

# CITY LABS

A COLLECTIVE FOR  
ARCHITECTURE AND  
DESIGN INNOVATION

SPRING 2026

**Spitzer** The Bernard & Anne Spitzer  
School of Architecture

The City College  
of New York **CUNY**



# CITY LABS AT THE SPITZER SCHOOL OF ARCHITECTURE



**Educating Innovative Leaders**



**Building a Sustainable, High-Tech Future**



**Expanding City Labs' Interdisciplinary Spaces**

# EDUCATING INNOVATIVE LEADERS

## Spitzer School of Architecture

- New York City's flagship public school of architecture
- 500+ students (65% receive financial aid)
- Over 40% first-generation college students
- Committed to providing cutting-edge, affordable education in upper Manhattan
- Facilities include a fabrication lab, model shop, solar roof pod, urban farm, robotics and research labs, studios, and architectural library
- Located in the vibrant community of Harlem

## City Labs

- Connecting digital fabrication labs and maker spaces at City College
- Using technology to support prototyping and manufacturing for research and education
- Supporting hands-on learning within an interdisciplinary framework
- Preparing students for contemporary practice in architecture and design (robotic applications, artificial intelligence, and design thinking)
- Part of Urban AI Research Consortium



# EDUCATING INNOVATIVE LEADERS



## Student outcomes

- Preparation for innovative leadership roles in the exciting realm of robotics in architecture
- Competitive edge in robotics, architecture, and related fields
- Interdisciplinary experience that leads to job possibilities in a broader range of careers
- Expanded opportunities for research and portfolio building
- Readiness for the architecture jobs of the future, with a focus on innovation, design, and experimentation

# SUSTAINABLE TECHNOLOGY-ENABLED INTERDISCIPLINARY

## LAB LEADERS



**AHU AYDOGAN, PhD**  
Associate Professor  
Living Systems Lab



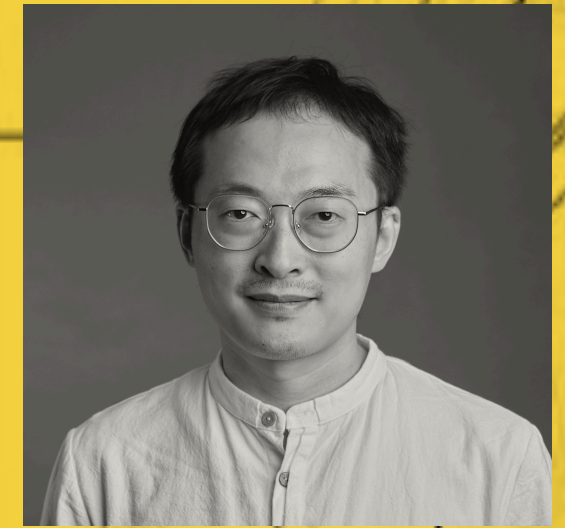
**DAMON BOLHASSANI, PhD**  
Assistant Professor  
Advanced Building  
Construction Lab



