



Sciences Will Merge in New ARB

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By Steve Koppes

The largest science building in the history of the University will nurture research at the tiniest of scales.

The Advanced Research Building, formerly known as the Interdivisional Research Building, will encompass 420,000 square feet on East 57th Street and Drexel Avenue. But much of the research conducted in the new building will occur at the nanoscale, the scale of atoms and molecules.

Robert Zimmer, Vice President for Research and Argonne National Laboratory, said "This is working at a scale where physics, chemistry and biology all merge, where problems have large overlap. The subjects don't divide so easily when you get down to that scale."

Complementing the University's research in the new building will be Argonne's nanoscience capabilities. Argonne is the home of the Advanced Photon Source, the world's most powerful source of X-rays. Scientists from around the world use the APS to probe the microstructure of solid materials.

Even as demolition and excavation on the ARB site begins this spring, Zimmer foresees new collaborations unfolding between scientists at the University and Argonne National Laboratory. The University operates Argonne for the U.S. Department of Energy.

"The capacity not just to understand what's happening on the nanoscale, but to fabricate at the nanoscale seems to offer vast potential for technological innovation," Zimmer said.

Gov. George Ryan, in his 2002 budget proposal, asked the Illinois Legislature to allocate \$40 million for the ARB, and an additional \$45 million for Argonne projects. The Argonne funding includes \$10 million toward a proposed Nanotechnology Institute, which could receive further support from the state and from the Department of Energy.

"Both of these things together are components of positioning the region to be a real leader in nanoscience and technology," Zimmer said of the research at both the ARB and the Nanotechnology Institute.

With a price tag of approximately \$180 million, the building will be the most



The Interdivisional Research Building, which will bring together University scientists from the Biological Sciences and the Physical Sciences to conduct collaborative research, also will bring together faculty researchers in an atrium, like the one in this artist's rendering of the building's interior.

expensive in the University's history, partly because of its sheer size. "It's an unusually large building," Zimmer said. "It's as if we were building two or three buildings at once."

The building will provide offices and laboratories for approximately 100 faculty members when it opens in 2004. The ARB will house the Institute for Biophysical Dynamics as well as the Materials Research Science and Engineering Center, both of which include scientists from the Biological and Physical Sciences divisions. Also relocating into the ARB from the Physical Sciences are faculty members in the James Franck Institute and the Chemistry Department. From the Biological Sciences will come the Department of Biochemistry & Molecular Biology, the Howard Hughes Medical Institute investigators and faculty researchers in the Ben May Cancer Research Institute.

This combination of biological and physical scientists working together under one roof is perhaps the most remarkable aspect of the building, said Donald Levy, the Albert Michelson Distinguished Service Professor in Chemistry.

"Traditionally, that never happened anywhere. Now it is an idea whose time has come," Levy said. "Everybody is building a building that will have biological and physical scientists together, but ours will be a more major undertaking, which will involve a larger group of scientists and more laboratory space, than any other similar project."

No one can yet say what scientific discoveries University scientists will make in the new building, but those who came before them developed carbon-14 dating; executed the first controlled, self-sustaining nuclear chain reaction; laid the mathematical foundations of the genetic evolution; and proved that chromosomal defects can lead to cancer.

One certainty, said Steven Sibener, Professor in Chemistry and Director of the Materials Research Science and Engineering Center, is the need for the building's strict controls on cleanliness, temperature, sound and other environmental factors that are necessary to do cutting-edge experimental science in the 21st century.

"I'd like to know that the first atomically resolved image of some protein doing a biological function in real time or the mechanistic details of a surface chemical reaction are clearly seen here rather than getting a fuzzy hint of what's occurring; a properly designed state-of-the-art building should enable this," Sibener said.

He will be among the physical scientists relocating to the ARB from the Research Institutes.

"The science we do on campus is going to be profoundly influenced by the new building," Sibener said. "It's not just going to be new digs. It's going to change what we do in just a very few years, and it's going to be for the better."

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