From the Director: Thoughts on research funding -- a glimmer of hope?

Immediately after WWII, funding for the biomedical sciences through the NIH underwent a kind of 'Big Bang.' Following a period of rapid inflation from 1947-1967 in which the budget increased by 125-fold from $8 million to $1 billion, NIH funding saw steady, sustained growth of roughly 8.8% per year from 1967 to 1997, with the budget doubling roughly every 10 years (1,2). From 1998-2003, Congress doubled the NIH budget. NIH funding since 2003 has seen a period of anemic growth of 1-3% per year (3). In constant dollars (adjusted for inflation), the NIH budget actually decreased by about 20% from 2003-2014. The proximal causes of this unprecedented regression in NIH funding are the combined effects of two recessions and the financial pressures of the wars in Afghanistan and Iraq. Arguably, a period of hyper-partisanship in our national politics has exacerbated the problem. However, perhaps there is a glimmer of hope. In a recent op-ed in the New York Times (4), Newt Gingrich, conservative Republican and former Speaker of the House, reminded readers that the doubling of the NIH budget during Clinton administration enjoyed wide bi-partisan support. Indeed, the NIH has traditionally been viewed as worthwhile target for federal spending by liberals and conservatives alike. In this editorial, Gingrich went on to discuss the magnitude of the effective cut in NIH spending we have seen and the irony that it has occurred at a time of unprecedented opportunities for biomedical research to have huge impacts in human health and disease. Gingrich concluded by advocating doubling the NIH budget again over a five year period. While again doubling the budget over a short period might be difficult for the research enterprise to digest efficiently, a return to bipartisan support for steady and sustained investment in the biomedical sciences would be an extremely welcome development.


Bob Fuller
Perspectives: Life in Biosciences
by Natacha Bohin

Let’s face it, despite the diversity of careers offered in an academic research institution, most of us group them all under this vague umbrella term of “going into academia.” In addition, our opinion of this career track is often colored by what we see our PIs going through. Let us round out the story on “going into academia.” Here, Dr. Kate Walton, a research investigator, Dr. Qing Li, an early career physician scientist and Dr. Rich Miller, a tenured professor, share their personal experiences, opinions and precious advice.

What does a typical day for you entail?

Katherine Walton, Ph.D.: Every day is a little bit different. It’s one of the things I love most about research. Some of the things that I do regularly are: my own experiments, work with students in the lab to plan and carry out experiments and then analyze their data, participate in joint lab meetings to share and discuss ongoing projects in our department, attend departmental seminars to learn how and what experts in their field are doing, work on preparing manuscripts, prepare grants, and peer review manuscripts that have been submitted for publication.

Qing Li, M.D., Ph.D.: I start the workday around 9AM, usually with checking emails and the clinical messaging system. There are typically a few messages for patient care so I will need to call nurses, patients or outside physicians first thing. I will then catch up with people in the lab. At least half of the days in any given week there will be meetings throughout the day. In between the meetings, I try to do some reading and writing if there is a grant deadline, or grab a cup of coffee with a colleague to chat. If I’m lucky, I will have some time to work at the bench, which I enjoy the most. I typically leave the office around 8PM unless I’m working against deadlines. When my husband is out of town or has meetings/events in the evening, I pick up my son from school at 5:45 and go home with him and work at home. I also work either 10PM-12AM after the kids are in bed, or 5-7AM before they get up.

Richard Miller, M.D., Ph.D.: I typically get to the lab around 8AM or so. On a good day I get to work 4 - 6 hours with few meetings; on a bad day I have meetings all day and don’t get as much work done. I go home around 4PM or so, do some exercises and make dinner, check email, and sometimes get a bit more work done. I get a lot of work done during the weekends, when there are fewer interruptions and meetings to attend. At this point 80% of my day is spent at a computer: e-mail, manuscripts, reviews, grants to write or review or critique, forms to fill out... and most of the rest goes into meeting with students, postdocs, techs, junior faculty, people seeking advice, grant managers, and so forth.

What is your favorite/least favorite part of your position?

KW: The best part of my job is working with students and other researchers. I love teaching and learning and being a part of the collaborative academic environment. The worst part of being a Research Investigator is the pressure to publish and obtain grant funding. That said, I still love certain aspects of manuscript and grant writing: journal articles allow us to communicate our findings to the most people and I find that grant writing helps me to focus my research and organize my ideas to share with others.