**GORDON A. GEBERT**  
Professor  
Robotics Lab



**FRANK MELENDEZ**  
Associate Professor  
Robotics Lab



**ZIHAO ZHANG, PhD**  
Assistant Professor  
Director, MLA Program  
Living Systems Lab

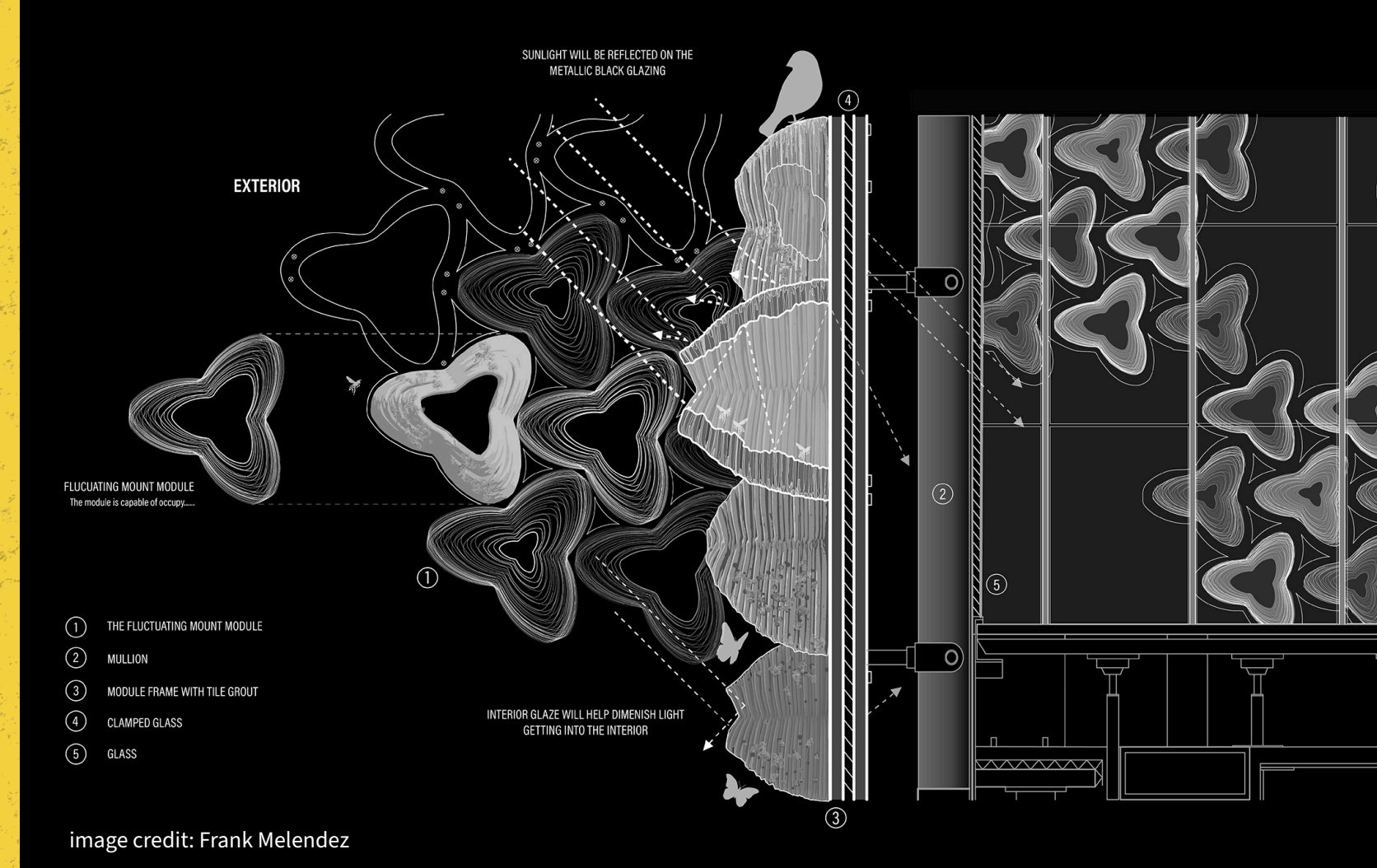
# DESIGNING A SUSTAINABLE FUTURE

## City Labs' goals

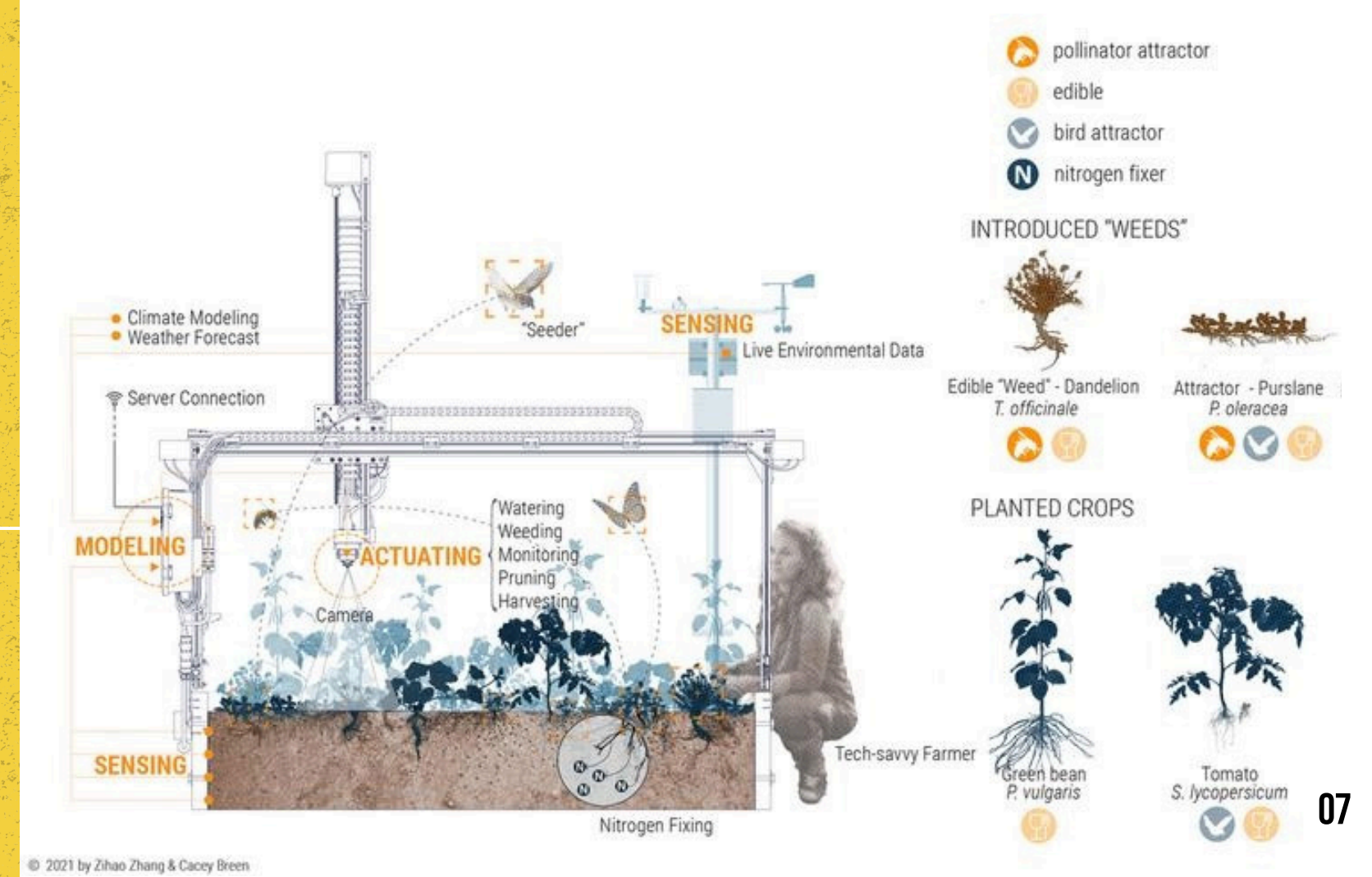
- Advance the frontiers of architecture and urbanism through cutting-edge research in adaptive construction, living systems, and responsive technologies
- Create equitable, sustainable, and community-centered solutions by integrating robotics, environmental sensing, and digital design
- Foster innovation and education at the intersection of design, technology, and social impact



- Adaptive construction
- Living and responsive systems
- Material innovation and assembly
- Human-robot collaboration and digital craftsmanship
- Parametric design and fabrication
- Citizen sensing and data analytics
- Artificial intelligence for design



# AREAS OF RESEARCH



# A HARLEM HUB FOR INNOVATION



## Sustainable design research

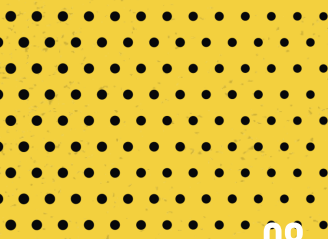
Address climate change through innovative construction practices and reduction of carbon footprints

