

PAYETTE NEWS



A close look at the intersection of high design, biocontainment and sustainability in the Pell Laboratory for Advanced Biological Studies at Penn State University

Biocontainment + Sustainability

We had a lot of fun designing this project because it challenged both our technical and design expertise due to its relatively small size, highly unique site and program. The Pell Laboratory houses some of the most cutting-edge infectious disease research in the world in a “BSL-3 Enhanced” biocontainment facility where scientists study aerosol and insect transmitted diseases such as H5N1 (Avian influenza), Yersinia Pestis (Plague) and Tuberculosis as well as insect transmitted virii such as West Nile Virus and Francisella Tularensis (Tularamia), in a safe and secure research environment sandwiched between two interstitial mechanical floors. The highly specialized and technically demanding program was both challenging and wonderful to work on. It is not often that we get the opportunity to design a self-contained BSL-3+ stand-alone building, much less one located in a cow pasture surrounded by barns. Payette has designed many BSL-3 environments, but never a whole building dedicated to BSL-3 research.

The Pell Laboratory is sited within a cluster of animal research facilities on the Ag Campus of Pennsylvania State University, set within the rolling agrarian landscape of central Pennsylvania. The vernacular landscape surrounding the site contains several simple rectangular barns capped by zinc clad roofs and silos that frame the horizon. The Pell Laboratory builds on these simple traditions, but with an attitude that reflects the cutting-edge program. The Pell Laboratory's most distinctive feature is its undulating roof form, which houses a complex array of mechanical systems and provides a dynamic silhouette against the tree-lined horizon. The zinc clad roof form collects the twin bars of concrete block laboratories that straddle a central circulation spine framing dramatic landscape views at each end.

Providing transparency, natural light and a connection to the surrounding natural landscape in an intense biocontainment environment is the central theme of the project.



Biocontainment facilities are typically designed as windowless bunkers for security reasons, and great care was taken to provide access to the natural environment for workers who spend the majority of their day working in cumbersome personal-protective equipment (Tyvek suits and respirators) in the Pell Laboratory. The project was funded by the National Institutes of Health, as part of the American Reinvestment and Recovery Act. During the final site review, the building was commended by the NIH review team as “the most pleasant biocontainment environment to work in that [we] have ever seen.”

Unlike many BSL-3 facilities, the BSL-3+ biocontainment environment is directly visible from the main lobby located along the central spine. Transparency across the central spine from the lobby is captured through a custom-designed fully glazed stainless steel pass-through TRANSsterilizer, which visually links the BSL-3+ environment to the outside world.

Biocontainment and sustainability do not necessarily go hand-in-hand; typically, these are some of the least energy efficient building types due to single-pass 100% outside air-systems and high air-change rates. Through a tremendous focus on energy efficient approaches across the building and its systems; the Pell Laboratory achieved a 63% reduction in energy usage from a typical biology lab building in its climate. This reduction in energy usage is equal to the annual energy of 49 homes in the northeast. The building also includes a high performance envelope utilizing triple glazing and sunshading and is thermally broken and highly insulated with limited glazing. The building reduced the lighting power density by 25% compared to a code building and has achieved daylighting for at least 75% of the regularly occupied areas. While small in size, the Pell Laboratory is a hugely significant tool in the infectious disease research community.

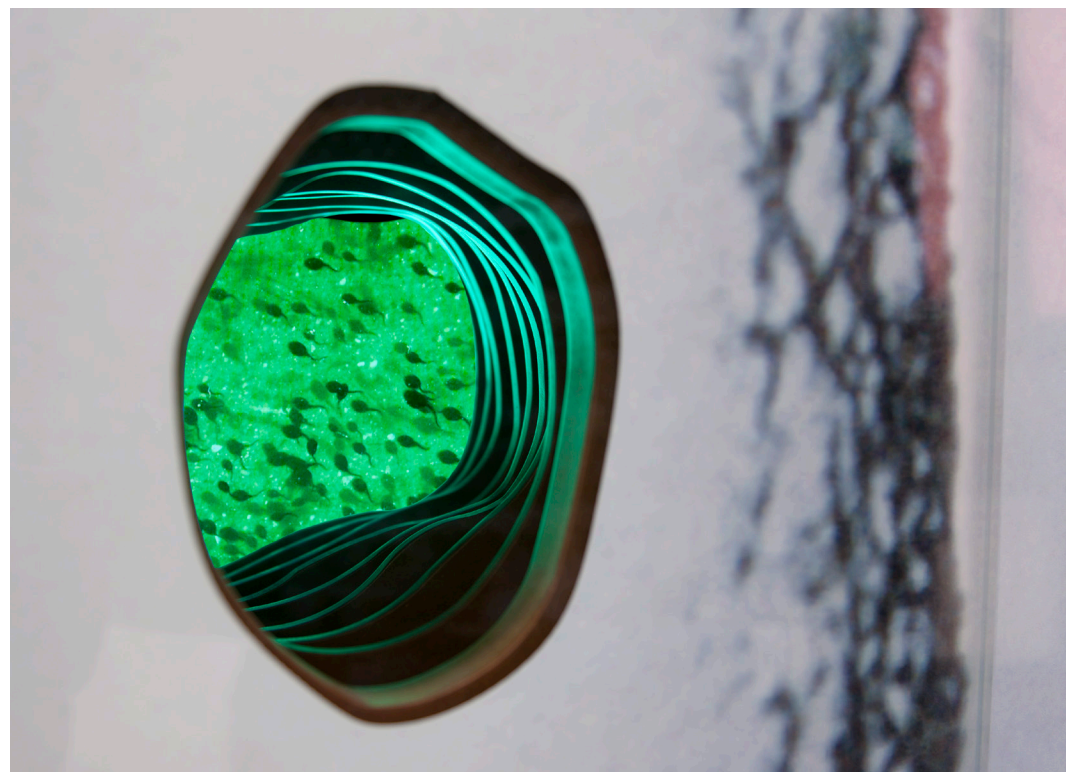
THE PENNSYLVANIA STATE UNIVERSITY
PELL LABORATORY FOR ADVANCED BIOLOGICAL STUDIES
University Park, Pennsylvania





