

SMART Teams Added to Center's Community Outreach Programs

By Dr. Barry Collier, Dr. Bonnie Kaiser, and Ms. Angela Slattery

The SMART (Students Modeling A Research Topic) program is run by the Center for Biomolecular Modeling at the Milwaukee School of Engineering (MSOE). SMART Teams are comprised of teachers and groups of middle or high school students working with research scientists to design and construct physical models of molecules that are being investigated by the scientists. The SMART program has partnered with Rockefeller University's Center for Clinical and Translational Science (CCTS) in a new community outreach effort. This program begins with teachers enrolling in a professional development course designed for learning approaches to teaching biomolecular structure and function, as well as how to integrate computer and physical modeling into the classroom curriculum. After completing the course, participating teachers form SMART Teams in their home schools. These teams work with a Rockefeller University faculty member to design and

build a physical model of a protein or other molecular structure using the technique of 3-dimensional printing.

Ms. Sherlyne Gilles, Rockefeller University outreach alumni member and middle school teacher at the Jackie Robinson School PS 375 in Brooklyn, New York, participated in the SMART professional development course several years ago. She is one of five alumni of the Rockefeller University Outreach Teacher program who were encouraged to take the MSOE course in biomolecular modeling and make use of MSOE's modeling kits to help motivate their students to ask questions about how a molecule's structure relates to its function. Ms. Gilles was matched last year by Dr. Bonnie Kaiser, Rockefeller's SMART Team Program Director, with Dr. Barry Collier's Laboratory of Blood and Vascular Biology.

Ms. Gilles and her SMART Team students traveled to the Rockefeller campus in January 2008 to tour Dr. Collier's laboratory and participate in an interactive session in which Dr. Collier described the research being conducted in his laboratory. After learning about how blood platelets contribute to hemostasis and thrombosis, and the important role that the integrin $\alpha\text{IIb}\beta\text{3}$ receptor plays in platelet function, Dr. Collier and the SMART Team decided to make a model of this protein complex using a compu-

tational model developed by Dr. Collier's collaborator, Dr. Marta Murcia, from the crystal structures of $\alpha\text{IIb}\beta\text{3}$ and related receptors.

In May, Drs. Collier and Kaiser visited the SMART Team at their home school, bringing with them the 3-D model of the $\alpha\text{IIb}\beta\text{3}$ receptor that had been prepared by the Center for BioMolecular Modeling in Milwaukee. They received an enthusiastic welcome from Ms. Gilles and her students. The students listened as Dr. Collier reviewed the role of platelets and the importance of ligand binding to the receptor. They asked insightful questions about the biological and medical implications of the research, and demonstrated a keen interest in medicine and biology.

The Rockefeller University SMART Team (RU SMART) began this collaboration in 2003 and meets regularly to devise strategies for promoting the involvement of SMART-trained teachers at Rockefeller. Along with Dr. Collier, other Rockefeller scientists who work with these past and present Outreach Teachers in RU-SMART activities are Drs. Darst, Fischetti, Friedman, MacKinnon, Pfaff, and Sakmar.

If you are interested in working with a SMART Team to build a model of a molecule you are studying, please contact Dr. Bonnie Kaiser at (212) 327-7431 or email bonnie@mail.rockefeller.edu.



Meet the Scholar: Allegra Grossman, M.D.

By Ms. Jennifer Spada

Dr. Allegra Grossman, a Clinical Scholar in the Center for Clinical and Translational Science, has been interested in diabetes and metabolism since she began her Endocrinology Fellowship at Weill Cornell Medical College in 2004. As a result, she was eager to perform research on diabetes in Dr. Markus Stoffel's Laboratory of Metabolic Diseases as part of the Rockefeller University Center for Clinical and Translational Science Clinical Scholars Program.

During the first two years of her training as a Clinical Scholar, she conducted two metabolic studies in collaboration with Dr. Stoffel, maintaining close contact with

him even after he moved his basic science laboratory from Rockefeller to the Swiss Federal Institute of Technology Zurich (ETH Zurich) in Switzerland. The aim of the first study, "Relation of Obesity with Frequency of Meals" is to test the relationship between the frequency of carbohydrate rich meals and the development hepatic fat (steatosis) and insulin resistance, measured by magnetic resonance spectroscopy and euglycemic hyperinsulinemic glucose clamps, respectively. The euglycemic hyperinsulinemic glucose clamp is the gold standard technique for measuring insulin sensitivity in humans. Resistance to insulin is one of the causes of diabetes and may contribute to some

of the complications of the disease. This was a six week inpatient study conducted at The Rockefeller University Hospital. Her second study, "FOXA2 Expression in Adipose Tissue of Human Subjects with Obesity/Insulin Resistance," looks at the relationship between adipocyte FOXA2 mRNA expression measured by RT-PCR and whole body insulin sensitivity measured by euglycemic hyperinsulinemic glucose clamps. She is currently processing data from these studies. In addition, Dr. Grossman developed an exciting study of her own, "The Effect of Vitamin D Repletion on Insulin Resistance" which has already enrolled 10 subjects at the Rockefeller University Hospital. Dr. Grossman

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