

FY 2013 Research and Evaluation Projects for the Howard Hughes Medical Institute Bioinformatics and Genomics Grants

Since 2008, the Center has played an integral role in the F&M programs funded by HHMI. For the Bioinformatics grant, which ended in August 2012, we were primarily responsible for evaluation of the various programs. For the newest grant, awarded in May 2013 in support of Genomics programs, the Center is partnering with with Biology Professor Kirk Miller and the Clinic for Special Children to conduct Genomics research among the Amish of Lancaster County, Pennsylvania. During FY 2013, we were involved in both grant programs, as the Bioinformatics grant was ending and the Genomics grant was beginning. We conducted final evaluations of the various summer programs funded by the Bioinformatics grant and contributed to the final reports on the grant sent to HHMI. We also began planning the Amish genomics research and an associated public health course.

Genomics Program: Amish Genetic Health Conditions Research. With the Departments of Biology and Public Health, the Center is an essential partner in one of the new initiatives funded by HHMI. We are working with Biology Professor Kirk Miller and the Clinic for Special Children to design and conduct a comprehensive epidemiological study of the Lancaster County Amish settlement. This goal of the research is to discover more about genetic diseases that are common in Amish communities. Specially trained student researchers enrolled in a new public health course at F&M will canvass the Amish Community and distribute surveys that will request extensive health information, including the effects of environmental exposures on health, whether the family has any children with genetic disorders, and information on health conditions, preventive healthcare, and behavioral and mental health. Genetic samples will also be collected. The Center has significant experience conducting this kind of sensitive research in Amish communities. The new survey and public health course are modeled on the groundbreaking work on Amish health and pregnancy outcomes we conducted between 2004 and 2007 as part of the Central Pennsylvania Women's Health Study. Our data from that research has been pivotal to designing programs to help decrease the prevalence of adverse pregnancy outcomes. In addition, several significant papers based on the research were published, and F&M faculty members, including Professor Miller and Berwood Yost, developed a highly praised multidisciplinary course based on the research. That course, called *Public Health Research: Pregnancy Outcomes in American Women*, not only received recognition from the Science Education for New Civic Engagements and Responsibilities (SENCER) community of the National Science Foundation as a model course, but also served as a model for designing the new Public Health Major at F&M. We fully expect that the new Amish Genetic Health Research will have similar positive repercussions for the college.

Bioinformatics Program Evaluations. Working with Biology and Bioinformatics faculty and staff from the Office of College Grants, the Center developed a comprehensive plan for evaluating the Bioinformatics programs funded by this grant. We created and carried out annual assessments of the summer programs, which included High School Teacher Summer Research Fellowships, a Bioinformatics Summer Seminar Series for local science teachers, faculty, staff, and students, and a weeklong Professional Development Workshop for local high school science teachers. Final evaluations for all three programs were completed in summer 2012. We held a focus group at the end of the 6-week Research Fellowship program, discussing the fellows' experiences and opinions in depth. The Professional Development Workshop was evaluated using knowledge tests at both the beginning and the end of the week. Finally, teachers, faculty, staff, and students were invited to complete an online survey evaluating the Bioinformatics Seminar Series. For the final report to HHMI, results of these evaluations were compared with those carried out in 2009, 2010, and 2011.