervises design and writing of protocols, case report forms and informed consent forms for clinical trials. Supervises and directs the design, implementation and monitoring of clinical trials, preparation of integrated medical reports, INDs, Investigational Device Exemptions (IDE), periodic reports New Drug Applications (NDAs) and Biological License Applications (BLAs), etc. Makes decisions on recruitment/selection of new investigators, contract research organizations and outside vendors. Directs planning and implements all activities required to conduct and monitor complex clinical trials and ensures that Good Clinical Practices (GCP) are followed. Monitors site visits pre-study, at study initiation, at regular intervals during the study and at study closeout. Directs investigator performance and adherence to protocol, and proactively addresses conduct issues and enrollment problems, as necessary. Ensures that Case Report Forms (CRF) are reviewed in a timely fashion and submitted to the data management group. Monitors the compilation/writing of integrated medical reports and clinical sections of INDs, IDEs, New Drug Applications (NDAs) and Biological License Applications (BLAs), etc. Prepares manuscripts for technical journals and makes presentations at scientific meetings.

Education/Experience
Requires a BS or MS in a scientific or health care field (e.g., nursing, pharmacy, physician's assistant) and 5-8 years plus experience in the pharmaceutical or device industry including relevant clinical research experience.

Approximate Salary Range
$75,000 - $110,000

Clinical Research Associate

Job Description
Is key participant in the design, implementation and monitoring of clinical trials, preparation of integrated medical reports, INDs, Investigational Device Exemptions (IDE), periodic reports, New Drug Applications (NDAs) and Biological License Applications (BLAs), etc. Participates in design and writing of protocols, case report forms and informed consent forms for clinical trials. Productive in recruitment/selection of new investigators, contract research organizations and outside vendors. Responsible for planning and implementing all activities required to conduct and monitor complex clinical trials and ensures that Good Clinical Practices (GCP) are followed. Conducts site visits pre-study, at study initiation, at regular intervals during the study and at study closeout. Monitors investigator performance and adherence to protocol, and proactively addresses conduct issues and enrollment problems, as necessary. Ensures that Case Report Forms (CRF) are reviewed in a timely fashion and submitted to the data management group. Involved in the compilation/writing of integrated medical reports and clinical sections of INDs, IDEs, New Drug Applications (NDAs) and Biological License Applications (BLAs)), etc. Assists in preparation of presentations and manuscripts of scientific meetings and technical journals. Attends scientific/professional meetings and training courses as appropriate.

Education/Experience
Senior positions require BS in a scientific, health care field (e.g., nursing, pharmacy, physician's assistant), or related field and 5-8 years' experience in the pharmaceutical or device industry including relevant clinical research experience.

Intermediate positions require BS in scientific field and 2-4 years related experience.

Knowledge of FDA regulatory requirements is preferred for both Senior and Intermediate levels.

Approximate Senior Clinical Research Associate Salary
$55,000 - $95,000

Approximate Intermediate Clinical Research Associate Salary Range
$40,000 - $65,000

Biostatistician

Job Description
Responsible for the statistical integrity, adequacy and accuracy of the clinical studies/databases. Provides guidance in statistical analysis methodology and performs statistical programming, design, and analyses for clinical trial projects. Plans, coordinates and provides statistical analyses, summaries and reports of studies in the support of product development including IND/ New Drug Applications (NDAs) and Biological License Applications (BLAs) submissions. Maintains and improves professional knowledge of technological advancements in data manipulation and statistical analyses.

Education/Experience
Senior positions require an MS, a PhD is preferred and 4-8 plus years' experience in clinical trials, regression models, survival analysis and analysis of categorical data. Ability to manage several programs and protocols is required for senior positions.

Intermediate positions require BS/MS and 2-5 years' related experience.

Both levels require good communication and interpersonal skills and a background in SAS and other programming skills. Application of these skills in a pharmaceutical environment is preferred.

Approximate Senior Biostatistician Salary Range
$70,000 - $115,000

Approximate Intermediate Biostatistician Salary Range
$55,000 - $90,000

Clinical Data Manager/Associate

Job Description
Primary responsibility is to ensure the validity of clinical trials and format them for statistical purposes. Also designs collection instruments, sets up databases and tracks and manages the flow of data to and from the investigative sites. With supervision, establishes protocol-specific data review and entry guidelines to document data validation and formatting procedures and defines batch-ending programs. Monitors timely data entry. Reviews data discrepancies resolutions provided by the investigative sites and enters corrections in the database, as appropriate. Assists in the review of interim/final data listings prior to transmission to other groups or inclusion in interim/final reports. Is familiar with database management systems and the principles, organization and content of standard Case Report Form (CRF) libraries. Ensures that incoming CRFs are tracked in a timely manner prior to safety review and upon manual review. Is familiar with data coding of Standard Operating Practices (SOP) and coding dictionaries. Conducts database audits according to established SOPs and is familiar with the implementation of GCPs.

Education/Experience
Entry-level positions require a high school diploma or Biotech Certificate and 2-5 years' experience in clinical data management or a BS with 0-2 years related experience. Intermediate positions require a BS and 1-3 years clinical data management experience, senior positions require a BS/MS with 3-6 years related experience. Managerial positions require a BS/MS with 5-8 years clinical data management experience. Experience with use of a personal computer and a range of software applications is necessary. Database management experience is helpful.

Approximate Clinical Data Manager Salary Range
$65,000 - $105,000

Approximate Senior Clinical Data Associate Salary Range
$45,000 - $80,000

Approximate Intermediate Clinical Data Associate Salary Range
$35,000 - $60,000

Approximate Entry-level Clinical Data Associate Hourly Rate
$13.20

Clinical Database Manager/Programmer Analyst

Job Description
Works as part of a project team, or possibly as a team manager, to design and implement applications in support of clinical research and biostatistics. Leads the analysis, design and implementation of client-server applications such as Oracle, SQL and forms of GUI-based products. Develops forms, menus and reports based on functional and design specifications. Documents all work fully according to Clinical Information Systems (CIS) standards. Actively promotes standards for the development and acquisition of systems. Participates in the evaluation and implementation of packaged systems. Communicates with the end-users.

Education/Experience
Programmer/Analyst positions require BS in computer science or related field and 0-3 years' programming experience, preferably in the pharmaceutical or health care industry. Senior Programmer/Analyst positions require BS/MS in computer science or related field and 2-5 years related programming experience. Managerial positions require BS/MS in computer science or related field and 5-8 years related experience.

Approximate Clinical Database Manager Salary Range
$70,000 - $115,000

Approximate Senior Programmer Analyst Salary Range
$55,000 - $90,000

Approximate Programmer Analyst Salary Range
$42,000 - $70,000

Medical Writer

Job Description
Responsible for the timely preparation, production and quality control of regulatory documents, including coordinating with regulatory project teams, creating editorial timelines and work flow specifications, scheduling and tracking documents, assessing documentation staffing needs, participating in "round-table" review of documents, establishing project-specific style guidelines, editing at various levels, writing and proofreading. Develops and updates specifications for the design, format production elements, tracking of regulatory documents and artwork used in regulatory documents. Hires, trains and supervises editorial temporaries and coordinates their work. Develops and updates departmental editorial style standards by preparing and revising a style guide. Provides guidance on writing to authors of regulatory submissions, and develops and updates general writing guidelines by preparing and revising an author's guide. Participates in Computer Application for New Drug Application/Computer Application for Product License Application (CANDA/CAPLA) planning pertaining to document structures.

Education/Experience
Senior positions require BA/BS/MS and 5-8 years plus publications experience, including at least 3 years in a scientific or technical publishing environment.

Intermediate positions require BA/BS and 3-5 years' related experience.

Direct experience in FDA regulatory documentation is desirable for both levels.

Approximate Senior Medical Writer Salary Range
$60,000 - $105,000

Approximate Medical Writer Salary Range
$40,000 - $75,000

Director/Manager of Regulatory Affairs

Job Description

Responsible for long- and short-term planning and directing of regulatory activities. Interprets corporate policy, develops and implements strategies for the earliest possible approval of regulatory submission, advises and manages the regulatory teams, and reviews ongoing projects. Plans, schedules and directs activities and programs through regulatory staff. Negotiates with outside agencies (national and international) as needed to resolve key regulatory issues and expedite approvals of product and services. Reviews and prepares responses to inquires from regulatory authorities relating to product registrations. Monitors and updates national and international registration requirements through reviews of publications, seminars, and direct communication with outside regulatory personnel. Communicates pertinent changes and updates to regulatory staff and senior management. Oversees the preparation and submission of applications and routine reports/renewals, including the preparation and submission of supplements and amendments as required by internal department (Manufacturing, QA/QC, Medical, etc.) to update registered product information. Provides input on budget requirements, and monitors project and program costs. May hire, train and develop regulatory staff and provide input on associated compensation and department structure decisions.

