

# The New PIBS Program:

Offering “a Broad Slice of the Science That’s Out There” for Ph.D. Students Heading for Careers in Biomedical Research

by John Barton



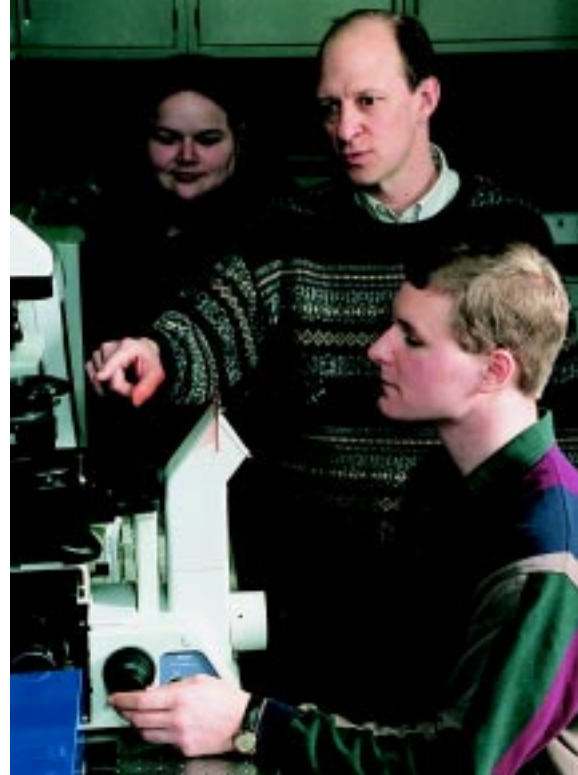
Diane Robins (left), professor of human genetics, with graduate student Ivelisse Gonzalez from the interdepartmental Ph.D. program in cellular and molecular biology

Exciting discoveries are going to be made in the biomedical sciences during the twenty-first century, and the University of Michigan Medical School plans to provide many of the scientists who will make them. Educating these future scientists has become an important mission for the U-M, which is carefully monitoring the first class of Ph.D. candidates admitted to the Medical School under the highly collaborative Program in Biomedical Sciences, or PIBS.

The first wave of PIBS recruits arrived in Ann Arbor last fall, a hand-picked contingent of more than 60 graduate students seeking doctoral degrees in 11 programs involving nearly 30 specific research areas under the guidance and supervision of 270 faculty mentors.

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Courses of study are tailored to the needs of each student, explains David Engelke, Ph.D., a professor of biological chemistry who is the PIBS program director. “There is no one-size-fits-all curriculum,” he says. “We hope to show them a broad slice of the science that’s out there, while allowing them to specialize as soon as they’re ready.”



The 11 PIBS-sponsored Ph.D. programs include:

- Biological Chemistry
- Biophysics
- Cell and Developmental Biology
- Cellular and Molecular Biology
- Human Genetics
- Immunology
- Microbiology and Immunology
- Neurosciences
- Pathology
- Pharmacology
- Physiology

The notion of combining recruiting, admission and mentoring aspects of doctoral studies in science isn’t exactly new for the Medical School, Engelke says. Discussions actually began back in the early 1990s, but it took several years of negotiations among faculty and students to smooth out the details and establish the courses of study that eventually evolved into PIBS.

“We began by discussing the need for a common gateway for students interested in biomedical science graduate study,” he says. “That work culminated in what is now known as the Program in Biomedical Science and resulted in the first group of incoming students.”

Engelke is assisted in the overall supervision of PIBS by Associate Director Sally A. Camper, Ph.D., an associate professor in human genetics and internal medicine who is also an associate research scientist in the Reproductive Sciences Program. Assistant Director Mary Chizek and her

At left, students Clarise Rivera and Greg DeLassus with PIBS mentor Joel Swanson; below, Associate Director Sally Camper in one of the many laboratories available to PIBS students; at right, David Engelke.



In putting together the first PIBS class, initial recruiting efforts generated 508 applications that resulted in 150 scholarship offers. “We thought we’d get about 33 percent of them,” Engelke recalls. “We ended up with 42 percent, or 66 students instead of 50. It was a very pleasant surprise.”

To compete on a national scale, the U-M as well as its peer institutions offer full financial support, including a stipend for living expenses, for as long as the students are involved in the program. Goldstein says it typically takes five years to earn a Ph.D.

Just as U-M football coach Lloyd Carr and his staff will cross state and international boundaries in the search for the best available players, PIBS recruiters are indefatigable in bringing the brightest scientists to Michigan. “It takes a national advertising effort,” Engelke says. “We have people

staff handle administrative matters and provide daily assistance to students in offices that are already overflowing with applications for the next PIBS class.

Steven Goldstein, M.D., interim associate dean for research and graduate studies and Henry Ruppenthal Family Professor of Orthopaedic Surgery and Bioengineering, who is also a senior research scientist with the Institute of Gerontology, is pleased with the way PIBS has managed to attract highly qualified students while competing directly with similar programs at peer universities. “There is an outstanding pool of candidates out there,” he says. “But we’re in competition with Harvard, Washington University, Princeton and Berkeley, as well as Wisconsin, Yale and the University of Pennsylvania.

“Recruiting is a challenge because there’s a perception that the best work is done on the east and west coasts. Once we get students to visit Michigan, we get a high percentage of them. Our strengths are in the size, diversity and quality of the academic programs. The amount of truly outstanding science that is being done here is another strength, and so is the potential to interact with so many scientists in so many disciplines.”

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travelling to colleges and speaking to undergrads in the sciences. With PIBS, we can make the U-M more visible in more places without requiring a separate effort from each program. We also send students, staff and faculty to recruit at seminars. We encourage faculty to talk about the program when they are on the road, and we’ve given them posters to share with friends at other campuses and their alma maters.”

While each of the successful PIBS applicants plans to seek a career in biomedical science, some students begin their first year with more clearly defined goals than others. “People don’t always realize it, but this is one of the largest research institutions in the country,” Engelke says. “Some of the students know exactly what they are looking for, and those are the people we connect with the experts in their areas of interest and then get out of their way.

“Other students are less certain about a specific path, and PIBS is set up to offer broad exposure to many areas and potential mentors. There are classes, research rotations and symposia within the Ph.D. programs. We want to give them a wide exposure to science and allow them to get excited about things they’ve never seen before. After that, they can declare their area of interest and focus there. Or, they may continue through additional rotations. It’s all collaborative,” he says. “We want to produce students who think more broadly. We want to establish a network across disciplines where knowledge and experience can be shared.”

Above all, PIBS candidates are expected to help make major contributions to the overall research efforts of the Medical School. “The role these students play is absolutely vital because they represent the future. As sharp, inquisitive beginners, they continually refresh the research process,” says Joel Swanson, who along with his wife, Michele, came to the U-M three and a half years ago from Harvard and Tufts, respectively. As faculty in the Department of Microbiology and Immunology, both are sharing their knowledge and laboratories as PIBS mentors.

Goldstein is optimistic about the chances of successful Ph.D. candidates finding challenging and rewarding careers in academia, pharmaceutical companies or biotech firms. Or they could even take their scientific expertise to law school for specialized study in patent law, genetics, cell biology, public policy or law enforcement forensics. “We’re training them for a myriad of careers,” Goldstein says. “And,” Engelke adds, “there are an awful lot of niches out there. You just aren’t going to find a lot of people with a science Ph.D. who have to drive cabs for a living.” 