The 2025 SEFA Lab of the Year® - Emory University, Health Sciences Research Building – II - By Victor J. Cardona

The SEFA Laboratory of the Year Judging Panel has selected *Emory University Health Sciences Research Building -II (HSRB-II),* an inter-disciplinary, flexible, collaborative, translational research complex at Emory University, Atlanta, Georgia as the 2025 *SEFA Lab of the Year.®* This year's Judges were Geo Adam (F. Hoffmann-La Roche AG); Abbie Gregg (AM Tech Solutions); Diane Kase (SmithGroup); Alex Kogan (Rockefeller University); Stuart Lewis (Flad Architects) and Derek Westfall (Tradeline).

The SEFA Lab of the Year® is a global competition recognizing innovation in laboratory design and excellence in execution. SEFA welcomes submissions from architects, owners and builders of all types of laboratories, located anywhere throughout the world (https://www.sefalabs.com/sefa-lab-of-the-year).

This 358,357 gross square feet (33,292 gross square meters), six-story and plinth facility brings together 1,200 researchers from cardiology, vaccinology, neurology, oncology and pediatrics in an environment designed to spur collaboration and innovation. The building includes various platforms for diverse research needs, including several meeting places inside and outside the building.

> *"HSRB-II is in the vanguard of new biomedical research buildings, such as the Francis Crick Institute in London, creating a remarkable work environment, connectivity and synergy - open labs and workspaces with soft barriers - to facilitate discovery of the biology underlying human health." - David Stephens, MD, VP of Research, Woodruff Health Sciences Center, Emory University*

This building exemplifies how design can bridge the gap between functional inclusivity and aesthetic harmony. HOK, Atlanta, GA. was the architect and lab planner for the project.

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Goals and Vision
The primary goal of the HSRB-II is to nurture the rapidly growing interface between experimental, conceptual and clinical research. The vision for this new facility is to re-imagine medicine and translational research by connecting clinical and research assets, ultimately making Emory University a top destination for scientists and researchers.
The stated design objectives for the project were to:

- Create a hub for interdisciplinary collaboration,
- Enhance translational research by combining clinical activities,
- Expand opportunities for external scientific partnerships,
- Prioritize health and wellness, and
- Facilitate community engagement.

> *"HSRB II will facilitate our vision of re-imagining medicine - providing an innovative and collaborative environment that encourages us to tackle the most challenging problems in biomedical research and human health and providing the best chance of success." - Vikas P. Sukhatme, MD, ScD, (former) Dean, Emory University School of Medicine*

Design Process and Parti
The design process included a complex collaboration and coordination across various disciplines and parties, including the design team, equipment manufacturers, specialty consultants and researchers.

In order to create an environment that empowers scientists, the project was conceptualized as two, slightly bent, six story towers over a two-story plinth, housing various programmatic elements: a dry office tower, a wet laboratory tower, an interactive atrium, a two-story high-tech plinth housing core facilities, and a bridge connecting the new building to the existing HSRB-I.

> *"The design of the new facility puts an emphasis on strengthening social and research collaboration between the PI community and graduate staff, promoting and sharing of ideas and strategies to strengthen Emory's goal of global research impact." - Charlie Andrews, AVP, Planning, Design and Construction, Emory University*

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Building Elements

The chosen site is located at the edge of the Emory University Campus, adjacent to and with views of the Lullwater Preserve, a 154-acre wooded landscape area. Approximately 30% of the site is dedicated to green space, accessible to the building occupants and the campus at large. The dry tower houses principal investigator's workspaces, offices, computational labs, conference rooms and meeting areas. Adjacent to the Lullwater Preserve, it includes outdoor balconies overlooking the wooded areas.

Photo © Christopher Payne/Esto

The wet laboratory tower includes flexible-bench, open wet labs that are bisected by a ghost corridor which provides a pathway to lab utilities, people, materials and equipment movement. The four, five-module open laboratories house eight principal investigators per floor, with adjacent lab support spaces enhancing these environments. Adjacent to these open labs are bench-based/small equipment cores. Graduate student write-up areas are located adjacent to the open labs, with glass walls allowing natural light to filter from the atrium.