Education/Experience
Director levels require a BS/MS in a scientific discipline, a PhD is preferred and 10 years' experience.

Managerial levels require a BS/MS in a scientific field and 8 years' experience.

Approximate Director Salary Range
$90,000 - $160,000

Approximate Manager Salary Range
$65,000 - $110,000

Regulatory Affairs Associate

Job Description
Ensures all company products meet worldwide regulatory requirements by supporting all assigned regulatory aspects of product approval and post-marketing compliance. Responsible for the coordination and preparation of document packages for regulatory submissions ensuring compliance with the Food and Drug Administration (FDA) and international regulations/ interpretations. This may include the review, evaluation, and compilation of files and reports for submissions. Provides project team representation and direction in managing information from/to other departments (including R&D, Manufacturing, Quality Assurance, Quality Control, Medical Affairs, Marketing, and Clinical Affairs) regarding Regulatory submissions. This may include the preparation of outlines, summaries, status reports, graphs, charts, tables and slides for distribution and communication to other departments. Reviews technical and clinical documentation and recommends changes for labeling, manufacturing, marketing, and clinical protocol for regulatory compliance. Researches and analyzes regulatory information and determines acceptability of data, procedures, and other product-related documentation presented in support of product registration. Is responsible for the timely completion of regulatory projects and submission of documentation to regulatory agencies. Develops and maintains current regulatory knowledge and keeps abreast of regulatory procedures and changes. May provide regulatory guidance to project teams and junior staff.

Education/Experience
Senior positions require BS/MS and 5-8 years plus regulatory affairs experience in the development of biological or pharmaceutical products.

Entry-level and intermediate positions require a BS/MS and 0-4 years' related experience.

In-depth knowledge of FDA laws is desirable for both levels.

Approximate Senior Regulatory Affairs Associate Salary Range
$55,000 - $95,000

Approximate Regulatory Affairs Associate Salary Range
$40,000 - $75,000

Documentation Associate/Assistant

Job Description
Responsible for coordination and administration of document production procedures, including planning and scheduling of word processing and production resources. Coordinates with project teams in the development of timelines for documentation phase of regulatory submissions. Is responsible for management of electronic files. Coordinates with scientific editor to develop and update specifications and procedures for design and format of documents and artwork policy and procedures. Oversees reference collection, archive system, and produces monthly and annual reports of regulatory submissions. As Local Area Network (LAN) administrator is liaison with bioinformatics and information systems departments and is responsible for computer hardware and software setups and maintenance. Participates in capital budgeting and in planning regarding CANDA/CAPLA systems.

Education/Experience
Intermediate positions require a BS and 2-4 years related experience in a scientific or regulatory environment and senior positions require a BS/MS and 5-8 years related experience.

Entry-level positions require a high school diploma or Biotech Certificate and 1-3 years' experience with computers and a LAN in a scientific or regulatory environment or a BS with 0-2 years related experience.

Approximate Senior Documentation Assistant/Associate Salary Range
$47,000 - $85,000

Approximate Documentation Assistant/Associate Salary Range
$35,000 - $65,000

Approximate Entry-Level Documentation Assistant/Associate Hourly Rate
$13.20

Medical Affairs Director Oversees the management of Medical Affairs Department including, updates of operating SOPs, attainment of quality and financial standards, budget preparation, personnel training and development, and overall coordination of medical monitoring operations. Responsible for providing medical monitoring for ongoing clinical trials; communicating with investigators, sponsors, and clinical research personnel. Resolves medical issues, provides medical input for medical documents, supports business development activities and provides Serious Adverse Event (SAE) consultation. Maintains professional knowledge and skills, particularly in the areas of FDA/ICH guidelines and regulations.

Education/Experience
Requires an MD with a minimum of 5 years medical experience and 3 years experience in the pharmaceutical or contract research industries.

Approximate Senior Director Level Salary Range
$200,000+

Approximate Director Level Salary Range
$175,000 - $200,000

Finance & Administration:
Finance, Administration, Information Systems and Legal Counsel

Vice President of Finance & Administration

Job Description
Responsible for all long-range financial matters and establishment of company-wide financial and administrative objectives, policies, and practices. Establishes and executes programs for the provision of the capital required by the business, including negotiating the procurement of capital and maintaining the required financial arrangements. Manages the cash-flow position of the company. This includes authority to establish credit and collections and purchasing policies and to establish schedules for the payment of bills and financial obligations. Approves all agreements concerning financial obligations, such as contracts for products or services and other actions requiring a commitment of financial resources. Maintains relationships with financial institutions in conjunction with the President and administers banking arrangements and loan agreements, receives, has custody of and disburses the company's monies and securities. Establishes and maintains a market for the company's securities and liaisons with investment bankers, financial analysts and shareholders in conjunction with the President. Administers all incentive

stock option plans. Maintains sources for the company's current borrowings from commercial banks and other lending institutions and invests the company's funds.

Responsible for the financial aspects of real estate transactions, and executes bids, contracts and leases. Oversees the granting of credit and the collection of accounts due the company, including supervision of required special arrangements for financing sales, such as time payments and leasing plans. Analyzes company shareholder relations policies and information program including the annual and interim reports to shareholders and recommends to the President new or revised policies or programs when needed. Provides advice on all matters to the President and assists the President in the formulation of overall corporate objectives.

Departmental responsibilities include the management of Finance, Accounting, Administration, Information Systems and Legal teams including benefit administration, insurance relationships and programs, and banking and lending relationships.

Education/Experience
Requires BS in Accounting or Finance, CPA and/or MBA preferred, and a minimum of 7-10 years senior financial management experience preferably at the Director or VP of Finance level. A background in a biotechnology/pharmaceutical environment is highly desirable.

Approximate Salary Range
$155,000 - $275,000

Chief Financial Officer

Job Description
Oversees all financial activities of the company including internal and external reporting, accounting, treasury and tax matters, as well as financial planning, budgeting and analysis. Key responsibilities include advising Senior Management and the Board of Directors on the potential impact of investments, purchases, commitments and contracts on the profitability and return-on-investment performance of the company. Other duties include evaluating and determining the financial impact of product development, capital spending, inventory investments, changes in product line and/or manufacturing methods, sourcing/outsourcing alternatives and contracts and advising management. Creates, reviews and approves periodic budgets and financial statements. Leads the development, interpretation, and reporting of operating financial information. Establishes accounting and finance practices and procedures in accordance with company policy. Serves as a key participant in the development of the company's strategic plan. Responsible for coordinating and creating the operating and capital budget. Participates in presenting strategic and financial plans. Manages relationships with senior management, outside auditors, board of directors, corporation counsel and financial institutions. May also lead the financial review aspects of due diligence analysis in conjunction with the review of new business acquisitions, divestitures, and downsizing initiatives as needed.

Education/Experience
Requires BS in Accounting or Finance with an MBA, CPA or equivalent postgraduate qualification and a minimum of 10 years of demonstrated financial management experience. Prior experience in Capital Formation, and/or Mergers & Acquisitions is highly desirable. Proven ability in presenting the financial and operational results and strategic plans of the organization to a variety of audiences including employee groups, finance community, Board Members and the Corporate CEO is essential.

Approximate Salary Range
$133,000 - $235,000 (may vary based on company size)

Director of Finance

Job Description
Oversees the company's financial and accounting operations. Responsible for month-end closes, preparation of monthly consolidations for management, budgeting, forecasting, and evaluating and enforcing contracts, accounting polices and procedures. Establishes internal controls, operating policies and procedures. Prepares and maintains company's financial statements. Prepares SEC quarterly and annual

filings. Manages fiscal growth and expenditures. Assists in debt and equity financings and financial due diligence. Coordinates annual audit and quarterly reviews. Tracks and analyzes new rules and regulations related to financial reporting and consolidations. Performs research, analysis and other technical support for deal structuring, M & A, and other special projects. Manages relationships with investors and financial institutions. Duties may also include the management of employee benefits programs and other human resources administration, asset/vendor management, and support for internal and external financial presentations and other ad-hoc requests and projects.