## Cross-disciplinary collaboration

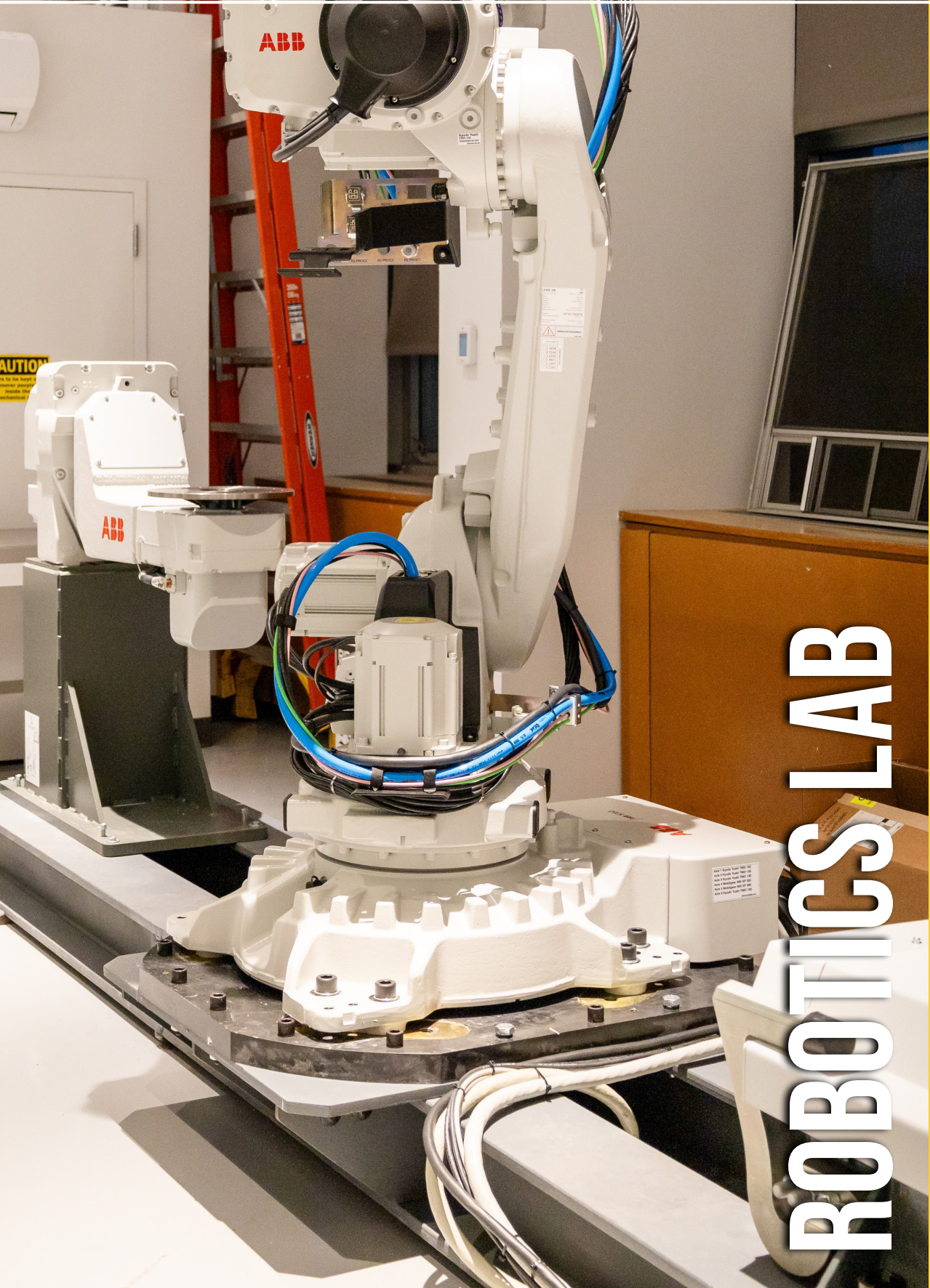
Partner with City College and City University of New York colleagues on groundbreaking projects