A six-story skylight atrium is located between the dry and wet towers, housing the main building circulation, collaborative lounges, breakrooms and kitchenettes. The atrium design features a dynamic shape inspired by the idea of scientists in motion. A 30 by 95-foot skylight crowns the space, with acoustic plaster used in the walls to improve sound attenuation. A five-story green, biophilia wall and open stairs complement this environment. The first floor houses a café and lounges that become the main social hub of the building.

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The two-story plinth houses “heavy” core facilities, including a vivarium, an animal bio-safety level three facility, a bio-safety level three lab, and high-end imaging equipment.

The Brumley Bridge connects the two Health Sciences Research Buildings, facilitating pedestrian, equipment and animal movement between buildings.

Programmatic Features
The first floor houses a combination of PI-based labs and incubator labs, including experimentalists and core facilities such as cell 3-D printing, and novel tech-labs. These *Labs2Launch* facilities include innovation zones pared with academic researchers and industry dedicated start-ups to foster scientific translation.

> *“I believe that the modern tools and extensive resources available through the Innovation Floor will accelerate the ability of start-up companies to transform laboratory discoveries into drugs that prevent, treat, and ultimately cure life-threatening diseases.” - Raymond F. Schinazi, PhD, DSc Professor, Department of Pediatrics, Laboratory of Biochemical Pharmacology, Emory University School of Medicine*

The laboratories are planned along a 10’-6” x 55’-0” universal lab planning module, aligned with structural, architectural and MEP (mechanical, electrical and plumbing) systems. The open labs are planned utilizing flexible, table-based modular casework with overhead service panels that provide lab services access. Strategically located electrical panels and shut-off valves enhance safety and adaptability. This modular lab design ensures long-term flexibility without structural modifications.

Bench-based and small equipment core laboratories are co-located with open labs on each floor. Among others, these include cellular imaging, flow cytometry, high-throughput screening, and a mass spectroscopy platform core.

Photo © Gary Gomez

The basement (G1) and sub-basement (G2) forms the core-rich plinth, housing some of the most sensitive scientific instrumentation in the State of Georgia. Site grading and solid rock topography influenced this area of the building geometry and structural planning. Proximity to the railroad tracks necessitated meticulous planning to mitigate vibration impacts, specifically for some of the highly sensitive equipment which required a highly stringent VC-D+ environmental vibration criterion.

The G1 level houses a small animal vivarium designed for both rodents and aquatics, a multi-species animal biosafety level lab (ABSL-3), a multi-pathogen flexible high-containment (BSL-3) lab, and clinical research facilities featuring advanced human and animal imaging modalities. The area includes public-facing, patient-based clinical functions and secure back-of-house operational flows.

In the lower and smaller G2 level we find state-of-the-art equipment including a PET Trace 880, 18 Me V, self-shielded Cyclotron, and small animal imaging modalities. To provide the essential services and delivery requirements, planning required extensive coordination between the design team and the equipment manufacturers.

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Building Systems
The architectural exterior of the building is contextual with the HSRB-I (phase 1) and the Italianate palette of the Emory University campus, including stone, glass and sloped red tile roofs that screen the rooftop mechanical equipment. Where not viewed from the outside perimeter, the exterior facades adopt a modern expression.

The interior architectural vocabulary is light and contemporary. Interpreting the traditional scientific poster, the interior design integrates digital displays, highlighting experimental and collaborative efforts throughout the building.

The HSRB-II structural design is based on an innovative structural system, one that matches the existing 14 feet floor-to-floor height of the HSRB-I, and utilizes a combined beam/girder and a two-way slab system that allows for a clear 10-foot ceiling height in the laboratories.