QL: I still really enjoy bench work. I enjoy working with postdocs and students and watch them grow scientifically. I also enjoy exchanging ideas and sharing problems with my colleagues and like to go to meetings to showcase our studies and get inspired by other excellent basic and clinical scientists. As a physician scientist, I enjoy patient care and take pride when our effort made a difference in people’s lives. My least favorite part of being a PI is the meetings, many of which are more administrative, although I understand they’re important to keep the place running smoothly. Writing grants is not my favorite activity but we all need to learn that if we want to become a successful PI these days.

RM: Most favorite: I enjoy giving talks. Least favorite: dealing with
the constantly shifting demands of the animal care committee.

What kind of personal and/or professional attributes would a person need to be effective in your position?

KW: To be successful as a Research Investigator it is important to be proactive in seeking out collaborations and sharing information.

QL: The most important attribute is dedication and passion for what you do. There will be so many obstacles and downtimes in this competitive environment and the passion for what you do really makes a difference to push you forward. You have to remember this will be something you will be doing for decades and if you are not sure this is something you would like to do, my advice is to find an alternative sooner rather than later. To be effective, you also need to learn to compartmentalize your time. There are so many responsibilities and it can be overwhelming. But if you focus on one thing at time and take them down one by one, you will become more effective. Sometimes you will just have to shut down your email, mute your phones and lock your door to have that focus. Organizational and planning skills are also very important.

RM: Well, the big one is a ferocious interest in doing scientific research. It also helps to be able to teach, give coherent talks, write exceptionally well, pick good mentors and learn when to take their advice, be interested in a problem that someone wants to pay you to work on, learn not to throw good money (i.e. time) after bad projects, be tenacious but willing to change course if needed, and not be too scared of statistics.

Do you have any advice for current graduate students who wish to get to where you are?

KW: 1) Maintain an open dialogue with your mentor(s). 2) Find/create a support network that includes other professors and peers. 3) Take advantage of all of the information sessions, workshops and seminars that are available to you. 4) Go to as many meetings as possible to share and learn about what is going on in your field and to network and make friends and collaborators outside of your program. 5) Make regular assessments of your goals (short and long term) and how you are working to achieve them.

QL: 1) Identify a good mentor and mentoring team early and work with them closely every step of your training. 2) Work hard. It’s not sufficient but it’s necessary for success. 3) Be persistent. The nature of research determines that most experiments will fail, but keep in mind that the next one could be your big discovery.

RM: Find a scientific problem you really really want to solve. It’s not as much fun working on a problem that you don’t have much real interest in, I think, and that would make plugging along harder to do when the first three grants get turned down. Don’t forget the positive control - it drives me crazy to hear a student say “I just wanted to see if it worked, and I’ll do the positive control next time.”

Qing Li, M.D., Ph.D. comments on the “Two-Body Problem.”

Having a spouse working in academia definitely posed challenges, but it can be beneficial as well. My husband and I had to separate for 3 years during our training and this is not an uncommon problem to dual career couples. The truth is that we were both so busy that the three years passed by really quickly. We did contribute significantly to the airlines and met at least once every two months. As a matter of fact, I delivered our first child one month after we got back together again! Despite all the challenges, there are also benefits to having a spouse working in academia. We both understand the demands of each other’s work very well, which is very important to keep a good relationship. When it comes to looking for a job, a lot of places will try to consider spouse issues and accommodate if they really want to hire one of you, so it could become an advantage. There are two strategies you can try to deal with the ‘two body’ career problem when looking for a job. One is to have the stronger one of you look first and if the institution is really interested, they will often help solve the spouse issue. Another strategy is to have the one of you for whom it will be relatively harder to find a position, or who is more restricted in the study topic, to look first and then the one for whom it will be relatively easier to find a position can follow along.
Microscopic tumors in the mouse whisker pad

Stochastic excision of reporter from *E. coli* genome
Jim Musgrave began his experience in higher education as a student at Hillsdale College in Michigan. After graduating in 2009, he continued his education as a medical student at East Tennessee State University Quillen College of Medicine. Although a successful student in the program, Jim ultimately chose not to pursue medical school after two years. Fortunately, his experiences in recruiting and student life as an undergraduate student led to his interest in a career in higher education. After working for the American Cancer Society he accepted a position in admissions at the University of Michigan School of Dentistry. That experience led him to his current positions in the CMB, Cancer Biology, and Immunology programs. In addition to being a dedicated administrator for CMB, Jim is also working towards a Masters degree in higher education through Eastern Michigan University.

What is your role in CMB like compared to other positions that you’ve had?
In CMB the administrators are involved in everything. That makes us really busy but it’s good because we know what is going on at all times and we have a good well-rounded picture of what needs to be done.

You overlapped and still work with Cathy Mitchell. Was there a particularly valuable tip or lesson that you got from her?
Get to know the students on a one on one basis. I haven’t been able to do this a lot so far, but I look forward to interacting with students here.

