The Research Institute at Nationwide Children’s Hospital
Research Building III

Columbus, Ohio
Translational Research for Children’s Health

The Research Institute at Nationwide Children’s Hospital is a national leader in applying scientific research to improve the health of children. Over the last decade, the institute has grown rapidly, tripling the number of employees and more than doubling its number of scientific publications. In order to expand their capabilities and address the complexities of today’s problems, the institute needed space that looks to the future of computational science and collaborative research.
In order to continue driving breakthroughs in scientific research that improves children’s health, particularly in the field of genomics, the Research Institute at Nationwide Children’s Hospital saw a need to integrate traditional laboratory research with computational science, statistical analysis and mathematics.

Research Building III evolves Nationwide Children’s existing open laboratory planning strategy into a “neighborhood” concept that makes group workspace integral to the lab environment. With multi-story collaborative zones connecting traditional “wet” labs to computational “dry” labs on adjacent floors, interdisciplinary research is easier than ever.

Top researchers understand the importance of collaboration and of laboratories that facilitate it. Immediately after Research Building III opened, it proved its value when the Research Institute was able to recruit faculty away from major East Coast research universities.

Creating well-designed, efficient day-lit spaces that allow colleagues to collaborate across departments not only leads to better interdisciplinary research—it helps attract top talent, too.
An Evolution in Lab Planning

NBBJ’s three-decade relationship with Nationwide Children’s Hospital has created a world-class biomedical research campus, now a top-10 NIH-funded research center. Beginning with the Wexner Institute for Pediatric Research in 1987, NBBJ’s three laboratory buildings each represent a significant evolution in lab planning, with each based on the prevailing research paradigm of the time.

The newest, Research Building III, employs a “neighborhood” concept, representing the latest innovative, collaborative paradigm of scientific inquiry. Located west of the main hospital across Parsons Avenue, it will anchor a future campus with expanded research capabilities.

NBBJ continues to push lab planning even further in Research Building IV. The firm is also designing an office building, ambulatory clinic and parking garage. Additional clinical, lab and support buildings are planned for the campus as well.

Wexner Institute
The Open Lab
1987 | 90,000 SF

At a time when research was a largely self-contained pursuit, the “open laboratory” at the Wexner Institute for Pediatric Research represented a revolution in lab planning. It consisted of discrete open-plan lab units, interspersed with support areas, arrayed around a core of offices.

Research Building II
The Core
2003 | 158,000 SF

Research Building II refined the laboratory plan with a “racetrack” of open labs surrounding support areas. This moved technicians’ desks beside laboratory benches for the first time and created a highly flexible environment, easy to reassign according to changing research needs. A central atrium gave the institute a public face for ceremonies and events, although it also located offices and conference rooms far from the laboratory.

Research Building III
The Neighborhood
2012 | 237,000 SF

Because scientific breakthroughs increasingly occur at the boundaries between disciplines, Research Building III advances a new type of collaborative laboratory workspace concept—the “neighborhood.” This design brings all labs, offices and support space in close proximity within each neighborhood suite, allowing researchers to interact across disciplines like never before.
Here Comes the Neighborhood

Nationwide Children’s already had a nationally-ranked pediatrics research program, but to maintain its competitive advantage—and to further the bench-to-bedside, translational research that makes a difference in children’s care—the research institute knew it had to make collaboration even more integral to its daily operations.

The “Neighborhood” concept for Research Building III places an unprecedented emphasis on collaboration and represents a significant evolution in lab planning. Here, three neighborhoods of lab benches—each housing four principal investigators, the ideal group size determined by the client—are surrounded by ancillary services: support areas, researchers’ offices, technicians’ desks, lounges and collaborative zones. Researchers and technicians are now in closer contact with each other and with their work than ever before, which helps spur new directions for research.