THE PENNSYLVANIA STATE UNIVERSITY HERSHEY MEDICAL CENTER
CHILDREN'S HOSPITAL
Hershey, Pennsylvania





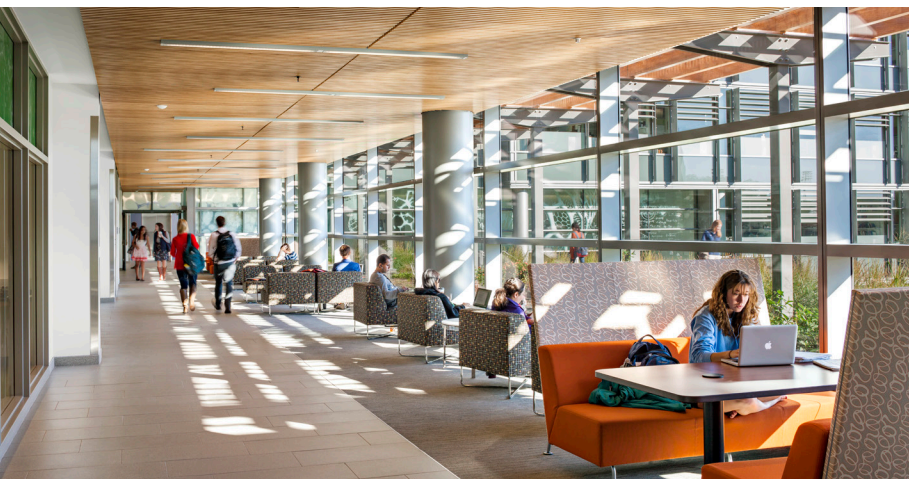
UNIVERSITY OF RHODE ISLAND
COLLEGE OF PHARMACY
Kingston, Rhode Island





GEORGETOWN UNIVERSITY
REGENTS HALL SCIENCE CENTER
Washington, DC





CONNECTICUT COLLEGE
NEW LONDON HALL LIFE SCIENCE BUILDING
New London, Connecticut