In the building, 75% of the programs are high-energy intensive, such as the wet laboratories, core facilities, vivarium and containment labs. The mechanical systems in the building are divided into distinct air systems:

- offices which use recirculated air and cascading outside air to minimize intake,
- laboratories that employ enthalpy wheels and high-performance ductwork to reduce energy, and
- vivarium and BSL-3 areas which include redundant air handling units (AHU) and exhaust fans with air valves and re-heat coils located outside the technical spaces to facilitate maintenance access.

The building's cooling is provided by a 2,000-ton chiller plant with centrifugal chillers. The exhaust systems are interconnected to the energy recovery systems. The HSRB-II achieves a 60% water savings over comparable projects. This includes a reduction of over 2 million gallons of water per year, with a 30% reduction of potable water.

Serving the building is a 2MV combined heat and power (CHP) microgrid. The building has achieved an impressive site energy use intensity (EUI) of 151 kBTU per square feet per year, a reduction surpassing most buildings of this type.

Sustainability and Wellness
The project has been awarded *LEED Gold and WELL certifications*, the latter a premier, evidence-based rating system developed by the International WELL Building Institute (IWBI) that focuses exclusively on enhancing human health and well-being throughout the built environment.

Additionally, it has won The International Institute for Sustainable Laboratories (I2S) *2025 Sustainable Laboratory Award for New Construction,* recognizing the project's laboratory innovation and exemplary achievements in lab sustainability, energy efficiency, de-carbonization, and waste reduction. This was made possible through an intensive parametric design approach that evaluated 86 strategies in 2,000 unique bundles, ultimately identifying optimal sustainable paths.

Photo © HOK

Some of the sustainable key features included:

- A blackwater reclamation system,
- Rainwater and condensate water re-use,
- Solar PV readiness,
- Bicycle storage and occupant showers,
- Core labs colocation to reduce outside make-up air volume,
- Optimized floor-to-floor heights and building enclosure, and
- Computational analysis determined attributes such as window to wall ratios, glazing, shading, and optimization of the mechanical systems.

In addition to the five-story living, green wall, the building design focused on community spaces that support scientific and human nourishment. Some of the wellness features incorporated in the building include:

- Interior natural materials such as stone and wood,
- A skylight atrium that brings natural daylight into offices and write-up areas,
- Glare control strategies that enhance visual and thermal comfort,
- Balconies and exterior gathering spaces for relaxation and comfort, and
- A café and communal social hub.

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Conclusion

Emory University's HSRB-II collects a wide range of research programs in a highly collaborative and interactive environment, with the building's concept housing them in a logical, highly functional, efficient and elegant manner. This is a building and team that truly deserves this highly coveted SEFA Lab of the Year Award.

Project Data

Building Area	358,357 gsf (33,292 gsm)
Assignable Area	210,000 nsf (19,509 nsm)
Building Efficiency	58.6%
Lab Area	161,083 nsf (14,955 nsm)
Percent of Lab Area	77% of total nsf
Lab to Lab Support ratio	1 to 0.95
Equivalent Linear feet/researcher (ELF)	14.33 feet
Area per PI	660 sf
Pi Team Composition	PI + 6

Project Team

Client	Emory University, Atlanta, GA
Architect, Lab Programming & Planning	HOK, Atlanta, GA
Lab Programming Consultant	Jacobs Laboratory Planning Group, Tarrytown, NY
Structural Engineering	HOK, Atlanta, GA
MEP Engineers	Vanderwell Engineers, Boston MA
Construction Manager	JE Dunn, Atlanta, GA

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About the author

Victor J. Cardona is a retired architect and laboratory designer based in Michigan and Florida. He served as a senior planner, vice-president, and Director of Laboratory Planning Group for SmithGroup. A past member of SEFA's Advisory Board, he has been a past judge in the LOY competition. He has published many laboratory-planning articles and presented these at national and international forums. His projects have been recognized by multiple entities, including four LOY projects. He now spends most of his time sailing on Lake Michigan.