- Labs receive plentiful daylight through high windows and glass partitions.
- Glass partitions allow technicians to keep an eye on their research.
- By moving technicians’ desks out of the lab and into a lower-HVAC-load part of the building, energy consumption is reduced. They also get to enjoy coffee at their desks.
- Neighborhoods are linked to those on adjacent levels by double-height collaborative spaces, which prevent any one group from being isolated within the building.
- A central support spine allows service access and separates noisy equipment from the lab space.
Better Results Through Collaboration

The Battelle Center for Mathematical Medicine

More and more, research science is converging with computation, as many breakthroughs—particularly in fields such as genomics and population health—require vast amounts of data processing. That’s why the Battelle Center for Mathematical Medicine, a specialized department within the research institute, forms a crucial element of Nationwide Children’s research strategy.

The Battelle Center applies sophisticated modeling techniques to biosciences research, not only at the micro level of protein interactions or an individual patient’s gene sequence, but also at the macro level of how cell populations grow and multiply, or how epidemics spread through a community. It also develops its own data-mining, modeling and visualization tools.

Increasing interaction across departments was a major driver of the design of Research Building III. By combining the Battelle Center’s advanced tools with traditional laboratory investigation, the institute can address more complex problems and drive innovative bench-to-bedside research.
“With white boards and writeable walls and windows, you can stop in the hallway, get into a conversation and start solving equations on the glass next to you. If there’s a pen and a marker board somewhere nearby, someone will be writing with them.”

— VERONICA VIELAND
Vice President, Computational Research, The Research Institute at Nationwide Children’s Hospital
The Science of Facade Design

Glass and precast concrete were chosen for the Research Building III building envelope, to match the existing architecture of the Nationwide Children’s campus. Just as science relies on taxonomy and categorization, the architects designed a family of four window types—of varying transparency—and four concrete precast panel types—of varying surface treatments—to bring energy and variation to the facade. Then the interior conditions determined the placement of materials, unifying the exterior and interior systems.
Green as Gold

Designed entirely in three-dimensional computer models, the mechanical systems are expected to achieve energy savings as much as 30% over ASHRAE 2007 standards. These savings, so difficult to achieve in a research facility, are accomplished in part by heat exchangers that capture heat energy from exhaust air.

The building envelope also contributes to sustainability. A refined glass curtain wall faces north and east, toward the existing campus, in order to illuminate the interior with indirect natural light. To the south and west, insulated precast concrete panels enclose the building where solar exposure is greatest. In general, floor-to-floor glass aligns with the laboratories to bring in maximum daylight, while private offices have more suitably scaled windows. Together, these systems have earned the building a LEED Gold rating from the U.S. Green Building Council.
CLIENT
The Research Institute at Nationwide Children's Hospital

SIZE
237,000 SF

COMPLETION DATE
2013

CONSTRUCTION
$90 Million

COMPONENTS
Wet / dry labs, offices, seminar rooms, conference rooms, café

SERVICES
Programming, full architectural services, interior design

SUSTAINABILITY
LEED Gold

AWARDS
American Institute of Architects, Ohio Chapter, 2013 Honor Award
ABOUT NBBJ

NBBJ creates innovative places and experiences for organizations worldwide, and designs environments, communities and buildings that enhance people’s lives. Founded in 1943, NBBJ is an industry leader in healthcare and corporate facilities and has a strong presence in the commercial, civic, science, education and sports markets. The firm has won numerous awards and has been recognized as one of the world’s “Top Ten Most Innovative Architecture Firms” by Fast Company magazine.

NBBJ has more than 750 employees in ten offices worldwide, including Beijing, Boston, Columbus, London, Los Angeles, New York, Pune, San Francisco, Seattle and Shanghai. Clients include Alibaba, Amazon, the Bill & Melinda Gates Foundation, Boeing, Cambridge University, Cleveland Clinic, GlaxoSmithKline, Google, Massachusetts General Hospital, Microsoft, Reebok, Salk Institute, Samsung, Stanford University, Starbucks, Telenor, Tencent and the Wellcome Trust.