As I am writing this, the Fall semester is winding down. First, though, I would like to look back to our retreat in May at Kellogg Biological Station. Our keynote speaker, Henry Bourne, both gave us a very personal look at his journey through science and led a spirited panel discussion of the future of graduate education in the biomedical sciences. Many of his views may be controversial, but it is always worthwhile to reflect on the purpose and value of what we do. The training students receive in our Ph.D. program is focused on how to become an independent researcher. It develops skills in critical thinking and planning that can be valuable in many pursuits. But most everyone who embarks on this course does so because they have a compelling interest in research, either to contribute to human discovery of nature, to advance medical science to relieve human suffering or both. Here is my gratuitous advice: if this is what you want to do, don’t let the current funding climate or job market dissuade you. Work hard and find a way to have a research career. Some of you will find different paths, in policy, writing, or administration, and all of these are valuable pursuits and your future colleagues will benefit from your talents honed in part by your experiences in CMB. My prediction, and hope, is that nearly all of you will remain close to science in some way during your careers.

At our Fall Symposium, we were treated to another personal history of a scientific career by our Myron Levine lecturer, Andrew Fire, co-discoverer of RNA interference and 2006 Nobel Laureate in Biology or Medicine. His story is a clear case in which focus on a basic molecular process led to a discovery of enormous importance both for biology and medicine. For those who couldn’t get into Kahn Auditorium, my deepest apologies. Next time I promise we will have a video feed to an overflow room!

Finally, I’d like to thank all of the students on the newsletter committee and particularly to Brooke Horton who has made great contributions to the transformation of this publication and who will be stepping down after this issue.
CMB Newsletter

Developing Future Biologists
by Brooke N. Horton

CMB trainees Andrea Ramos and David Lorberbaum, with the help of graduate students in other departments at UM, are pioneering an outreach initiative to lower the barriers to higher education in STEM for underrepresented minorities. CMB faculty, Deb Gumucio, Ben Allen, Scott Barolo and Deneen Wellik are overseeing the student-led program. This teaching intensive program in Ponce, Puerto Rico is set to launch in Spring of 2015.

Although, it’s difficult at times to find good plantains and the snow may fall too frequently for her taste, the opportunity to navigate a successful career in the life sciences is something CMB alumnus, Andrea Ramos, is bringing back to Puerto Rico with the help of a team of graduate students and supportive faculty through a new initiative, “Developing Future Biologists”. Andrea Ramos, left the warm beaches of Puerto Rico to begin her graduate education at the University of Michigan and found a growing community and outstanding training opportunities.

There is currently a great need to connect to Hispanic populations and encourage the exploration of STEM (science, technology, engineering, and mathematics) careers. This population is one of the fastest growing minority groups in the U.S.; however, this growth is not accurately reflected in STEM careers. Currently, Hispanics comprise 15 percent of the total workforce, and only 7 percent of the STEM workforce. These numbers are striking when compared to the more evenly distributed employment numbers for whites, which is 67 percent in the total workforce and 71 percent employed in STEM (2013 Census).

The University of Michigan is in a unique position to improve the accessibility of graduate education in STEM to this underrepresented minority group. In the past five years PIBS has greatly improved the diversity in its graduate program. In 2014, 9 percent of PIBS graduate students were Hispanic, with the five year average being 11 per cent representation. Though this still falls short of an accurate representation of Hispanics in STEM, a more inclusive environment is giving rise to a powerful voice for this community and is bringing to fruition non-contrived graduate recruitment initiatives for underrepresented students as well as opportunities for cross-cultural learning.

Andrea attended the University at Ponce as an undergraduate and knew she wanted to pursue a career in research. However, her passion for the life sciences was met with many challenges in Puerto Rico. Her coursework was limited and there were very few chances to have a hands on experiences with science in a laboratory.

Utilizing their opportunities and success in graduate training, Andrea conceptualized an outreach initiative to allow others to follow in their footsteps. With the help of graduate colleagues, David Lorberbaum, Martha Echevarria Andino, Brandon Carpenter, and Justine Pinskey, the pilot program, “Developing Future Biologists” (DFB), is set to launch in Spring of 2015.

This initiative is designed lower the cultural barriers to graduate education and increase awareness of life science careers for underrepresented minorities. Through a week long workshop at the University of Puerto Rico at Ponce, DFB will provide students with personal mentoring, direct exposure to cutting edge research, and inspiration to pursue a career in the life sciences. A set of hands-on experiments accompanying a short lecture series will allow students to experience a topic of biology that is not currently offered at Ponce. Additionally, UM faculty and graduate students will engage professionally and socially with students so that a clear and complete picture of graduate school is provided. As a student lead group, DFB also provides the opportunity for current graduate students to gain teaching experience with non-native English speakers and engage in cross-cultural learning.

This effort promotes the recruitment of qualified underrepresented minorities to pursue advanced degrees in biomedical research at UM, and will improve the education experience for all graduate students at UM. If you’d like to know more, contact the leadership team at DFB. coordinators@umich.edu.
Sixth year Ph.D. candidate, Katie Baldwin, sits down with us to discuss her ideal faculty position and the steps she is taking to get there. When she’s not boosting lab moral with creative projects, traveling, or training for the next marathon, she spends her time studying the molecular mechanisms of axonal regeneration with Dr. Roman Giger.