Education/Experience
Requires BS in Accounting, Business Administration or Finance, MBA and CPA preferred, and a minimum of 7-10 years financial analysis/planning experience. Extensive knowledge of accounting, financial statement preparation, and SEC reporting is required. Managerial experience is strongly preferred.

Approximate Salary Range
$76,000 - $115,000 (may vary based on company size)

Accounting Manager

Job Description
Manages and performs a variety of technical accounting and auditing functions. Audits, analyzes, compiles and reconciles company's financial transactions. Maintains, analyzes and reconciles general ledger accounts; performs detailed quarterly audit and year-end functions; prepares monthly and year-end revenue and expenditure accruals; adjusts and closes journal entries; reconciles bank accounts. Prepares/reviews payroll, accounts payable, accounts receivable, cash receipts, employee benefit forms and claim reports; assists in the annual operating budget; maintains the fixed asset accounting system(s); performs internal audits of investments, revenues and expenditures; develops, plans and implements accounting procedures within the accounting/financial unit. Manages the accounting staff and assists in the interviewing, hiring and training of new staff.

Education/Experience
Requires BS in Accounting, Finance, or related field, with a minimum of 5-8 years accounting/general ledger experience. Extensive knowledge of the auditing, analysis, compilation and reconciliation methods used in processing financial and accounting transactions is essential.

Approximate Salary Range
$57,000 - $120,000 (may vary based on company size)

Accounting Clerk

Job Description
Assists with the planning and execution of various financial processes including routine calculations, posting and verification duties, account analysis, ad-hoc reporting, and other basic accounting functions. Reviews and examines financial transaction documents for accuracy and prepares the necessary corrections. Audits ledgers for accuracy and assists in the preparation of ad-hoc requests for account analysis. Performs posting of cash receipts, expenses, or other transactions to journals or ledgers. Prepares statements, invoices and vouchers. Other duties may include data discrepancy investigation and/or resolution, inter-departmental correspondence, and the maintenance and distribution of financial documentation.

Education/Experience
Requires a high school diploma, 2 or 4 year Accounting degree is preferred, and a minimum 2-5 years accounting experience. Knowledge of bookkeeping procedures and basic accounting principles is required. Intermediate computing skills are highly desirable.

Approximate Salary Range
$27,000 - $34,000

Payroll Clerk

Job Description
Assists in the verification, compilation and maintenance of payroll data. Receives and verifies time sheets. Prepares, inputs and electronically transmits payroll data. Audits and corrects payroll processing reports

errors. Assumes responsibility for all tax forms relating to payroll, including W-2. Posts bi-weekly and monthly payroll adjustments as needed including changes affecting net wages, such as exemptions, insurance coverage, and loan payments. Depending on the size of the company, the clerk may prepare, issue and distribute paychecks and pay advice forms. Interfaces with Human Resources personnel to record all data on hiring, termination and employee transfers. Responds to requests from employees and external agencies on matters relating to payroll and may prepare periodic reports of earnings, taxes, and deductions as needed. Other duties many include the preparation and distribution of employee lists and staff leave/vacation reports.

Education/Experience
Requires a high school diploma with a minimum of 1-3 years' payroll or related experience. Practical knowledge of payroll accounting and working knowledge of computers is preferred.

Approximate Salary Range
$30,000 - $35,000

Public/Investor Relations Manager

Job Description
Responsible for the management of P/R strategies in the area of press releases and industry articles, press tours, and promotional programs. Works with external public relations and investor relations agencies to ensure company communication objectives are met on time and within budget. Produces news releases, corporate backgrounders, product launch kits, presentations, and drives the release process. Responds to all media requests, inquiries and concerns. Conceptualizes and employs proactive story angles and campaigns to secure desired PR coverage. Works with national and international PR agencies to ensure consistency and accuracy of worldwide news coverage. Exploits opportunities for product awards and sponsorships. Selects, prioritizes and oversees publicity events and media/analyst tours.

Participates at investor conferences and organizes analyst briefings. Works with Marketing and Product Development to identify and communicate the company's value propositions, and build brand image. Identifies and develops relationships with key press contacts, editors, industry analysts, and key investors. Manages company press clippings, publication library, and contact database. Organizes and maintains a master calendar of all PR, media events and product reviews. Develops, executes, and tracks industry analyst plans. Participates in the planning and organizing of a corporate crisis management program and process to ensure effective response(s) to unforeseen issues. Provides advice to senior management on corporate positioning within the marketplace and works with cross-functional teams to create long term strategies that build value for the company.

Education/Experience
Requires BS in Marketing, Communication, Journalism or related field and a minimum of 2-3 years corporate and/or public relations experience preferably in a biotechnology or pharmaceutical environment. Strong written and oral communications skills are a necessity. Knowledge of basic design/layout/graphic principles and corresponding software programs is preferred. Extensive knowledge of top business publications and their editorial needs is highly desirable.

Approximate Salary Range
TBA

Government Relations Manager

Job Description
Responsible for a variety of activities involving community and government relations, public policy and communications including major, high profile projects with emphasis on community benefit investments, implementing legislation and new community programs. Activities include public speaking engagements, active involvement in community-based organizations, and maintaining various relationships in the community. Serves as a corporate liaison between the news media and government agencies in support of political action committees and key industry associations, special events coordination for Government Affairs and political fundraisers, and internal & external fundraising. Tracks and monitors lobbying activities and legislation, and assists in the management of government affairs issues.

Keeps the public informed about the activities of government agencies and officials. Prepares and distributes internal communication for public awareness campaigns, to ensure consistent corporate image and message. Maintains database of key government and media contacts used for external communication efforts. May assist with media relations programs, including research and development of press releases, media kits, and special interest stories.

Education/Experience
Requires BS (or equivalent) in English, Journalism, Public Relations, or Communications and 3-4 years experience in corporate communications, public relations, legislative and/or public policy analysis preferably in a biotechnology or pharmaceutical environment. A thorough understanding of corporate political action committee administration and the political process is required. Strong verbal and written communication skills are a necessity. Experience working with elected officials, staff and governmental agencies is highly desirable. Experience with political action committees and fundraising including special event planning/execution is preferred.

Approximate Salary Range
TBA

Director of Human Resources

Job Description
Directs the activities and staff involved in developing and maintaining Human Resources (HR) activities, policies and procedures. Identifies legal requirements and government reporting regulations affecting HR and directs the preparation of information requested for compliance. Acts as a primary contact with labor counsel and outside government agencies. Directs organizational planning process including the organizational structure, succession planning, job design, and manpower forecasting. Oversees the development and management of wage and salary structures, pay policies, performance appraisal programs, disciplinary actions, employee benefit program and services, and company health and safety programs. Selects and coordinates use of insurance brokers, insurance carriers, pension administrators, training specialists, labor counsel, and other outside resources. Advises senior management on all HR related issues including recruitment practices/procedures, career development, promotions, transfers, retention, continuing education/training, compensation reviews, hiring/firing decisions, exit interviews, conflict resolutions, and employee relations.

Education/Experience
Requires BA/BS in Business, Liberal Arts, a graduate degree is preferred, and a minimum of 10-15 years HR management experience. Thorough knowledge of HR functions, particularly in the areas of organizational development, compensation, and employee relations is essential.

Approximate Salary Range
$110,000 - $128,000

Human Resources Representative

Job Description
Administers one or more Human Resources programs including salary administration, recruitment, staffing and retention, diversity, benefits administration, workers compensation, training, and employee relations. Provides counsel and assistance with performance management issues, workplace concerns, employment legislation, discipline, and terminations. Insures compliance with all government programs including affirmative action, anti-discrimination, ADA, OSHA, FMLA, and wage and hour regulations. Advises new and existing employees on benefit eligibility, amounts of coverage, and claim procedures. Oversees the maintenance of benefit records and ensures the necessary documentation is processed to implement desired benefit coverage. Handles all Workers' Compensation claims and manages the annual benefit open enrollment process. Provides administrative support to the HR department, including data entry, photocopying, data collection, and filing. Maintains and updates employee information. Codes and distributes resumes, creates new hire offer packages, post jobs internally and externally, types job descriptions, and creates and distributes interview schedules. Administers new hire orientations and exit interviews and processes all associated paperwork. Collates recruitment and benefit packets as well as other

written materials. Plans and organizes meetings, conferences, employment interviews, and training sessions. Coordinates various human resource metrics including headcount, turnover, and overtime to create, maintain and/or update regular management reports.