## Grant opportunities

Secure funding for impactful research in sustainability and beyond



# CITY LABS



ROBOTICS LAB



LIVING SYSTEMS LAB



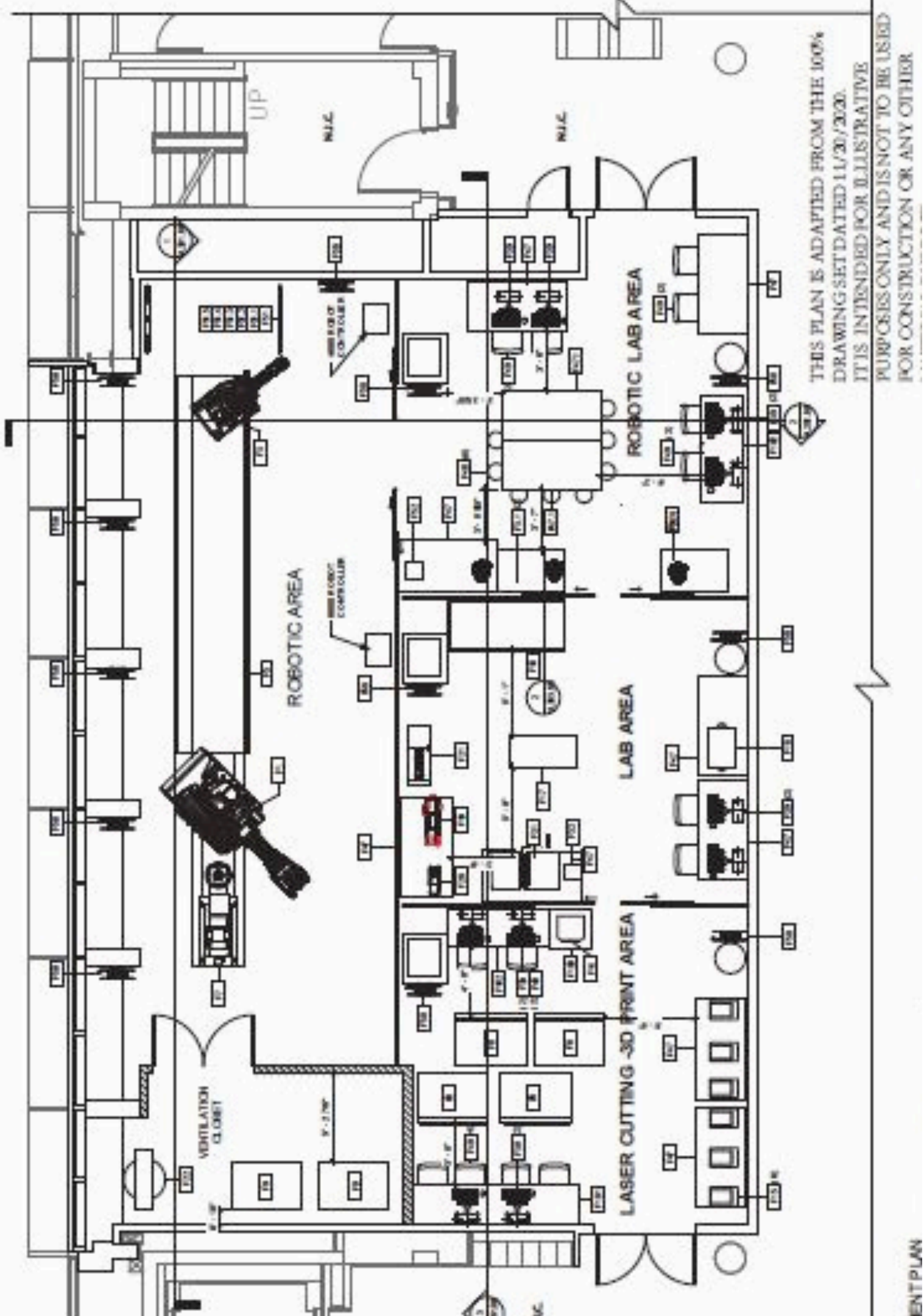
ADVANCED BUILDING  
CONSTRUCTION LAB

# ROBOTICS LAB

Room: SSA 212-213  
2130 sq ft.

The Robotics Lab helps students critically explore robotics and their potential to transform, and perhaps disrupt, modes of present and future design practice. The newly renovated and fully equipped lab—underwritten by CUNY and the Spitzer School—includes:

- A suite of three connected spaces, including a staging and preparation area with benches, tools, and workstations
- A fully equipped training and education space with four compact robots, two of which are fully collaborative
- A 16-foot-high 40' x 18' robotics research bay housing two large, high-capacity advanced robotic arms, one of which is track-mounted
- Supporting equipment, including mid-sized 3-D printers, spatial scanners, photo and video recording capabilities, electronics workstations and advanced computation equipment
- A variety of powerful tools for attachment to the robots, extending their capabilities for such tasks as extrusion, milling, gripping, and vision





# ROBOTICS LAB

## Our vision

A research and teaching facility bringing highly advanced robotic and automation facilities and capabilities to a variety of constituents and programs, including:

- Spitzer faculty and students
- City Labs projects and programs
- Professional and construction communities
- Local institutions and community organizations
- Programs such as conferences, symposiums, and STEM activities
- Continuing professional education and workforce training
- Dedicated personnel and operations budget

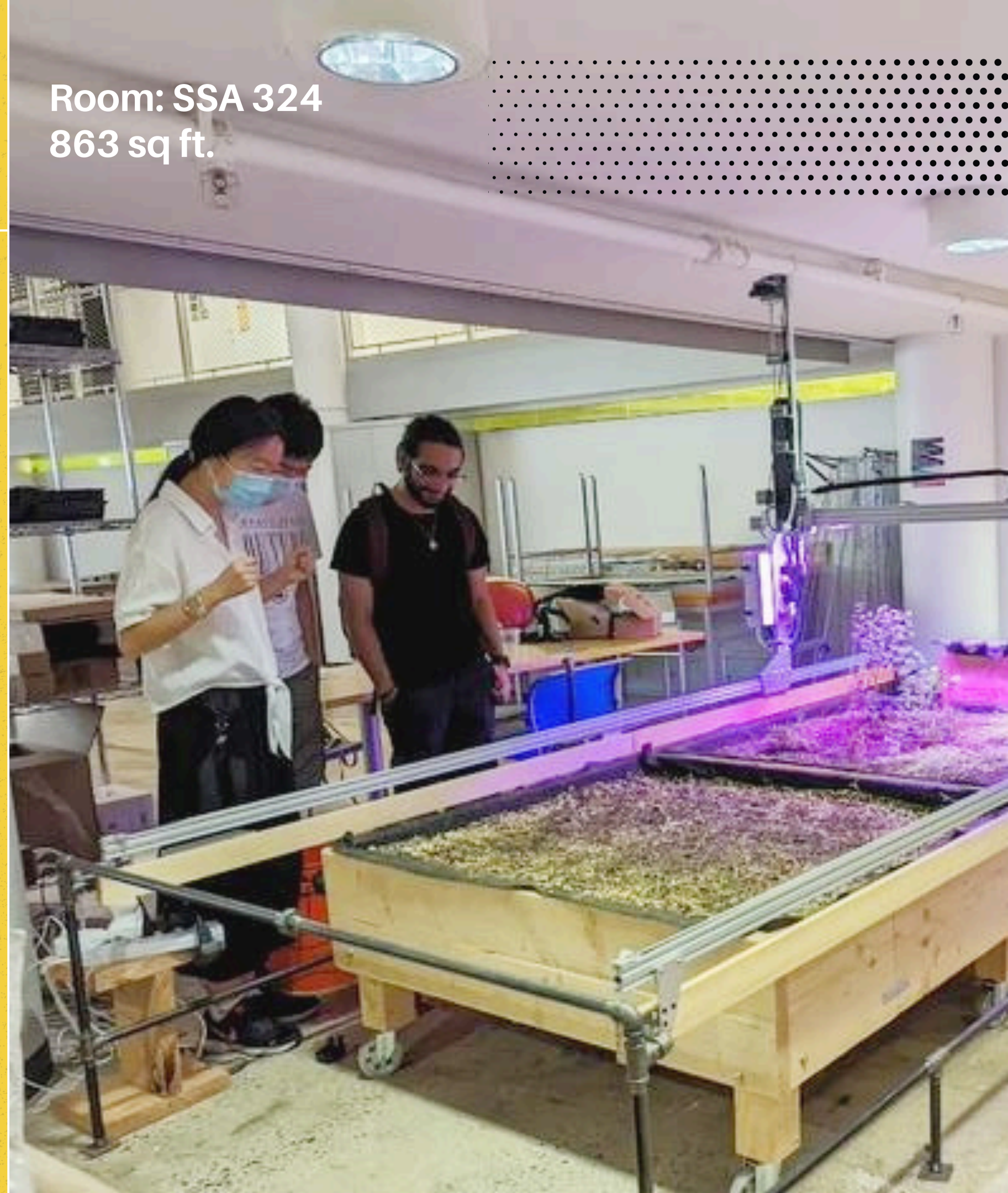
# LIVING SYSTEMS LAB

The Living Systems Lab hosts researchers who investigate co-creation and co-evolution in the natural and built environments. Bridging biological systems and design, the lab consists of two spaces, an urban farm on the Spitzer roof and a lab inside the architecture school which is in development. The following equipment is in use, helping to advance research in living systems:

