

Campaign will preserve research tradition

The benefits are so clear, there's no doubt what needs to happen next.

More—and soon.

That's where the *Legacies: A Vision of Hope* campaign comes in.

It is a universal given in the sciences at Hope that students are best served by research-based instruction. That is, they not only learn about science, they do it.

"I think undergraduate research has been shown to be vital for students at helping them understand the complexities of the physical and natural world," said Dr. James M. Gentile, who is dean for the natural sciences and the Kenneth G. Herrick Professor of Biology at Hope. "It takes what they have been exposed to in lectures and takes what they have experienced in controlled teaching laboratories, and applies that to some real problems in an area of study in which they're interested."

"But even more than that, I think what it does is allow a faculty member and student to play different roles with one another," he said. "The faculty member isn't standing up expounding on her knowledge. The student isn't sitting down being a sponge absorbing all of this. But rather, they're partners in a dynamic learning process where neither of them knows the answer and they have to work together to develop the approach to gather the information and then to interpret it to ultimately find that answer."

The approach has been emphasized at Hope for decades, especially intensely since the 1960s. Correspondingly, Hope faculty have been significant contributors to scientific knowledge, by measures such as publication, and Hope graduates have been well prepared for science-related careers. For example, according to a study of 914 institutions released by Franklin and Marshall College, Hope ranked in the top four percent in the nation in producing future Ph.D. holders in the sciences between 1920 and 1990. A report from the National Science Foundation placed Hope in the top

25 nationally among baccalaureate colleges as a source of future Ph.D. recipients in the natural, physical and social sciences, and engineering between 1991 and 1995.

Accordingly, the college has built a national reputation for excellence in science instruction. Project Kaleidoscope of Washington, D.C., recognized Hope's program in the sciences and mathematics as a "Program That Works"—a model for other institutions to consider. In 1998, Hope was one of only 10 liberal arts institutions nationwide recognized by the NSF with an "Award for the Integration of Research and Education" for innovation and excellence in science instruction.

There is an old adage, however, to the effect that if one is not moving ahead, one is falling behind, and that is a very real concern at Hope. Peale Science Center, home to several departments, is some three decades old. The building, according to Dr. Gentile, has worn out physically as well as pedagogically.

He believes that the new science building and the Peale renovation sought through *Legacies: A Vision of Hope* are crucial if Hope is to remain at the forefront.

"Peale Science design-wise was years ahead of its time," he said. "Other designs have caught up. Other buildings have better engines. The newer buildings are better buildings because they've incorporated the concepts and designs that were initiated in Peale into a modern infrastructure."

"The new science complex is going to take it one step farther, and I think quite honestly will leapfrog us once again into the leadership role," Dr. Gentile said.

The degree of emphasis varies, but commitment to research-based learning at Hope runs back about a century.

Biologist Dr. Samuel O. Mast designed his department's space in Van Raalte Hall, dedicated in 1903, with faculty research in mind. In a presentation before the joint session of the Biological section of the Michigan School Masters' Club and the Michigan Academy of Sciences at Ann Arbor, he noted, "We have planned a private laboratory, 9x12 feet—rather small, but better than none... Every instructor



An architect's rendering of a chemistry lab in the new science building. Such spaces are being designed with not only current needs but also future directions in mind, and should serve well in helping preserve Hope's strong tradition of active, research-based learning in the sciences.

should do some special work."

In his *A Brief History of Science at Hope College*, Dr. Irwin Brink '52, professor emeritus of chemistry, wrote, "A legitimate claim can be made on Professor Mast's behalf to the effect that he was Hope's first teacher scholar scientist, a bona fide research scientist who drew students into his research."

Dr. Mast's talents weren't limited to forward-thinking science instruction. While on the Hope faculty from 1899 to 1908, he also taught physical education and designed Voorhees Hall.

Dr. Gerrit Van Zyl '18, who taught chemistry from 1923 to 1964, is widely recognized for developing research-based learning at Hope in its modern sense, having involved many students in his active research program. His research focus was complemented by particular excellence in the classroom by colleague Dr. J. Harvey Kleinheksel '22, who taught at Hope from 1928 to 1965.

