



Virginia Department of Planning and Budget
Project Request Justification

2006-2008

Biennium

Date: July 22, 2005

A. General Information

1. Agency name: VPI-Coop. Ext./Agriculture Experiment Station
Construct
2. Agency code: 229
3. Project title: Human and Agricultural Biosciences Building I
4. Agency priority: 1
5. Contact Person: M. Dwight Shelton, Jr.
6. Contact's telephone number: (540) 231-8775
7. Contact's e-mail address: mdsjr@vt.edu

B. Proposed Project

1. Project Cost:

General Fund/General Fund supported debt	44,000,000
Nongeneral fund	
9 (c) revenue debt	
NGF supported 9 (d) revenue bonds	
Total request	44,000,000

2. Project cost changes:

NONE.

3. Description:

- This is a new project on the university's capital plan and is included in the first biennium as a high priority in order to provide expanded, modern research space to the Agricultural Experiment Station in the College of Agriculture and Life Sciences.
- The proposed 93,000 gross square foot facility will be a combination of faculty offices, research offices and laboratories, and graduate and undergraduate student research space that will be used to house a number of research programs in the experiment station.
- The life expectancy of the project is 80 years with proper maintenance.
- The project scope is based on a thorough analysis of the five priority research areas listed below that the laboratory building will support: (1) Molecular and cellular regulation including cell cycle/cancer, cell structure and biochemistry, and cell signaling; (2) genomics science including functional genomics and proteomics, computational genomics and comparative genomics; (3) infectious disease and immunology including biology of the microbe, host

responses, vaccines, therapeutics and diagnostics; (4) neuroscience including central nervous system neurotoxicology and neurodegeneration, environmental neurotoxicology, molecular neuroscience, and cognitive, affective, behavioral neurosciences; and (5) public health.

- The project is for the Cooperative Extension/Agriculture Experiment Station and thus full state funding is requested.

4. Project scope change:

NONE.

5. a. Approved Master Site Plan:

Yes No

If not, explain:

b. 2004-10 Capital Outlay Plan:

Yes No

If not, explain:

- This is a new project on the university's capital plan and is included in the first biennium as a high priority in order to provide expanded, modern research space to the Agricultural Experiment Station in the College of Agriculture and Life Sciences.

6. Equipment for a previously funded project.

NONE.

7. Supplement to a previously funded project.

NONE.

C. Project Justification

1. a. Existing condition:

- Virginia Tech's current laboratory spaces for biosciences research around the Agriculture Quad include the following buildings: Agnew Hall (1940), Hutcheson Hall (1940), Price Hall (1907), Saunders Hall (1931), Seitz Hall (1940) and Smyth Hall (1939.) These buildings were all constructed prior to World War II, are obsolete for advanced research activity, and are too costly to renovate or upfit to support modern biosciences laboratory work.
- The task of bringing structures listed above up to 21st century building codes would be very expensive and would not contribute to recruitment, retention, and research productivity. Although safe for current occupancy and low intensity functions, these buildings will require extensive asbestos and lead-based paint abatement before other major issues of inadequate electrical capacity, lack of central HVAC, and purified water systems can be addressed. Upgrading of the basic physical plant for these structures would have to be

followed by complete renovation of the interior, including removal of many non-load bearing walls and construction of individual laboratories. The costs of building upgrades, utility enhancements, and installation of research equipment such as chemical hoods, will exceed the cost of a new facility and, because of size limitations, would still not provide a facility adequate for the needs of future research in the biosciences.

- Three other biosciences facilities located outside the Agriculture Quad include Engel Hall (1961), the Food Science and Technology complex (1952, 1965, 1968), and Wallace Hall (1969) share many of the same concerns with the buildings in the nearby Agriculture Quad. Although these facilities may require less structural renovations, their overall design reflects the research needs from 35 years ago and, like the Agriculture Quad buildings, replacement is likely to cost less than extensive renovation.
- The university believes razing at least one of the existing buildings described above and replacing it with the proposed project is the best, most economical solution for addressing the need for modern laboratory space in the biosciences.

Higher Education Only

b. Facility Condition Index:

FCI _____

c. Space deficit:

Yes **No**

2. Programmatic information:

- This project will provide a combination of faculty offices, research offices and laboratories, and graduate and undergraduate student research space that will be used to house a number of research programs in the Agricultural Experiment Station in the College of Agriculture and Life Sciences.
- The proposed construction is a state-of-the-art laboratory facility to house advanced research and scientific discovery in the biosciences. New technologies in cell and molecular biology, genetic engineering and information technology, are revolutionizing agriculture and the life sciences. Over three quarters of the existing laboratory facilities at Virginia Tech lack the space, ventilation systems, electrical and telecommunications resources to enable research programming in innovative scientific discovery. Modern facilities, designed and constructed around twenty-first century research programs, will allow Virginia Tech to conduct biosciences research with national and international significance and propel the university to a leading position in the biosciences.
- The frontier of agriculture research exists at the molecular scale. Increasingly, research in genomics, microbiology, bacteriology, and immunology are driving the development of new approaches to solving problems that impact agricultural production, animal and human health, and the environment. The availability of state-of-the-art research facilities that can support groups of disciplines working in teams will enhance the quality and quantity of research in the medical, biomedical, and public health sciences at Virginia Tech. This strategy is congruent with National Institutes of Health intentions to provide major future funding to interdisciplinary research teams rather than single investigators examining a small slice of a problem. Virginia Tech has a unique capability to connect laboratory based

research with practical applications through the Experiment Station. In this way, “test-tube” technologies can be developed, implemented, refined and then distributed with significant impact on the lives of citizens.

- Virginia Tech has existing strengths in the life sciences and the Experiment Station has five focus areas for biomedical research: (1) Molecular and cellular regulation including cell cycle/cancer, cell structure and biochemistry, and cell signaling; (2) genomics science including functional genomics and proteomics, computational genomics and comparative genomics; (3) infectious disease and immunology including biology of the microbe, host responses, vaccines, therapeutics and diagnostics; (4) neuroscience including central nervous system neurotoxicology and neurodegeneration, environmental neurotoxicology, molecular neuroscience, and cognitive, affective, behavioral neurosciences; and (5) public health sciences, including food, nutrition and health and chronic disease (e.g. obesity, heart disease, and diabetes) prevention and environmental health. Significant research and discovery in these five focus areas will lead to advances in medical treatments, pharmaceuticals, control of infectious diseases across the globe, and impact the quality of life for people in developed and developing nations.
- In addition, the Food, Nutrition, and Health (FNH) faculty advisory committee of the Experiment Station has promulgated a vision and mission of the FNH initiative: “promote and protect the public’s health through scientific discovery and information dissemination”. The mission will be accomplished using advanced technologies from the development of new foods, improved nutrition, food safety, and the adoption of health-promoting behaviors to prevent illness and reduce health costs. A focus within this mission relates to prevention and management of obesity. Obesity is widely considered one of the most pressing global public health problems. Virginia Tech has significant strength in this area, and there are substantial and expanding opportunities for research and external funding related to this health problem. Laboratory based research, conducted by nationally renowned biosciences researchers will connect advances at the microbiological level with, food production, food delivery and consumption, and improved human health and wellbeing.

3. Alignment to strategic plan:

This project will support Virginia Tech’s strategic plan in the areas of Research and Scholarship, Graduate Education, Undergraduate Education, and Outreach. The Human and Agricultural Biosciences Building I will provide state-of-the-art laboratory facilities to meet the modern demands of new technologies being used today in research in agriculture, animal science, biodesign and bioprocessing, functional foods, and infectious diseases. The availability of such facilities will enhance university research capabilities, support local industry and agricultural extension services, and advance the following goals of the university:

Research and Scholarship:

1. Increase the stature of Virginia Tech as a national research university in quality of research and scholarship.
2. Increase the stature of Virginia Tech as a national research university in quantity of research and scholarship.

Graduate Education:

1. Increase the quality of the graduate programs.

Undergraduate Education:

1. Maintain a current, relevant, and comprehensive undergraduate curriculum.
2. Strengthen the quality of undergraduate instruction.
3. Create learning experiences for undergraduate students that maximize the benefits of attending a large research university.
4. Expand the university's leadership role in the effective integration of instructional technology and pedagogy.

Outreach:

1. Sustain the university's commitment to the outreach mission.
3. Strengthen the relationship between Outreach and Extension.
4. Organize, coordinate, communicate about, and integrate the various economic and community development activities at Virginia Tech.

D. Options Considered

Other options considered but not selected include leasing, renovating existing space, or delaying the project entirely. Constructing a new facility is the selected option because of the significant and unique facility demands required to support the agricultural and life sciences programs slated to occupy the facility.

Leasing is not a feasible option because it is not financially viable to enter into a capital lease for this particular project due to its extensive laboratory construction requirements and its need to be in proximity to other facilities on campus.

Renovating an already existing facility is not a viable option because the University currently operates with a shortage of research laboratory space. Thus, no existing space is available to allocate for renovation to accommodate this expanding program. Further, the majority of research laboratory space on campus is more than 30 years old and does not include adequate levels of essential infrastructure support and thus would be less economical to develop as opposed to new construction.

Delaying the project to a future biennium is not a viable option because, without the near term availability of modern research facilities, the college will miss the opportunity to participate in new, ground-breaking interdisciplinary research in the life sciences, agriculture and public health.

E. Project Schedule Changes:

NONE.