- One air quality monitor (for CO<sub>2</sub> and H<sub>2</sub>O<sub>2</sub> testing)
- Vacuum forming machinery
- Temperature and humidity sensors
- Two Farmbots, one on the rooftop and one in the hallway
- Sensors and microcontrollers
- Kiln (upgrade anticipated)

Funding is needed to transform the lab, adding a wet lab, a testing center, and an appropriate ventilation system.

Room: SSA 324  
863 sq ft.



# LIVING SYSTEMS LAB

## Our vision

A fully equipped wet lab dedicated to lab-scale experiments in architectural and environmental sustainability:

- Sinks, testing lab, fume hood, and ventilation system
- Tools to study landscape systems, such as a hydrological simulation table and grow chambers
- Personnel and operations budget

SSA Roof garden  
4,925 sq. ft.





Room: SSA 004  
476 sq. ft.

# ADVANCED BUILDING CONSTRUCTION LAB

The ABC Lab offers Spitzer students access to knowledge and tools necessary for research in the field of building technology and materials science. The lab includes mixing, fabrication, testing equipment, and a small testing lab. An upgrade to testing equipment is needed in this lab.

# ADVANCED BUILDING CONSTRUCTION LAB



**SSA Transformer Shed**  
350 sq. ft.

## Our vision

A full-scale testing lab, located in the repurposed transformer sheds, decommissioned in the Spitzer back-of-house area. This lab will accommodate large-scale projects such as concrete 3-D printing, stone carving, and masonry construction. The renovation will include:

- New roof, interior upgrade, plumbing, electrical, and heat
- Shaded terrace for outdoor experiments
- Industrial robot with concrete 3-D printer

# BUDGET PER LAB

## Shared Across 3 Labs(Annual)

Lab Technician: \$100,000\*

Prof. AI in Cyber-physical Systems and Robotics: \$170,000\*

### Operating: \$90,000

Research Fellow \$70,000

Equipment, Tools, and Materials: \$10,000

Software: \$5,000

Outreach and Communications: \$5,000

## Robotics Lab

*\$5.6 million invested in renovation, equipment and software\**

### Operating: \$120,000

Personnel (Lab Associate): \$70,000

2 Teaching/Research Assistants: \$20,000

Equipment, Tools, and Materials: \$10,000

Specialized Software: \$15,000

Maintenance and Repair: \$5,000

*\*Funds secured from CUNY and CCNY by Spitzer Leadership.*

## Advanced Building Construction Lab

*\$105,000 invested in renovations and equipment\**

### Operating: \$120,000

Personnel (Lab Associate): \$70,000

2 Teaching/Research Assistants: \$20,000

Equipment, Tools, and Materials: \$10,000

Specialized Software: \$15,000

Maintenance and Repair: \$5,000

### Capital: \$865,000

Testing Equipment: \$200,000

Transformer Shed Renovation: 500,000

Industrial Robot: \$130,000

Concrete 3D Printer: \$35,000

## Living Systems Laboratory

*\$3 million invested in design, construction and equipment\**

### Operating: \$120,000

Personnel (Lab Associate): \$70,000

2 Teaching/Research Assistants: \$20,000

Equipment, Tools, and Materials: \$10,000

Specialized Software: \$15,000

Maintenance and Repair: \$5,000

### Capital: \$2,200,000

Specialized laboratory infrastructure, including exhaust ventilation systems, fume hoods, and related laboratory equipment.

# FUNDING REQUEST

## Capital Expenses (One-Time Investments)

ABC Lab Equipment and Expansion : \$865,000

Living Systems Wet Lab : \$2,200,000

**Total Capital Expenses: \$3,065,000**

## Endowment

**\$10,000,000**

4% return on endowment: \$400,000 to cover operating expenses.