Education/Experience
Requires BA/BS in Business, HR, Psychology or related field, and a minimum of 3-5 years experience in benefits administrations, payroll, labor relations or equivalent HR experience in a biotechnology or pharmaceutical environment. Capability and willingness to maintain confidentiality is essential. Excellent verbal and written communication skills are required. Previous recruitment experience is preferred.

Approximate Salary Range
$40,000 - $60,000 (may vary based on company size and/or person's level of experience)

Safety Manager

Job Description
Responsible for the development, implementation and management of company-wide safety programs in compliance with OSHA and other relevant regulations to ensure the safety and security of employees and facilities. Establishes risk management and business contingency programs. Maintains Right-to-Know documentation and provides regular, required training to security employees. Acts as first contact response for emergency situations, notifies emergency personnel and performs security investigations throughout the company on a case-by-case basis.

Administers procedures for proper reaction to abnormal and emergency conditions that threaten company personnel, tenants and or property. Coordinates the implementation of safety systems including fire, intrusion, monitoring devices, vehicle/visitor inspection, company identification cards and key issue and control programs. Maintains safety policy procedures and ensures compliance and consistency with company safety policies. Serves as chief liaison with local, state, federal law-enforcement agencies. Hires, trains, and manages security staff. Develops and maintains security officer shift schedules and changeover procedures.

Education/Experience
Requires a high school diploma, BS in business administration preferred, and a minimum of 3-5 years' experience in law enforcement or security management. Prior supervisory experience and a broad knowledge of security matters encompassing legal principles, fire and safety rules and regulations, electronic security and alarm systems, fire fighting, exposure to firearms, and communications and other related security devices is preferred. Must be certified in CPR and qualified in Basic First Aid. Certified Protection Professional (CPP) certification is a plus.

Approximate Salary Range
$55,000 - $70,000 (may vary based on company size and/or person's level of experience)

Receptionist

Job Description
Manages switchboard and front desk operations. Answers and redirects telephone calls. Meets and greets customers. Opens, sorts and distributes incoming mail and processes outgoing mail. Processes repetitive documents and exercises editing responsibility for correct spelling, punctuation and language. Updates and maintains Master Schedule for staff members' weekly schedules. Responsible for organizing, maintaining inventory, receiving and dispersing office supplies. Maintains professional appearance of front office, kitchen, conference rooms, and other public areas. Monitors office equipment and coordinates servicing. Assists other departments as needed, performing clerical tasks as assigned (copying, faxing, filing, ordering supplies etc.).

Education/Experience
Requires a high school diploma and a minimum of 1-2 years' varied administrative support and receptionist experience. Other equivalent combinations and education including completion of administrative support or business courses may be considered. Good written and verbal communication skills are required.

Approximate Salary Range
$25,000 - $30,000

Administrative Assistant

Job Description
Responsible for a wide variety of general administrative duties including filing, faxing, photocopying, preparing correspondence, maintaining calendars, coordinating video conferencing and teleconferencing, making travel arrangements and managing itineraries. Manages and prioritizes internal and external communications (including Email, as necessary). Arranges and provides support for large internal/external meetings including taking minutes, and the distribution of pre and post meeting agendas, programs, presentations/briefing documents. Designs and prepares presentations, assists in specialized projects, and coordinates on and off-site meetings as needed.

Education/Experience
Requires a high school diploma, a BA/BS is preferred, and a minimum of 1-3 years administrative experience. Strong initiative, communication, interpersonal, organizational and computing skills are required.

Approximate Salary Range
$35,000 - $55,000 (varies based on level of management supported and/or person's level of experience)

Manager of Information Systems

Job Description
Manages information systems and computer resources for the entire organization. Oversees the organization's Computer Operations, Systems and Programming, Technical Support Services, Communication Network and User services. Acts as a liaison between senior management and the computer staff (data processing, information systems, network services etc.). Manages the department's budget. Develops disaster recovery plans and manages back-up and security systems. Hires, trains, and supervises information systems staff. Manages user requirement definition and development, application development, system configuration and testing, installation, implementation of ongoing support, system enhancements/upgrades and bug fixes. Responsible for the introduction of new systems and hardware/software rollouts.

Education/Experience
Requires BS in Computer Science or Business Administration, an MS or MBA may be required for senior level positions in larger companies, and a minimum 5-8 years MIS management experience. Knowledge and experience of process modeling, reengineering and systems analysis is preferred.

Approximate Salary Range
$80,000 - $90,000

Systems Analyst

Job Description
Designs, customizes, and implements new software and supports existing legacy and packaged software systems. Interprets business needs into functional requirements and program specifications, defines business process flows, develops prototype screens and reports for new/existing system enhancements, and builds test plans, test criteria and scenarios. Collaborates with Analysts/Programmers to drive and oversee the development and implementation process. Supports all phases of system testing, user training and system deployment, and assists in creation of related documentation. Provides on-going application support, research and diagnostics on all production systems and manages the entire lifecycle for IT deliverables. Provides strategic advice to business units by defining and/or developing business processes/procedures and researching and identifying enabling systems/technologies. Provides technical support to business unit by analyzing new software programs and hardware equipment and conducting cost/benefit analysis.

Education/Experience
Requires BA/BS in Computer Science and a minimum of 3-5 years business/systems analysis experience preferably in a biotechnology or pharmaceutical environment. Demonstrated success implementing packaged software and strong knowledge of the full 'Systems Development Life Cycle' is essential. Strong analytical and problem-solving skills are also required. A broad understanding of technology and a solid understanding of the appropriate application of various technologies is preferred.

Approximate Salary Range
TBA

Analyst/Programmer

Job Description
Designs, develops, codes, tests, debugs, and documents programming applications to satisfy requirements of one or more user areas. Typically provides 24-hour daily production and technical support to assigned systems. Provides comprehensive consultation to business units, business analysts and IT management and staffs at the highest technical level. Provide programming and proper usage support to users of Business systems. Assists with the creation and modification of custom reports, specified by users and is involved in all aspects of application development, system configuration, system testing, installation, and implementation of system enhancements/upgrades and bug fixes. Other duties may include User Acceptance Testing and End User training.

Education/Experience
Requires BS in Computer Science or related area, and a minimum of 3 years programming experience in a scientific or technical environment. Proficiency in programming languages like C/C++, Perl, SQL, HTML,and JAVA and knowledge of mixed operating systems environments (e.g. UNIX, Windows NT, Sybase, Oracle etc.) is required. Structured programming skills, problem-solving abilities, and strong diagnostic capabilities are essential. Extensive knowledge of relational databases, commercial report writers, and proficiency in PC software is preferred.

Approximate Salary Range
$65,000 - $75,000

Librarian

Job Description
Assists the Library Services Manager in all library operations including acquisition and organization of print and electronic resources, references services, long range planning for the library, and staff orientation in the use of electronic information resources including integrated library systems, web browsers, and search engines. Conducts statistical, financial, scientific, patent and/or business information searches in support of the organization's research and development efforts as needed.

Software management related duties (if applicable) focus on the migration of source code and files to production systems, management and maintenance of version control, release and migration documentation, access authorization for developers, testers, etc. and deployment of software releases or rollouts.

Education/Experience
Requires BS/MS in Science and/or MSL (Masters in Library Science), and a minimum of 1-3 years' experience in a pharmaceutical or biomedical library. Knowledge of non-traditional information resources, such as CD-ROMs, online databases, and the Internet is essential. Other requirements (if applicable) include working knowledge of software version control, release and migration packages.