What types of institutions are you interested in for a potential academic position? (Small liberal arts college, undergraduate/graduate school, medical school, independent research institute) and why?

I think all of these places have advantages and disadvantages, but I’m probably most interested in an undergraduate/graduate school. This gives the option of teaching and interacting with students, in addition to providing a large and resourceful research community.

What are you looking for in a post-doc lab?

I’m looking for a lab that has the potential to produce new faculty. I am looking for labs that have a forward momentum, and their work is leading to more questions rather than answering them. Some fields have become saturated, and people working in those fields have difficulty finding jobs. I also want a mentor who is supportive of the members in their lab, in terms of research and career goals. Ideally, someone with realistic expectations, who allows members of their lab to have a reasonable work-life balance.

I do have broad questions that I am interested in answering: how is synaptic stability and homeostasis maintained in the adult CNS, and how might deregulation of stability mechanisms contribute to brain disorders such as autism, schizophrenia, depression, and obsessive compulsive disorder? I am keeping these questions in mind as I look for postdocs.

What is your biggest concern when it comes to pursuing a faculty position? There percentage of postdocs that secure a faculty position is quite low. My biggest concern is that I devote a tremendous amount of time and effort into pursuing a faculty position only to find that I’m unable to land a job at the end of it.

What advice do you have for new graduate students still getting settled in the lab?

“Ask yourself what your goals are, both for your research project and your career.”

Some of us senior grad students get very cynical at times. Just ignore us, and keep that enthusiasm for as long as you can. Grad school can feel like a long road with many ups and downs, but before you know it you’ll be ready to graduate. Sometimes you need to put your head down and work, but make sure to step back and see the big picture too. Ask yourself what your goals are, both for your research project and your career.

Some days can be tough, but then there are days when you get a new piece of data, and in that moment, you are the first person to turn over that piece of the puzzle. That is exciting, and I think that’s what keeps a lot of us going. It’s also helpful that I have a great group of people that I work with. I feel very fortunate to be surrounded by hilarious, kind, and intelligent people on a daily basis.

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“Arts and sciences are branches of the same tree. All these aspirations are directed toward ennobling man’s life, lifting it from the sphere of mere physical existence and leading the individual towards freedom.”

-Albert Einstein
Tell us about your research training before becoming a faculty member at the University of Michigan.

I started my career in one of the first MSTP programs in the country in New York City. I recall my first day in lab as an MSTP student, I broke the pH meter probe on the bottom of a beaker. I was mortified! I transferred to Ohio State University partway through the program because my husband had a job opportunity in Yellow Springs, Ohio. Since Ohio State had no MSTP program, I joined their biochemistry PhD program, and worked in the lab of Bob McCluer, a lipid biochemist. After I finished my PhD coursework and prelims, I changed labs and finished my thesis work on histone phosphorylation in the lab of Tom Langan, an Assistant Professor at the Charles F. Kettering Research Laboratory in Yellow Springs, down the road from where my husband was teaching.

After finishing my PhD, we did a joint job search which led us to Buffalo, New York, where I carried out a genetics postdoc in the lab of Ken Paigen at Roswell Park Memorial Institute, and where I entered the field of mouse genetics.

Both Ken Paigen and Tom Langan were brilliant investigators with rigorous scientific standards, who looked for precise answers to important questions. They provided the foundations of my scientific training. I think the choices of predoc and postdoc advisors are the two most significant career-related decisions that a graduate student makes.

“I think it is important to appreciate [...] your experiences as a graduate student, rather than focusing on job prospects at this early stage of your career.”

What are your views regarding the so-called two-body problem, the difficulties of spouses both working in academia finding two jobs within commuting distance?

You cannot optimize two careers at the same time. You have to compromise. My husband and I took turns picking the destinations of our relocations. My husband’s career drove our early decisions while I chose the later move to Michigan. What is essential is the commitment to compromise.

Can you comment on work/life balance as a faculty member at a leading research institution?

Work/life balance is an enormous challenge. In academia, we enjoy a great deal of autonomy and choice about working schedules. For example, several faculty members coach their children’s sports teams in the afternoons. As long as the work gets done, there is wonderful flexibility in our work that greatly benefits family life. On the other hand, the workload is tremendous, and in order for that commitment to be worthwhile, you must love the work.

What is one piece of advice you would give graduate students seeking a thesis lab?

PhD training is in large measure an apprenticeship. Students should choose a mentor whose scientific standards and practices they admire and wish to emulate. You want to find a place where you can learn how to carry out high quality, rigorous scientific research. It is also appropriate to assess likely produc-
tivity by looking at the publication records of recent graduates from the labs you are considering.

What advice would you give students about making the most out of their graduate experience?

Take advantage of your thesis committee! A thesis committee is like having a consulting firm at your fingertips. The best time to meet with them is when things aren’t going well, so that you can get perspective on whether to ‘fish or cut bait,’ and ideas about alternative and feasible approaches. Unlike a prelim committee, the purpose of a thesis committee is to provide direct assistance to help you move your research forward.