## Operating Expenses (Annual)

Personnel : \$280,000

Equipment, Tools, & Materials: \$ 40,000

Software: \$50,000

Maintenance & Repair: \$15,000

Outreach & Communications: \$5,000

Unexpected Expenses: \$10,000

**Total Annual Operating Expenses: \$400,000**

# THANK YOU!

**City Labs: A collective for architecture and design innovation at the Spitzer School of Architecture**

**Educating Innovative Leaders  
Building a Sustainable, High-Tech Future**

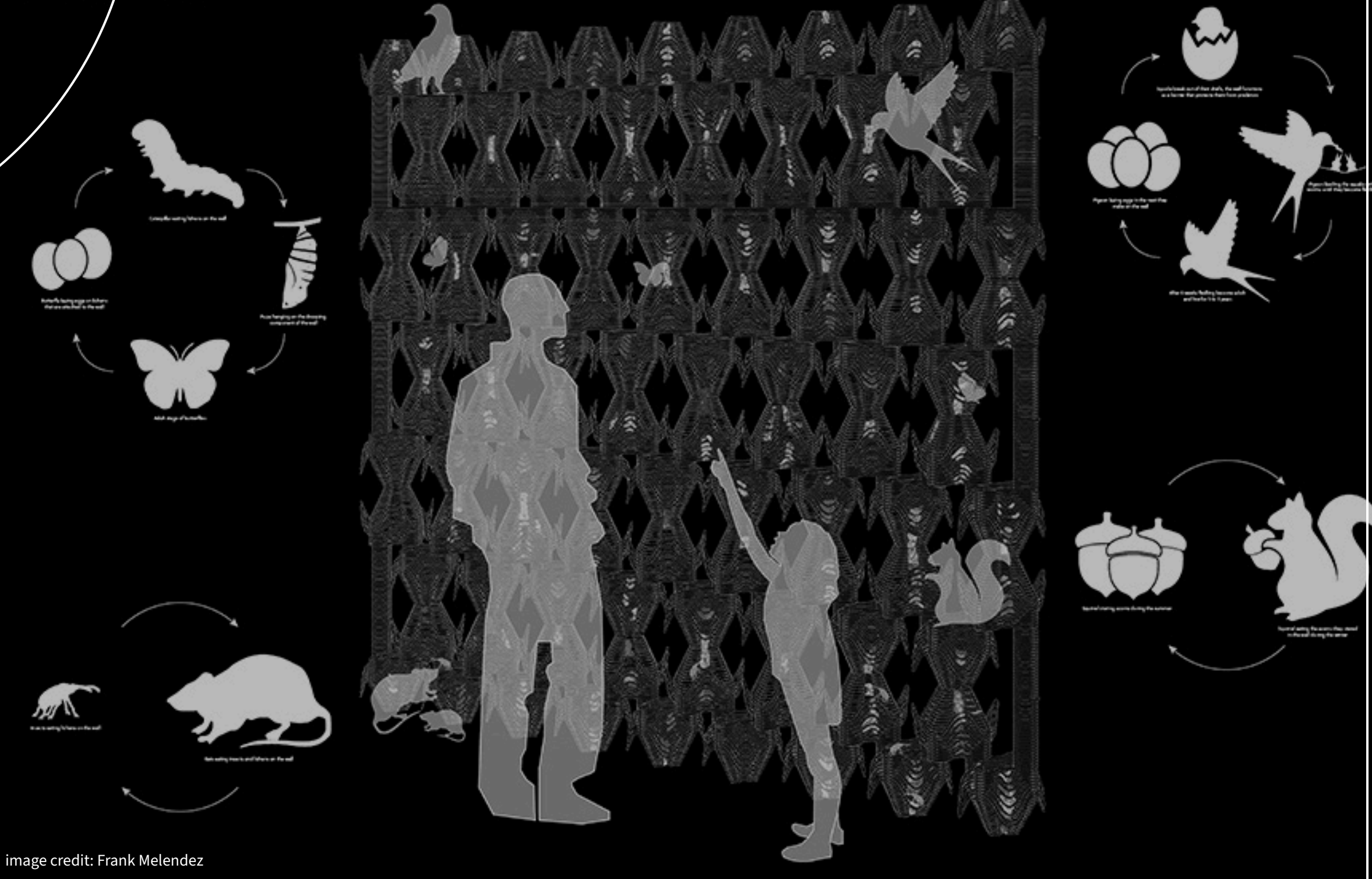


image credit: Frank Melendez

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