Approximate Salary Range
TBA

Patent/IP Attorney

Job Description
Works as an in-house counsel in the preparation and prosecution of patent applications, development and maintenance of the company's intellectual property (IP), and the development of intellectual property strategies and policies. Reviews, negotiates and drafts license, research, technology, material transfer agreements for IP consideration and protection. Reviews intellectual property provisions of various contractual arrangements and assists in rendering opinions on validity and infringement. In coordination with licensing counsel, drafts opinions and develops legal strategies for the company's business and research endeavors, and is involved in all copyright, trademark and litigation matters. Interacts extensively with scientists and counsels in-house clients on general contract, commercial and intellectual property

issues. Depending on the size of the company may also be responsible for the supervision of patent support staff.

Education/Experience
Requires JD degree (Juris Doctorate) and BS in Science or related field, advanced degree preferred, and a minimum of 10 years experience in all aspects of US/Foreign intellectual property and patent laws relating to biotechnology. Must be admitted to practice before a state bar in the US patent Office. Experience with biotechnology and/or pharmaceutical patent prosecution, contract work and technology licensing as well as intellectual property strategy development and implementation is essential.

Approximate Salary Range
$130,000 - $140,000

Labor/Employment Law Attorney

Job Description
Provides legal representation, counseling and guidance in matters concerning labor relations, employment discrimination, occupational safety and health, affirmative action, unemployment compensation, wage and hour regulation, wrongful discharge and other matters related to the employer-employee relationship. Represents company before state and federal courts, and/or administrative and arbitration tribunals, and during collective bargaining negotiations and labor arbitrations. Counsels company in all aspects of employee benefits law, including the design, implementation and operation of qualified retirement plans, welfare benefit plans and executive compensation programs; statutory and regulatory compliance; governmental filings and representation before regulatory agencies; issues relating to pension and welfare funds and employee benefits litigation.

Works with employer to insure compliance with new federal and state employment statutes and regulations, and advises management on employment issues such as hiring and firing, contract interpretation, non-compete, confidentiality and separation agreements, sexual harassment, Family and Medical Act (FMLA) and Fair Labor Standards Act (FLSA).

Education/Experience
Requires JD degree (Juris Doctorate) and BS in Business Administration or related field, and a minimum of 3-5 years labor and employment litigation experience in a large law firm or a combination of law firm and corporation. Strong practice experience in Title VII, ADA, FLSA, WARN, OSHA, FMLA, wrongful termination, discrimination claims and traditional labor law is essential. Knowledge of current legislative and regulatory changes in the employment area is preferred.

Approximate Salary Range
TBA

Contract Attorney

Job Description
Provides legal counsel and service on corporate, regulatory, judicial and legislative issues. Prepares contracts, amendments, subcontracts, subleases and non-standard agreements, as required. Analyses contracts, RFPs/RFQs, product acquisition agreements, and commercial leases from other firms for conformity and negotiates optimal terms. Identifies risk exposure; advises executive management on contractual obligations and issues; interfaces with corporate Contracts Department to escalate contract risks, and establishes and maintains document control management procedures. Keeps current on legislative issues, statutes, decisions, and ordinances of judicial bodies. Examines legal data to determine advisability of defending or prosecuting lawsuit. Provides legal guidance to staff and may act as agent of the corporation in various business transactions.

Education/Experience
Requires JD degree (Juris Doctorate) and BS in Business Administration or related field, and a minimum of 3-5 years experience in commercial litigation. Familiarity with all legal requirements involved in contractual dealings and a thorough knowledge of contract regulatory law is required.

Approximate Salary Range
TBA

Business Development:
Business Development and Marketing/Sales

Vice President of Business Development

Job Description
Identifies, evaluates and pursues the strategic and financial prospects of new market opportunities. Directs the assessment of future markets and licensing potential and is responsible for coordinating commercial input to specific programs as necessary. Establishes new scientific and strategic partnerships, joint ventures and alliances. Follows-up on all partnership activity including the tracking, documentation and status reporting of all collaborations along the business development pipeline. Establishes and implements appropriate development strategies to support commercialization and licensing strategies. Interacts with existing corporate contacts, facilitates communication, keeps tracks of milestones and identifies scope for enhancing these relationships. Oversees the plan and execution of a comprehensive marketing strategy including responsibility for the preparation of presentation and marketing materials for professional meetings, seminars and conferences.

Education/Experience
Requires MBA and science degree with a minimum of 8 years business development experience in a biotech/pharmaceutical environment. Prior experience in dealing with corporate partners and in negotiating and completing agreements is required. A thorough understanding of the processes of due diligence, asset valuation, alliance integration and portfolio management combined with a scientific and business acumen is also desirable.

Other requirements may include extensive contacts in the pharmaceutical/biotechnology industrial community relevant to the licensing of targets, leads and drugs.

Approximate Salary Range
TBA Other requirements may include extensive contacts in the pharmaceutical/biotechnology industrial community relevant to the licensing of targets, leads and drugs.

Director of Business Development

Job Description
Manages the identification, evaluation, and development of pharmaceutical and biotechnology prospects for new business opportunities. Develops proposals and term sheets for prospects and manages the day-to-day aspects of closing, including the utilization of legal counsel, and coordination with accounting, finance, human resources and other functional areas. Performs market research, analyzes new market opportunities and pursues new business opportunities. Organizes, tracks, documents and reports on the status of all prospects in the business development pipeline. Participates in the development and execution of a comprehensive marketing strategy, including sales and presentation materials, marketing communications, and industry trade shows and conferences. Also participates in the development of strategic partnerships, joint ventures and alliances, as well as technology and intellectual licensing opportunities, with industry, academia and government agencies.

Education/Experience
Requires BS, MBA is strongly preferred, with a minimum of 8 years experience in selling, networking, and negotiating contracts with pharmaceutical and biotechnology companies at the executive level, specifically within the drug discovery and development areas. Strong business acumen, organizational and analytical skills are required.

Approximate Salary Range
TBA

Manager of Corporate Planning

Job Description
Responsible for managing the financial planning processes including long-range/strategic planning and short-range/tactical planning for the company. Designs and refines financial planning processes and coordinates the execution of those processes across various operating groups. Participates in setting targets and planning guidelines. Assists the CFO in crafting and presenting key messages regarding the

corporation's financial plans and outlook to internal audiences (including executive management team and Board of Directors) and external audiences (including securities analysts and key investors). May perform and coordinate special analysis projects for the CFO as required. Conducts competitive analysis by monitoring the competitive environment and reports on developments with significant potential to impact future business prospects. Provides finance support for key functions including IT, HR, Legal, Business Development and Finance.

Education/Experience
Requires BS/BA with a minimum of 8 years financial planning and analysis experience. MBA is preferred.

Approximate Salary Range
TBA

Business Development Research Analyst

Job Description
Provides detailed market analysis and competitive intelligence on a periodic or project basis. Assists Director in the formulation and execution of strategies and tactics required to achieve business development goals and advises executive management in the definition and development of investment growth strategies for the company. This includes assessing and pursuing expansion, acquisition and partnering opportunities as well as managing the activities and processes for diversification and business growth in line with the corporate strategic plan. Works with internal and external counsel to evaluate intellectual property of licensing and acquisition candidates. Provides recommendations to facilitate partnering decisions, including design of deal structures and alternatives. Negotiates and maintains research agreements with investigators and their institutions. Secures licenses required for ongoing discovery and development operations and maintaining long-term partner relationships.

Education/Experience
Requires a BS in scientific field, MS or PhD is preferred and a minimum of 3-5 years experience in biotechnology/pharmaceutical business development or licensing environment. Experience in strategy consulting, investment banking or corporate partnering/deal making processes is highly desirable.

Approximate Salary Range
TBA

Vice President of Marketing

Job Description
Develops and implements strategic and tactical marketing programs to drive revenue growth and product contributions. Accountable for all aspects of brand performance including identifying business issues and creating solutions to drive brand performance. Develop brand strategies and manage implementation of brand campaigns and programs. Monitors brand revenue and expense forecasts to achieve revenue and earnings targets. Manages all vendor and agency relationships to achieve maximum Return on Investment (ROI) on all marketing programs. Maintains and develops marketing staff. Provides appropriate direction to field sales team to assure optimal execution of all programs. Works with Corporate Development, Project Management and senior management regarding strategic planning and product development. Works with research professionals to provide commercial input to the development of new products.

Education/Experience
Requires a BS in scientific field, MBA is highly desirable and a minimum of 2 years strategic marketing experience and 4 years marketing experience in biotechnology/pharmaceutical business development environment. Prior experience in successful product launches is desirable.

