

BY BARRY TEATER
DECEMBER 6, 2010

Maine's Jackson Laboratory has deep ties to North Carolina's biomedical research community

North Carolina seemingly has little in common with Maine, but in the realm of biomedical research the two states share at least one exceptionally strong bond: The Jackson Laboratory.

Jackson is a nonprofit genetics research institution headquartered in Bar Harbor, Maine, with a West Coast branch in Sacramento, Calif. Its 1,200 employees work toward a twofold mission: to discover the genetic basis for preventing, treating and curing human disease, and to enable research and education for the global biomedical community.

Jackson's many links to North Carolina's bioscience research institutions include active membership in the North Carolina Association for Biomedical Research, a statewide nonprofit founded in 1989 by North Carolina's leading research organizations to advance bioscience research and careers; collaborations with the state's brain trust of biomedical researchers; supplying laboratory mice and services to research labs across the state; and educational outreach to North Carolina schools, students and genetics researchers.

Professor Gary Churchill, one of Jackson's 38 principal investigators, recently returned to his Bar Harbor laboratory after a 10-month working sabbatical in the Department of Genetics at the University of North Carolina at Chapel Hill. During the last five years, Churchill has worked with colleagues there — Fernando Pardo Manuel de Villena, David Threadgill, Darla Miller and William Valdar — and with Trudy Mackay in the Department of Genetics at North Carolina State University in overseeing an ambitious project called the Collaborative Cross.

The project involves the randomized breeding of eight inbred mouse strains and is designed to be the ultimate mouse reference population for scientists seeking to explore the genetic underpinnings of complex human traits and disease. The project aims to create 1,000 strains of mice that mimic the genetic diversity of the world population. The first fully inbred Collaborative Cross strain was completed while Churchill was in Chapel Hill. He expects to breed as many as 50 strains in 2010 and as many as 500 strains in the next few years to join strains already in existence in North Carolina, Australia and Israel.

Jackson Laboratory Senior Research Fellow Ken Paigen also has strong ties to North Carolina. Paigen and Dr. Paul Watkins, a UNC-Chapel Hill distinguished professor of medicine, helped devise a system intended to explain why some people are susceptible to drug toxicity and explore those mechanisms in mouse models. Paigen and Watkins believe the research could improve the drug development process by better understanding which properties of a drug can make the drug toxic and by better identifying the people most vulnerable to those toxicities.

In addition to conducting its own research with collaborators, The Jackson Laboratory provides its gold standard JAX® Mice to virtually every major nonprofit biomedical research institution and biopharmaceutical company in North Carolina that conducts laboratory mouse-based experimentation. It offers more than 5,500 genetically defined strains of mice modeling various diseases and conditions and provides a wide array of research support services. UNC researcher Dr. Oliver Smithies used JAX® Mice in his gene-targeting research that earned him the 2007 Nobel Prize in Physiology or

Medicine along with Sir Martin Evans of Cardiff University and Dr. Mario Capecchi of the University of Utah, both of whom also used JAX® Mice.

The Jackson Laboratory's education programs also reach into North Carolina. The recent explosion of interest in systems biology and computational biology has built an intellectual bridge between Jackson and students at the North Carolina School of Science and Mathematics (NCSSM), in Durham. Students there are able to do meaningful science research 1,100 miles from Maine with only their computers and an Internet connection.

The top students are encouraged to apply for a slot in Jackson's prestigious Summer Student Program, which allows them to spend a summer in Bar Harbor continuing their work under the mentorship of a Jackson professor. Since 2008, seven NCSSM students have participated in the competitive program, which accepts only about 30 of 400 applicants.

Many North Carolina students and researchers also travel to Bar Harbor to participate in Jackson's various courses and conferences on genetics and mice, including its signature summer event, the annual Short Course on Medical and Experimental Mammalian Genetics, cosponsored by The Johns Hopkins University School of Medicine.

Barry Teater is Director of Communications at The Jackson Laboratory. Previously, he was Vice President of Communications at the North Carolina Biotechnology Center.



THE JACKSON LABORATORY CAMPUS, IN BAR HARBOR, MAINE