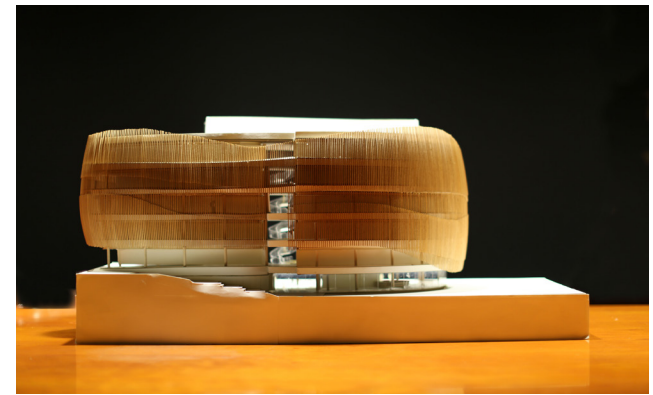




ON THE BOARDS



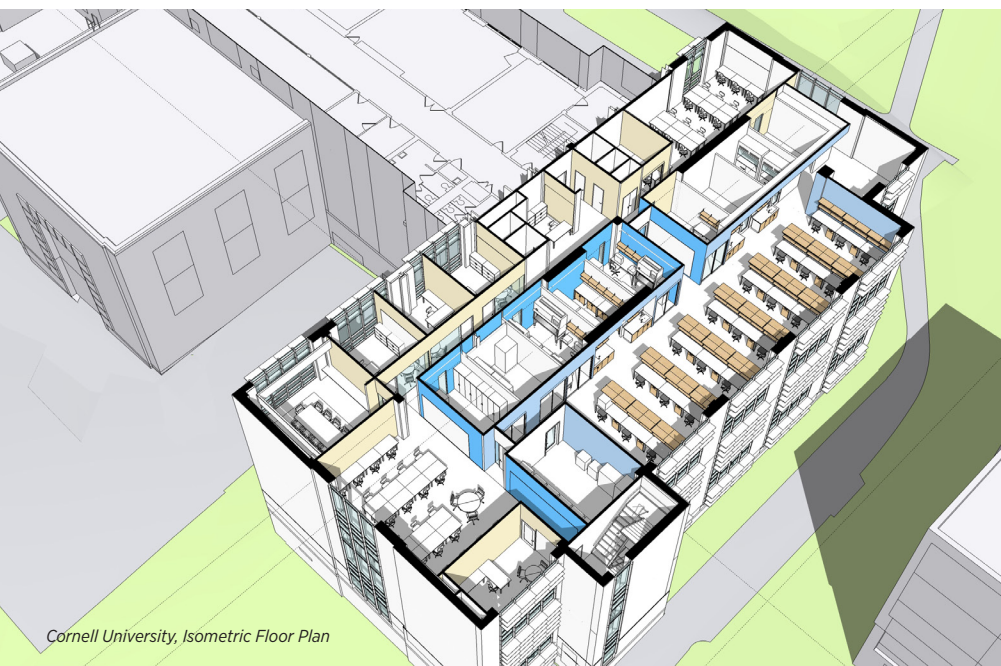
Northeastern University



Northeastern University, Model Photo



George Washington University, School of Public Health
Sketch-up Study of an Atrium



Cornell University, Isometric Floor Plan



Sectional Look at a Science Center



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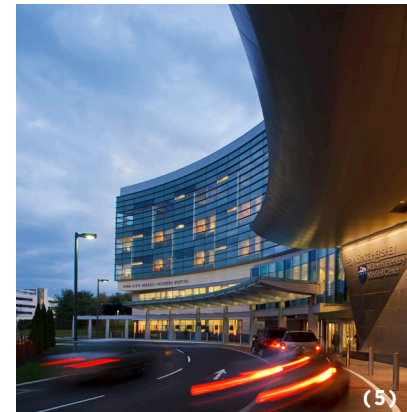
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(3)



(4)



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RECENT FIRM NEWS

George E. Marsh Jr., Principal, has been elected to the **College of Fellows of the American Institute of Architects**. George was recognized under the Practice category for his work leading design, planning, programming and management of projects nationally and internationally.

The New London Hall Life Sciences Building at Connecticut College has achieved **LEED Gold Certification** for its extensive renovation and adaptation strategies, including the building's geothermal system which meets 100% of the building's heating and cooling load.

Georgetown University's Regents Hall Science Center earned **LEED Gold Certification**. In addition to implementing a variety of sustainable strategies, the University furthered its commitment to energy savings by integrating interactive kiosks throughout the building which demonstrate energy efficiencies.

Payette contributed 20 projects to the **cultureNOW** database, including podcasts detailing each project.

CONFERENCES & LECTURES

Jeffrey R. Zynda presented "How the "Biocontainment Factor" is Changing Capital Project Processes and Outcomes" at **Tradeline: Biocontainment Facilities**.

James H. Collins, Jr. and Andrea Love presented "The Sustainability Advantage for Facility Design, Infrastructure and Operations Costs" at **Tradeline: Research Facilities**.

Jeffrey R. Zynda presented "Waste Not: How the Paradigm Shift in Cagewash Equipment Can Significantly Reduce Energy Consumption and Reduce Operating Costs" at the **12th FELASA and 12 SECAL Conference**.

At **ArchitectureBoston Expo (ABX)** ten Payette staff members will present six different topics touching on a wide-range of subjects such as natural ventilation strategies, the role of emerging professionals, healthcare in Haiti and the integration of Revit with 3D renderings.

Full articles at payette.com/blog

RECENT AWARDS

Pennsylvania State University (4)
PELL LABORATORY FOR ADVANCED BIOLOGICAL STUDIES
AIA / New England, Honor Award

Penn State Hershey (5)
CHILDREN'S HOSPITAL
Modern Healthcare, Award of Excellence

Detroit's TechTown (3)
THE NEXUS
Architizer A+, Jury Winner
Architecture +Economic Crisis (Unbuilt)

Harvard University
SHERMAN FAIRCHILD RENOVATION
USGBC/MA Chapter
Special Recognition for Stellar Energy Performance in a Lab Building
R & D Magazine
Renovated Lab of the Year, Special Mention

Connecticut College (1)
NEW LONDON HALL LIFE SCIENCE BUILDING
Boston Society of Architects
Higher Education Award

Brigham and Women's Hospital (2)
ADVANCED MULTIMODALITY IMAGE
GUIDED OPERATING SUITE
AIA National Healthcare
Innovations in Planning and Design
Research, Built and Unbuilt

Complete list at payette.com/awards

NEW COMMISSIONS

ARIAD Pharmaceuticals
Boston Children's Hospital
Boston University
Columbia University
Cornell University
Drexel University
Harvard University
Massachusetts Institute of Technology
National Coast Guard Museum
Tufts University
University of Alabama at Birmingham
University of Kentucky
University of Texas, Austin

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