Approximate Salary Range
TBA

Marketing Research Analyst

Job Description
Provides information on marketed and pipeline products, including assessment of strategic direction and marketplace analysis. Uses primary and secondary qualitative and quantitative market research data to create financial models and provide analytical support to existing and new marketing and sales strategies.

Researches market trends, awareness, adoption and attitudes of newly launched products. Analyzes provider, patient and other relevant data sets to support targeting strategies for sales and marketing promotions. Advises management on competitive activities and strategies and performs market research to support business development, including market assessment, feasibility, profitability and strategic fit. May interface with external partners, vendors or clients, to support both direct and indirect market research efforts. May be expected to deliver regular communications and/or briefings in support of strategic efforts, global market awareness and product development activities.

Education/Experience
Requires BS in Economics, Econometrics, Statistics or financial analysis combined with 1-3 year's experience in data analysis and marketing research in a healthcare/pharmaceutical environment. Exceptional verbal and written skills are required to effectively synthesize information and communicate direction to management.

Approximate Salary Range
TBA

Product Marketing Manager

Job Description
Responsible for managing all aspects of product marketing, product strategy and development, strategic planning and creation and implementation of marketing strategies. Specific responsibilities include business case development for new/existing product initiatives, launch plan creation, management of product life cycle, and high level technical and sales support to internal and external groups. Provides direction to sales training to identify training needs and interfaces with Sales Managers and Sales Consultants to identify and address product issues/opportunities. Works with Market Research to develop sales forecasts and identify primary and secondary market research needs. Manages marketing resources and builds and sustains relationships with internal and external customers. Also involved in product definition, product feature positioning, forecasting, competitive analysis, solution pricing, and development of marketing materials.

Education/Experience
Requires a BS or MS in life sciences or a related discipline; MBA is desirable, plus 3-5 years experience in marketing with emphasis on market strategy, product development and business case analysis in a life science research environment.

Approximate Salary Range
TBA

Project Management:
Project Management for all departments in the company

Director of Project Management

Job Description
Oversees project development efforts for strategic programs and projects. Coordinates and develops yearly programs, strategic plans and annual project budgets. Provides direct input into corporate strategic planning, development management processes, critical path issues/solutions, resource management, and project management from conception through development cycle. Responsible for managing multiple global cross-functional project teams simultaneously and reporting project status to executive management. Collaborates with senior project managers, functional directors and managers to assure integration of project, company, and functional goals towards achieving project milestones and timetables. Identifies issues that may delay product or project and recommends appropriate action to be taken. Supports overall team function and project managers in their strategic function.

Education/Experience
Requires BS/MS, PhD preferred in life sciences, MBA degree is preferred and a minimum of 8 years experience in a pharmaceutical or biotechnology environment. A background in Chemistry, Biochemistry, Medical or Pharmaceutical Regulatory Affairs is important and demonstrated experience managing interdisciplinary development teams is required.

Approximate Salary Range

$110,00 - $145,000

Associate Director of Project Management

Job Description
Ensures scientific research, clinical studies, or biomanufacturing projects are completed on time, on-schedule and within budget. Establishes project milestones, manages program budgets/work plans, and ensures that the resources assigned to projects are adequate to meet program objectives. Monitors project expenses against budget and works with project managers and project teams to identify risks, contingencies and alternatives. May assist in the facilitation, motivation and evaluation of project team members. Manages all project and client communications including team meetings, client meetings, budget reports and progress reports.

Education/Experience
Requires BS/MS in life sciences, MBA or Post-Graduate Level science degree is preferred, and a minimum of 5 years project management experience in a pharmaceutical or biotechnology environment. A fundamental understanding of drug development processes and strategies are also helpful.

Approximate Salary Range
TBA

Project Manager

Job Description
Manages all daily project management activities, including project schedule development, project budget, team leadership, intra-division liaison, project communication, staffing activities, status reporting, and resource plan development. Identifies and tracks critical path/activities, risks, contingencies and alternatives. Supervises and mentors team members and ensures team members understand project objectives, specifications, deliverables, timelines and tasks. Other responsibilities include recording meeting minutes, tracking action items, preparing meeting agendas, coordinating global and sub-team activities and disseminating project information.

Education/Experience
Requires BS in scientific discipline, MBA a plus and a minimum of 3-5 years staff management or supervisory experience in a pharmaceutical or related industry.

Approximate Salary Range
$70,000 - $90,000

Project Assistant

Job Description
Responsible for performing departmental project management activities as assigned by a supervisor or project manager. Duties typically include the collection of project plan updates, maintenance or modification of project plan documentation and the preparation/distribution of project status reports. Other responsibilities may include assisting the project manager in the identification and scheduling of project deliverables, milestones, and required tasks, and/or establishing standards for project reporting and documentation.

Education/Experience
Requires BS in scientific discipline and a minimum of 3 years related experience in a pharmaceutical or related industry.

Approximate Salary Range
TBA

BAA-NIH-NIAID-NCRR-DMID-03-36
Klempner, Mark S.

Boston University
School of Medicine

715 Albany Street
Boston, Massachusetts
02118-2526

January 28, 2003

Barbara Shadrick
Senior Contracting Officer
Contract Management Branch, DEA
NIH: National Institute of Allergy and Infectious Diseases
6700B Rockledge Drive, Room 2106
Bethesda, MD 20892-7612

Re: BAA-NIH-NIAID-NCRR-DMID-03-36
National Center for Emerging Infectious Diseases and Biodefense
Certification that facility will be used for the purpose for which it was constructed.

Dear Ms. Shadrick,

We are writing to assure the NIH that should we receive funding to build a National Center for Emerging Infectious Diseases and Biodefense, the facility would be devoted exclusively to biodefense research and other NIAID-defined research programs for 20 years, beginning 90 days after completion of construction.

We understand that NIH staff will periodically review the type of research being carried out in the building to ensure compliance with this requirement.

Sincerely,

Aram V. Chobanian, M.D.
Provost, Medical Campus
Dean, BU School of Medicine

Elaine S. Ullian, M.P.H.
President and CEO
Boston Medical Center

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Research	BSL-4	BSL4 Lab	0	750	2	1500
Research	BSL-4	Isolation Room	0	121	2	242
Research	BSL-4	Equipment Room	0	121	2	242
Research	BSL-4	LN2 Storage	0	150	1	150
Research	BSL-4	centrifuge room	0	121	2	242
Research	BSL-4	Change Rooms (M/F)	0	200	2	400
Research	BSL-4	Suit Room	0	410	1	410
Research	BSL-4	Chem shower	0	30	2	60
Research	BSL-4	Sterilizer	0	62	2	124
Research	BSL-4	Fumigation room	0	242	1	242
Research	BSL-4/3 Ag	BSL4/3Ag Lab	0	750	1	750
Research	BSL-4/3 Ag	Isolation Room	0	121	1	121
Research	BSL-4/3 Ag	centrifuge room	0	121	1	121
Research	BSL-4/3 Ag	Equipment Room	0	121	1	121
Research	BSL-4/3 Ag	Suit Room	0	400	1	400
Research	BSL-4/3 Ag	Chem shower	0	30	2	60
Research	BSL-4/3 Ag	Change Rooms (M/F)	0	200	2	400
Research	BSL-4/3 Ag	Sterilizer	0	62	1	62
Research	BSL-4/3 Ag	Fumigation room	0	242	1	242
Research	High Containment Support	Red Bag Storage	0	110	1	110
	High Containment Subtotal		**0**			5999