The research-based approach became more broadly institutionalized during the 1963-70 presidency of Dr. Calvin VanderWerf '37, who was a chemist. "And I think President Gordon Van Wylen, President John Jacobson and President Bultman have all been strongly committed to not only sustaining this environment but building it even further," Dr. Gentile said.

Beyond the fact that Peale is well worn, and beyond the fact that the student body has grown by some 50 percent since Peale was built, new approaches to science in general are driving the new building, according to Dr. Gentile.

His perspective is echoed in the book *Academic Excellence: The role of research in the physical sciences at undergraduate institutions*, edited by former Hope chemist Dr. Michael P. Doyle, now vice president of Research Corporation. The book includes chapters by Dr. Douglas C. Neckers '60, who emphasized research-learning while teaching chemistry at Hope from 1964 to 1971. Dr. Neckers, who is director of the Center for Photochemical Sciences at Bowling Green State University, noted, "My prediction is that the undergraduate institution that takes unusual but creative real-world steps in

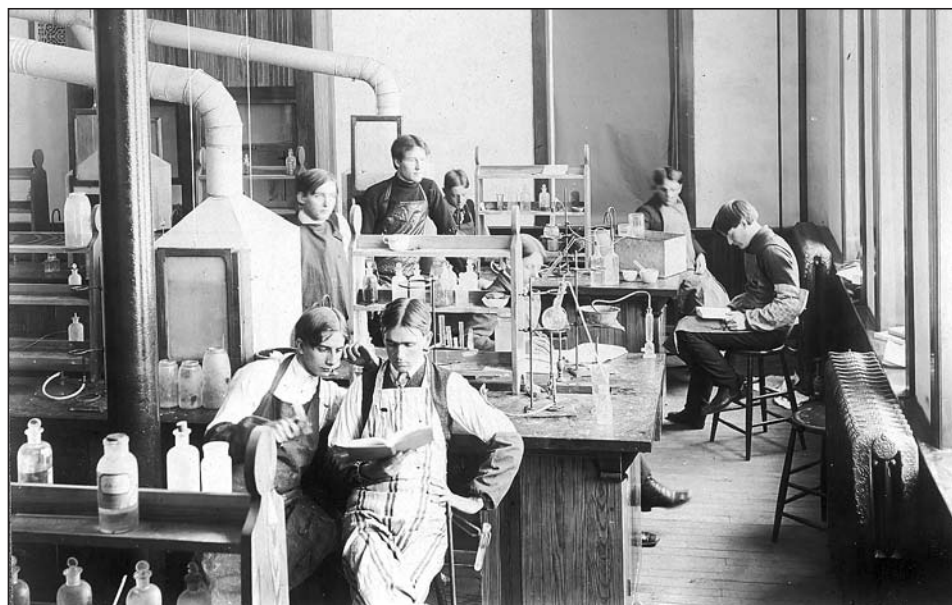
developing cross-disciplinary, team-based research activities will take one giant leap over the competition in developing the undergraduate research paradigms of the 21st century."

Biochemistry, nuclear physics—the boundaries between disciplines have blurred in the past 30 years. Biology, chemistry, the geological sciences and psychology will all remain in the new complex. They will be joined by nursing, and physics and engineering won't be far away—just over in neighboring VanderWerf Hall.

According to Dr. Gentile, the new building's design anticipates not only the way the disciplines inter-relate now, but that they will no doubt inter-relate in new ways in the future. The result, he noted, will be an educational experience worthy of the heritage that has preceded it.

"In our new spaces we're going to be far more interdisciplinary and we're going to cut across boundary lines that were sort of artificially drawn over the last century in science," he said. "We're going to focus on science, and we're going to focus less on disciplines."

"Our building will reflect that, and will allow our teaching to reflect that. And our research already reflects that," Dr. Gentile said. "And that's what's going to put us ahead of the pack." ✍



Research and learning have been linked for nearly a century at Hope. (Photo from the Hope College Collection of the Joint Archives of Holland)

LEGACIES

A VISION  OF HOPE

Legacies: A Vision of Hope is an \$85 million fund-raising effort that has three primary components: renovating and expanding the science center, increasing the endowment, and addressing short-term and long-term facility and space needs.

Thus far, the campaign has raised \$62 million.

For more information about the campaign, please visit the college on-line at www.hope.edu or call (616) 395-7783.