What are some interests that you have outside of your work and school?
Cooking, eating & working out.

Favorite meals that you like to cook?
Hearty winter-time type meals like braised short ribs, roasted chicken with root vegetables and other home style meals. I also like to bake – pies and cookies, mostly.

What is your favorite spot around Ann Arbor?
Isalita Cantina Mexicana.

Have you noticed any particular characteristics about students/fac in CMB?
The leadership, and faculty in general, really advocate for students, which is great. The students are also very dedicated and passionate about their research. This combination leads to an overall positive work environment for me.

Other interests?
I like to travel. We took a lot of family driving vacations while I was growing up. My Dad wanted to teach us about the history of the country by visiting historically significant places. I’d like to go back and revisit those places with the experiences that I’ve had now.
Breane Budaitis
Utilizing a chemical-gentic approach to engineer inhibitable kinesin motor proteins as a strategy to elucidate their fundamental properties in cells.
*What animal would you be:* hedgehog

Max Denies
Developing spatial and temporally resolved proteomic techniques to study clathrin-mediated endocytosis.
*Fantasy Career:* Leading a technology startup company and eventually getting into venture capital

Quinn Ellison
Understanding the biological significance of highly repetitive palindromic sequences on mammalian sex chromosomes.
*Favorite Hobby:* Creative writing (mostly poetry) and cooking (mostly baking)

Jackie Fingerhut
Asymmetric stem cell division and nonrandom sister chromatid segregation in *Drosophila melanogaster*.
*Fantasy Career:* Fiction writer

Katelyn Green
Elucidating the mechanism by which RAN translation occurs in neurodegenerative diseases.
*Fantasy Career:* Running an apple orchard and writing novels in my spare time
Hannah Hong
How autophagy is inhibited during glucose starvation in budding yeast.
*Fantasy Career*: Owning a cat café

Adam Krieger
The mechanisms that influence the diversity and stability of microbial communities, and how the human microbiome community interacts with its environment to affect human mental and physical health.

*Favorite joke*: An escalator can never break, it can only become stairs. You would never see an “Escalator Temporarily Out Of Order” sign, just “Escalator Temporarily Stairs. Sorry for the convenience”. -Mitch Hedberg-

Alyssa Miller
The cellular mechanisms governing mammalian tissue development, disease, and repair.
*Favorite Food*: All of breakfast

Jane Song
Determining the role of Hox11 genes in the patterning of the mammalian musculoskeletal system.
*Favorite Hobby*: When it’s warm, bicycle riding. When it’s cold, snowboarding

Noah Steinfeld
The regulation of Myosin V attachment to cargoes
*Celebrity Alter Ego*: Taylor Swift

Molly Thorson
*Fantasy Career*: I would be a concert pianist
The Two Best and Worst Words in Academia

Lance Presser, PhD @Idpsci - Mar 8
#best2wordsinscience Lunch provided.

Beaker Ben @Beaker_Ben - Mar 7
Grant awarded. #best2wordsinscience

Drug Monkey @drugmonkeyblog - Mar 7
#best2wordsinscience Paper Accepted

Crazy Scientist, PhD @wandedob - Mar 7
Hawaii conference #best2wordsinscience

Jason McDermott @BioDataGanache - Mar 7
-80 died #worst2wordsinscience #somuch

Michael Hochberg @HochTwit - Mar 15
contaminated again #worst2wordsinscience

Where are they now?
... and imploring them for wisdom

Natalie Whitfield, PhD,

Natalie Whitfield graduated from CMB in 2009 and did not want to pursue a post doc. She was not adamant about staying in academia and running her own research program as a PI. After teaching as an adjunct professor at junior colleges in Michigan and working for a health care product company, she wanted a career that would bridge her interests in health care and microbiology. She began to search for clinical microbiology fellowships, which are highly competitive – only 10-12 national programs accept 1-2 fellows two years in advance. She also cold contacted clinical microbiologists with basic research labs, looking for a post doc. A professor offered her a position, but suggested an assistant manager position at the clinical microbiology lab at University of Arizona’s College of Medicine. Over the past few years, she has progressed from assistant manager to assistant clinical professor. As an assistant clinical professor, she spends 75% of her time as director of a clinical microbiology lab, which also includes running a translational, clinical trial based research lab. The rest of her time is spent teaching medical students (1 lecture and 1 virtual microbiology lab a year), residents in their pathology rotation, residents on her service, and physicians and nurses (on techniques such as specimen collection). For current graduate students, she suggests to “start looking outside the box” when it comes to careers. By aligning her passion for health care and microbiology, Natalie has found her niche in the last place she wanted to look.