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Research	BSL-3E	BSL3E Labs	0	200	9	1800
Research	BSL-3E	BSL3E Ante room	0	100	2	200
Research	BSL-3E	BSL3E Sterilizers	0	62	4	248
Research	BSL-3	BSL3 Anteroom	0	70	20	1400
Research	BSL-3	BSL3 Procedure Lab	0	130	20	2600
Research	BSL-3, 3E Support	BSL3E Equipment	0	260	3	780
Research	BSL-3, 3E Support	BSL3E Storage	0	180	1	180
Research	BSL-3, 3E Support	BSL3E Change Rooms	0	180	2	360
Research	BSL-2	Basic molecular lab (for 4-5 people)	0	900	20	18000
Research	BSL-2 Support	Tissue Culture Lab	0	200	10	2000
Research	BSL-2 Support	Walk-in cold room/ freezer room	0	200	5	1000
Research	BSL-2 Support	Glassware washing/ autoclaves	0	484	1	484
Research	BSL-2 Support	Dark Room	0	200	2	400
Research	BSL-2 Support	PCR Room	0	121	10	1210
Research	BSL-2 Support	Microscopy	0	121	5	605
Research	BSL-2 Support	Equipment Room	0	200	5	1000
Research	BSL-2 Support	Lab Storage Room	0	121	5	605
Research	BSL-2 Support	Chemical Storage	0	121	5	605
Research	BSL-2 Support	Hot Isotope Lab (fume hood)	0	121	1	121
Research	BSL-2 Support	Vault Storage	0	121	5	605
Research	BSL-2 Support	Decontamination room (autoclave)	0	200	5	1000
Research	BSL-2 Support	Computation room (bioinformatics)	0	121	2	242
Research	BSL-2 Support	Instrument Room	0	200	2	400
Research	BSL-2 Support	Centrifuge room	0	121	5	605
Research	BSL-2 Support	Reagent Prep Room (fume hood)	0	121	2	242
	Laboratories Subtotal		0			36692

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Research	Office and Office Support	Administrative Assistant	2	125	2	250
Research	Office and Office Support	Associate Director Office	2	125	2	250
Research	Office and Office Support	Break Room/Equipment	0	110	1	110
Research	Office and Office Support	Conference Room	0	350	2	700
Research	Office and Office Support	Files/Storage	0	25	16	400
Research	Office and Office Support	Office Automation Support Room	0	180	4	720
Research	Office and Office Support	Pantry	0	180	4	720
Research	Office and Office Support	Post Doc/ Fellows Office	80	50	80	4000
Research	Office and Office Support	Secretary to Senior Res. Scientist	10	50	10	500
Research	Office and Office Support	Senior Research Scientist	20	125	20	2500
Research	Office and Office Support	Vet / Pathology Office	2	125	2	250
Research	Office and Office Support	Visiting Research Scientist	5	125	5	625
	Office Subtotal		121			50811
	Vaccine, Therapeutics & Diagnostics Research Total		121			93502

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Core Technology	BSL-4	CTIC - Confocal Microscope	0	130	1	130
Core Technology	BSL-4	CTIC - Delta Vision Room	0	130	1	130
Core Technology	BSL-4	CTIC - Electron Microscopy	0	410	1	410
Core Technology	BSL-4	CTIC - Cryogenic Prep Room	0	150	1	150
Core Technology	BSL-4	High Containment Specimen Processing	0	580	1	580
Core Technology	BSL-4	BSL4 High Throughput Drug Screening Lab	0	580	1	580
Core Technology	BSL-4	BMPC Lab	0	630	1	630
Core Technology	BSL-4	BMPC Tissue Culture Lab	0	121	1	121
Core Technology	BSL-4	BMPC Equipment Room	0	121	1	121
Core Technology	BSL-4	BMPC Sterilizer	0	62	1	62
Core Technology	BSL-4	Immunology / Cell Sorting Lab	0	242	2	484
Core Technology	BSL-4	Immunology / Cell Sorting Equipment	0	200	1	200
Core Technology	BSL-4	Histopathology Lab	0	290	1	290
Core Technology	ABSL-4	Whole Animal Imaging - MRI Controls	0	140	1	140
Core Technology	ABSL-4	Aerosol Challenge Room	0	130	1	130
Core Technology	ABSL-4	Aerosol Challenge Prep Room	0	130	1	130
Core Technology	ABSL-4	ABSL-4 holding room	0	300	5	1500
Core Technology	ABSL-4	Procedure Room	0	121	2	242
Core Technology	ABSL-4/3 Ag	ABSL-3 Ag holding room	0	300	3	900
Core Technology	ABSL-4/3 Ag	Necropsy	0	242	1	242
Core Technology	ABSL-4/3 Ag	Large Sterilizer	0	242	1	242
Core Technology	ABSL-4/3 Ag	Carcass cooler	0	62	1	62
Core Technology	ABSL-4 Support	Necropsy	0	150	2	300
Core Technology	ABSL-4 Support	Large Sterilizer	0	400	1	400
Core Technology	ABSL-4 Support	Carcass cooler	0	62	2	124
Core Technology	ACL-4	IC - ACL-4 Insectary Holding	0	150	2	300
Core Technology	ACL-4	IC - ACL-4 Insectary Procedure Room	0	125	2	250
Core Technology	ACL-4	IC - ACL-4 Insectary Ante Room	0	62	1	62
Core Technology	High Containment Support	EM Control Room	0	121	1	121
Core Technology	High Containment Support	Whole Animal Imaging -NIH MRI	0	310	1	310
Core Technology	High Containment Support	Whole Animal Imaging - Small Animal MRI	0	180	1	180
Core Technology	High Containment Support	Whole Animal Imaging - MRI Prep	0	484	1	484
Core Technology	High Containment Support	HC Specimen Processing (Class III)	0	210	1	210
	High Containment Subtotal		0			10217

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Core Technology	ABSL-3 Holding	ABSL3 Procedure Lab	0	160	8	1280
Core Technology	ABSL-3 Holding	ABSL3 Holding Room	0	300	8	2400
Core Technology	ABSL-3 Holding	Anteroom	0	70	4	280
Core Technology	ABSL-3 Support	Storage/Supply	0	484	1	484
Core Technology	ABSL-3 Support	Soiled cage processing	0	2200	1	2200
Core Technology	ABSL-3 Support	Clean cage processing	0	2300	1	2300
Core Technology	ABSL-3 Support	Clean cage storage	0	1200	1	1200
Core Technology	ABSL-3 Support	Food storage - dry	0	270	1	270
Core Technology	ABSL-3 Support	Food storage - refrigerated	0	270	1	270
Core Technology	ABSL-3 Support	Bedding storage	0	420	1	420
Core Technology	ABSL-3 Support	Storage	0	510	1	510
Core Technology	ABSL-3 Support	Inner Change Room	0	121	2	242
Core Technology	ABSL-3 Support	Body Showers	0	30	4	120
Core Technology	ABSL-3 Support	Outer Change Room	0	121	2	242
Core Technology	ABSL-3 Support	Fumigation room	0	121	1	121
Core Technology	ABSL-3 Support	Carcass cooler	0	62	2	124
Core Technology	ABSL-3 Support	Pathology Storage	0	150	1	150
Core Technology	ABSL-3 Support	Necropsy	0	220	2	440
Core Technology	ABSL-3 Support	Operating Room	0	310	1	310
Core Technology	ABSL-3 Support	Prep Room	0	100	1	100
Core Technology	ABSL-3 Support	Animal Prep	0	121	1	121
Core Technology	ABSL-3 Support	Recovery	0	121	1	121
Core Technology	ABSL-3 Support	Scrub	0	62	1	62
Core Technology	ABSL-3 Support	X-ray	0	90	1	90
Core Technology	ABSL-3 Support	Tissue Digester	0	350	1	350
Core Technology	ABSL-3 Support	Carcass cooler	0	100	1	100
Core Technology	ACL-3	IC - ACL-3 Anteroom	0	90	1	90
Core Technology	ACL-3	IC - ACL-3 Prep Room	0	260	2	520
Core Technology	ACL-3	IC - ACL-3 Insect Holding Room	0	310	2	620
Core Technology	ACL-3	IC - ACL-3 Insectary Work Room	0	310	1	310
	Animal Space Subtotal		0			15847

