



Office of Education, Division of Intramural Research
National Heart, Lung, and Blood Institute

August 2004 Fellows Newsletter

From the Director of the Office of Education:

This summer brings some changes to the Office of Education. We said goodbye to Ms. Nga Ho, who has helped many of you. We wish her success as she begins Medical School. We have also revamped our web site. Check it out at: <http://dir-intranet.nhlbi.nih.gov/oe.asp> We especially urge you to visit the photo gallery for the Fellows Retreat.

This July, many new fellows joined NHLBI, and we are pleased to welcome them in this issue of the Newsletter. In addition, this issue presents the next installment of essays by Dr. Denise Crooks. If you would like to contribute to the newsletter or have any comments or suggestions for the Office of Education, please e-mail your comments to: direducation@nhlbi.nih.gov

What shall we cook for dinner?

By Denise Crooks, PCCMB

For weeks now, I've been feeling disgruntled as I compose a response to a certain reviewer. In my opinion, the extra experiment s/he want us to do is an extraneous detail whose point was already made using other methods, and distracts from the main issue of the paper. But the reviewer felt that it was important, so we complied. The situation reminded me of a talk at the NHLBI Fellows Retreat where the speaker encouraged everyone to select projects that ask important scientific questions. And in a news report on the death of Francis Crick that appeared in Nature August 5, it was stated that Crick "felt that the important problems [in molecular biology] had been solved, and that only details remained to be worked out." Who gets to decide what the important questions in science are? And what if we have our own ideas?

One colleague told me to "follow the money," giving the example of the Human Genome Project (HGP). The publicly funded project approach was to use mapped clones from known chromosomal

regions. However, the whole genome shotgun method, espoused by Craig Venter was faster than those traditional methods. She did not debate whether the HGP asked an important question, nor even which method was the better way to sequence the human genome. Instead she focused on the idea that only by using private funding was Venter able to overcome the skeptics who controlled the funding and become an important contender in the HGP arena.

In 1908, Jules-Henri Poincaré wrote: "Science is built up with facts, as a house is with stones. But a collection of facts is no more a science than a heap of stones is a house." In a 1998 Scientific American column, Steven Vogel, Professor of Biology at Duke University, almost echoes Poincaré when he questions the role of funding in what he calls academically correct biology:

Science without data is unimaginable, but data are not science. Equating the acquisition of data with the progress of science tacitly asserts that great generalizations must necessarily follow when sufficient data are amassed, surely an uncertain proposition. Certainly, though, gathering data along well-established lines

is a particularly predictable activity. And activities with predictable costs and rates of progress will be favored by a very contract-like granting system. But a university must ask how an emphasis on data acquisition affects its intellectual climate, since it not only does science but also produces scientists...The attitude that expense measures quality has a still worse side: It tends to reward the routine, the data-intensive, the applied and developmental projects; and it discourages risk-taking, creativity and shifts of direction. One hires young people in areas that are "hot," which means areas into which funds are copiously flowing and that are or will soon become overpopulated. One then demands such continuity of funding and productivity that people can't change direction when the area is mined out.

I do not have the experience to comment on Vogel's experience of academically correct science and the role of attracting funding plays. My experience as a graduate student studying the role of a nonessential adenovirus gene on EGF receptor sorting, and now a post-doc focusing on a rare disease, is that I have been limited by my own interests, not by what is considered "hot." What I find interesting is the struggle to define a

balance between data acquisition which is measurable, and discovery which is often an act of unpredictable creativity. Perhaps the real question was not who decides what the important questions are, but rather how do we challenge scientific models? The population geneticist J.B.S. Haldane is said to have joked that there are "Four stages of acceptance: i) this is worthless nonsense; ii) this is an interesting, but perverse, point of view; iii) this is true, but quite unimportant; iv) I always said so."

So as scientists, we should necessarily be skeptics. There is no question that there should be oversight in the way data are collected and analyzed. We should not accept the most prescient of hypotheses until experimental evidence is produced in accordance with the scientific method. It is up to the one questioning the scientific model to make a convincing experimental and theoretical argument. When data begin to fit the new hypothesis more than the old, then we gradually replace or amend that hypothesis with the one that is more plausible. We should balance the collective bias that tends to occur when a scientific model has been in place for a long time with openness to new ideas. To paraphrase Isaac Newton, if we see further than others, it is by standing on the shoulders of giants.