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Core Technology	BSL-3/4 Clinic	Patient Rooms	0	250	10	2500
Core Technology	BSL-3/4 Clinic	Patient Toilets	0	62	10	620
Core Technology	BSL-3/4 Clinic	Ante room	0	100	5	500
Core Technology	BSL-3/4 Clinic	Patient Isolation Room w/ Toilet	0	260	1	260
Core Technology	BSL-3/4 Clinic	Patient Isolation Toilet	0	50	1	50
Core Technology	BSL-3/4 Clinic	Airlock	0	62	1	62
Core Technology	BSL-3/4 Clinic	Patient Prep	0	300	1	300
Core Technology	BSL-3/4 Clinic	Patient Entry / Receiving	0	160	1	160
Core Technology	BSL-3/4 Clinic	Procedure	0	300	1	300
Core Technology	BSL-3/4 Clinic	X-ray	0	300	1	300
Core Technology	BSL-3/4 Clinic	Day room	0	484	1	484
Core Technology	BSL-3/4 Clinic	Nurses Station	2	320	1	320
Core Technology	BSL-3/4 Clinic	Drug / Narcotics Storage	0	130	1	130
Core Technology	BSL-3/4 Clinic	Supply Storage	0	100	1	100
Core Technology	BSL-3/4 Clinic	Equipment / Supply Storage	0	150	1	150
Core Technology	BSL-3/4 Clinic	Isolator / Supply Storage	0	260	1	260
Core Technology	BSL-3/4 Clinic	Lab	0	242	1	242
Core Technology	BSL-3/4 Clinic	Nurse Administrator	1	150	1	150
Core Technology	BSL-3/4 Clinic	Associate Director Office	1	150	1	150
Core Technology	BSL-3/4 Clinic	Conference / Break	0	260	1	260
Core Technology	BSL-3/4 Clinic	Change Rooms	0	350	1	350
Core Technology	BSL-3/4 Clinic	Fumigation	0	62	1	62
Core Technology	BSL-3/4 Clinic	Sterilizer Load	0	430	1	430
Core Technology	BSL-3/4 Clinic	Sterilizer Unload	0	490	1	490
Core Technology	BSL-3/4 Clinic	Laundry & Dietary Storage	0	220	1	220
Core Technology	BSL-3/4 Clinic	Exam Room	0	90	2	180
Core Technology	BSL-3/4 Clinic	Patient Toilet	0	50	1	50
	BSL-3/4 Clinic Subtotal		4			9080

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Core Technology	BSL-3E	BMPC Lab	0	810	1	810
Core Technology	BSL-3	Genomics-Microarray Lab	0	400	1	400
Core Technology	BSL-3, 3E Support	BMPC Tissue Culture Lab	0	140	1	140
Core Technology	BSL-2	Bioinformatics	0	400	1	400
Core Technology	BSL-2	Proteomics / Mass Spectroscopy Lab	0	400	2	800
Core Technology	Office and Office Support	Administrative Assistant	1	50	1	50
Core Technology	Office and Office Support	Aerobiology PI	1	125	1	125
Core Technology	Office and Office Support	Aerobiology PI	1	125	1	125
Core Technology	Office and Office Support	Animal Core PI	1	125	1	125
Core Technology	Office and Office Support	Bioinformatics Core PI	1	125	1	125
Core Technology	Office and Office Support	Bioinformatics Core PI	1	125	1	125
Core Technology	Office and Office Support	Biological Molecule Production Core PI	1	125	1	125
Core Technology	Office and Office Support	Cell Tissue Imaging Core PI	1	125	1	125
Core Technology	Office and Office Support	Cell Tissue Imaging Core PI	1	125	1	125
Core Technology	Office and Office Support	Combinatorial Libraries and HTS Core PI	1	125	1	125
Core Technology	Office and Office Support	Combinatorial Libraries and HTS Core PI	1	125	1	125
Core Technology	Office and Office Support	General Clinical Research Center PI	1	125	1	125
Core Technology	Office and Office Support	General Clinical Research Center PI	1	125	1	125
Core Technology	Office and Office Support	General Clinical Research Center PI	1	125	1	125
Core Technology	Office and Office Support	Genomics-Microarray Core PI	1	125	1	125
Core Technology	Office and Office Support	Immunology/Cell Sorting/Monoclonal Antibody Cor	1	125	1	125
Core Technology	Office and Office Support	Insectary Core PI	1	125	1	125
Core Technology	Office and Office Support	Proteomics / Mass Spectroscopy Core PI	1	125	1	125
Core Technology	Office and Office Support	Specimen Processing and Microbiology Core PI	1	125	1	125
Core Technology	Office and Office Support	Whole Animal Imaging PI	1	125	1	125
	Laboratory/Office Subtotal		**20**			4975
	Core Technology Total		**24**			40119

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Support	BSL-2 Support	Isotope Processing & Storage Room	0	121	1	121
Support	BSL-2 Support	Safety Training Lab.	0	484	1	484
Support	BSL-2 Support	Respiratory Protection Storage Room	0	121	1	121
Support	Building Support	Lobby/Waiting	0	200	1	200
Support	Building Support	Dining Area	0	363	1	363
Support	Building Support	Lockers- Female	0	160	1	160
Support	Building Support	Lockers- Male	0	160	1	160
Support	Building Support	Shop - Skill Crafts	2	450	1	450
Support	Building Support	Work Control, Maint. Mgmt. & Decon.	3	50	3	150
Support	Building Support	Chief Building Engineer Branch	1	125	1	125
Support	Building Support	Project Mgmt and Engineering	4	50	4	200
Support	Building Support	Building Control Center	3	50	3	150
Support	Building Support	O&M Docu. & Engr Files Room	0	150	1	150
Support	Building Support	detergent storage	0	120	1	120
Support	Building Support	Equipment Storage	0	100	1	100
Support	Building Support	laundry	0	200	1	200
Support	Building Support	Supply Storage	0	250	1	250
Support	Building Support	Office	1	100	1	100
Support	Building Support	PC Storage / Repair Area	0	180	1	180
Support	Building Support	Breakdown & Inspection Area	0	320	1	320
Support	Building Support	Loading Dock	0	700	1	700
Support	Building Support	Biowaste Tank Area (3 tanks)	0	1300	1	1300
Support	Building Support	Biowaste Tank Control Room	0	200	1	200
Support	Building Support	Secure Storage	0	125	1	125
Support	Building Support	Flammable Storage	0	120	1	120
Support	Building Support	Chemical Storage	0	120	1	120
Support	Building Support	Gas Storage	0	120	1	120
Support	Building Support	Vault	0	125	1	125
Support	Building Support	Linen Supplies / Storage	0	400	1	400
Support	Building Support	Warehouse Supervisor's Office	1	125	1	125
Support	Building Support	Warehouse Area	0	320	1	320
Support	Building Support	Conference Room / Classroom	0	400	2	800
Support	Building Support	BSL4 Training Lab	0	750	1	750
Support	Building Support	Storage - Projection Control / Televideo	0	100	1	100
Support	Building Support	Storage - Furniture	0	125	1	125
Support	Building Support	Security Entry Desk	2	150	1	150
Support	Building Support	Access Control Point	1	100	1	100
Support	Building Support	Trash Holding	0	100	1	100
Support	Building Support	Soiled Linen Holding	0	100	1	100
Support	Building Support	Recycled Waste	0	100	1	100
Support	Building Support	Chemical Waste	0	200	1	200
Support	Building Support	Gas cylinder storage	0	120	1	120
Support	Building Support	Med Waste Treatment	0	190	1	190
Support	Building Support	Contaminated Waste Holding	0	100	1	100
Support	Building Support	Gamma Cell	0	100	1	100
	Laboratory/Support Subtotal		18			10794

Space Tabulation by Room Type

Function	Space Type	Room Name	Total Occupants	Unit NSF	Total Spaces	Total NSF
Support	Office and Office Support	Administrative Assistant	1	125	2	250
Support	Office and Office Support	Administrative Assistant	1	50	1	50
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Associate Director Office	1	125	1	125
Support	Office and Office Support	Biosafety Officer	1	125	1	125
Support	Office and Office Support	Break Room	0	125	1	125
Support	Office and Office Support	Central Security Surveillance Room	2	250	1	250
Support	Office and Office Support	Director Office	1	125	1	125
Support	Office and Office Support	Fellows Trainee Area	3	125	3	375
Support	Office and Office Support	Info. Systems Mgr	1	125	1	125
Support	Office and Office Support	Liaison Office	1	125	1	125
Support	Office and Office Support	NIAID Office	1	125	1	125
Support	Office and Office Support	Office Automation Support Room	0	125	1	125
Support	Office and Office Support	Programmers	3	50	3	150
Support	Office and Office Support	Safety Manager	1	125	1	125
Support	Office and Office Support	Specimen Access	0	120	1	120
Support	Office and Office Support	Suite Conference Room	0	240	1	240
Support	Office and Office Support	Surveillance Room Toilet	0	30	1	30
Support	Office and Office Support	Tunnel Connector Entry Point	0	530	1	530
	Office Subtotal		22			3745
	Support Total		**40**			14539

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