I have heard repeatedly the practical advice that as post-docs, we should aim for two types of research projects. The first is a safe or "bread-and-butter" project that is hypothesis-driven and which falls within the boundaries of prevailing scientific thought. The second can be a riskier, discovery-based study which gets accepted by the scientific community only after rigorous questioning. In my opinion, the two are not mutually exclusive: We come up with new hypotheses that need to be tested and confirmed. We methodically test an established model and we might come up with novel findings that lead to theoretical leaps. In other words, you can cook scrambled eggs, and then you try the soufflé recipe.

New NHLBI Fellows



Dr. Zakari Aliyu joined the Hematology Branch as a Clinical Fellow. He earned an M.S. degree at Ahmadu Bello University in Nigeria and an M.P.H. at George Washington University in 1999. He completed his residency at St. Agnes Hospital in Baltimore, Maryland. He was an Attending Physician, and Adjunct Assistant Professor at George Washington University and St. Angles Hospital.



Dr. Arun Balakumaran earned his MBBS (Bachelor of Medicine and Surgery) at the University of Madras in India in 1991. He then completed his Ph.D. at the University of Texas Medical Branch in Galveston, Texas. Dr. Balakumaran is currently is a Clinical Fellow in the Hematology Branch under Dr. Cynthia Dunbar. He will be working on "Adult Stem Cell in Tissue Repair".



Mr. Robert Kalfus is a Postbac IRTA who has recently joined the Laboratory of Biochemistry under the supervision of Dr. Earl Stadtman. Mr. Kalfus earned his B.S. in Chemical and Biomolecular Engineering. Currently, he is working on "Engineering a human cell line to express a gene whose product modifies tRNA." In this research, the cell line will be used to determine if modification of the tRNA disrupts HIV transcription initiation in vivo as a possible therapy for the disease.



Mr. Matthew Pappas graduated with a B.S. in Electrical Engineering from Valparaiso University, Indiana in May 2004. Mr. Pappas is a Postbac IRTA and in the Laboratory of Developmental Biology under Dr. Cecilia Lo. He is working on

"Three-Dimensional Gene Expression Profiling."



Dr. Yesoda Rao has recently joined the Clinical Cardiology Section as a Visiting Fellow under the supervision of Dr. Vandana Sachdev. Dr. Rao earned her M.B. and B.S. degrees from Osmania Medical College in Hyderabad, India. She completed her residency at Suny Downstate Medical Center in Brooklyn, New York. Dr. Rao is working on "Development of Novel Biomarkers in Patients with CAD: Nitrite as a Surrogate Marker for Cardiovascular Risk." She will also be working on a lot of flow mediated dilatation studies (FMD).



Ms. Catherine Ritchey recently graduated from The College of Wooster in Wooster, Ohio with a B.S. in Biochemistry and Molecular Biology. Ms. Ritchey is a Postbac IRTA in the Laboratory of Molecular Cardiology under Dr. Kenneth Kramer's supervision. Ms. Ritchey is currently working on "Fishing for Mechanisms of Proteoglycan Functions."



Dr. Aarthi Shenoy is a Clinical Fellow who has recently joined the Hematology Branch under Dr. Cynthia Dunbar. Dr. Shenoy earned her B.S. degree at University of Iowa, Iowa. She then got her M.D. from University of Iowa College of Medicine in 1997.



Dr. Yong Tang has recently joined the Hematology Branch under the supervision of Dr. Neal Young as a Clinical Fellow. Dr. Tang completed his Bachelor of Medicine at Hunan Medical University, China in 1992. He then earned his M.S. in Biochemistry at the University of Kansas Medical Center, Kansas in 1996. Dr. Tang is working on "Immunology of Aplastic Anemia, MDS and PNH."

Volunteers Needed

The Office of Education welcomes your participation in planning activities.

Contact: direducation@nhlbi.nih.gov

This newsletter is published by the Office of Education, NHLBI Division of Intramural Research, Dr. Herbert M. Geller, Director.