Another tip - it is very important to remain in your PhD lab until your most important papers are submitted, and ideally, until the reviews have been addressed. It can be quite difficult to respond to reviewers’ requests from a distance, and there may be no one else in your lab that can carry out the additional experiments that are requested. This can be a source of great unhappiness for everyone. Better to stay on for 6 - 12 months after your thesis defense to tie up the loose ends.

How can graduate students seeking a career in academia prepare themselves now?

Read Nature and Science every week, even if only the research highlights. This can help you keep up with rapid advances, become aware of the leaders in your field, and broaden your perspective on what is going on in science. Notice what excites you while reading, and consider these topics as potential postdoctoral research areas. I also recommend doing anything you can to improve your mastery of written and spoken language. The ability to articulate and explain your work in writing and in person is absolutely critical to your long-term success.

It is important to contact the postdoc lab of your dreams a year before your anticipated graduation. This will allow your postdoctoral mentor to save a spot in the lab, and the lead time can lead to a position on a relevant institutional training grant.

You will be a strong candidate for postdoctoral positions as a graduate of the University of Michigan if you have one or two first author papers in solid journals like the Journal of Biological Chemistry. Papers in Nature and Science are wonderful but not essential for access to excellent postdoctoral positions. First authorship is quite important, and demonstrates that you had a major role in moving the project ahead.

What should graduate students look for in a postdoc lab?

The scientific excellence of the mentor is key, and can often be gleaned from the last 5 years of publications. Like families, each lab has a distinct culture. When interviewing, find out what the lab is like, and learn the views of the postdocs in the lab. I was 7 months pregnant while interviewing for postdocs, and one PI asked me “who will take care of your baby?” I knew this was not the right lab. I had my second child during my postdoctoral years. I felt guilty! But my mentor said “just come back when you are ready.” He understood the importance of one’s personal life. Find the lab that has a compatible culture with yours.

What is your opinion regarding encouraging graduating PhD students towards ‘alternative’ career paths due to the scarcity of faculty positions?

Even while I was in graduate school, only a minority of graduate students went into academia. It was not much talked about, but I would estimate that 20% of graduate students at that time pursued a faculty position. I think it is important to appreciate the intrinsic value of your experiences as a graduate student, rather than focusing on job prospects at this early stage of your career. Harold Varmus [1989 Nobel Prize in Physiology or Medicine & current NCI Director] wrote that he wished every citizen could have the experience of carrying out basic research. It is exciting, it is rewarding, it is intellectually stimulating. What a wonderful way to spend a few years!

Take one step at a time. If you love it, do more lab work as a postdoctoral fellow. If you find out that the lab is not for you, there will be many other options.
Where are they now?

Brendan is a tenure track Assistant Professor at Calvin College, where he runs a research lab and teaches. He also has a joint appointment at the Van Andel Institute, where he continues his research as a staff scientist.

When Brenden entered grad school he knew that he wanted to teach and do research. He joined Gary Hammer’s lab and aimed to gain as much experience as possible before graduating in 2006. He gave lectures in the graduate Cell Biology course for three years, served on program and admissions committees, and mentored undergraduates in his lab.

As a postdoc at the Van Andel Institute, he had protected time that allowed him to commit to teaching opportunities. He TA’d for courses, lectured as an adjunct faculty, and taught undergrad labs at a nearby college.

He has “found his dream job” and “was blessed with incredible mentors, [whose] energy and knowledge of what’s hot really helped.” His advice is to “find mentors that will really teach you how to be successful at the nuts and bolts of it” and “start crafting your experiences as early as possible.” He “banged on doors and sent [his] resume around” to find teaching positions on campus, but “made it very clear that teaching” was on his own time and never compromised his time in lab. “The opportunities on campus are there for the taking.”

Brendan Looyenga, PhD

contact info
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“As a rule, to be a success at a really competitive academic institution you need to be a person who works an awful lot. When I come into the lab on Saturdays and/or Sundays, I see a few postdocs and a few grad students also working weekends, and I know they are the ones with the best chances of lasting success.” - Rich Miller, M.D., Ph.D. Tenured Professor, U of M

“Find mentors that will really teach you how to be successful at the nuts and bolts of it” - Brendan Looyenga, CMB Alum, Assistant Prof. Calvin College

Many postdoc fellowships have ‘protected time’ that allow you to explore career options (such as teaching) outside of the lab.

\[=1\text{year}\]

Arrow thickness is to scale based on the average number of students enrolling in biology PhD programs in US institutions annually (16,000)

\[\text{Average time to graduation: 7 years}\]

\[\text{PhD}\]
\[63\% \text{ Graduate}\]
\[70\% \text{ of graduates start a postdoc}\]

\[\text{Postdoc}\]
\[4 \text{ years}\]

\[30\% \text{ do more than one postdoc}\]

Academic Titles

- **Assistant Professor**: entry level tenure-track faculty; if associate level is not reached universities terminate employment (6-10 years)
- **Associate Professor**: granted tenure, on track to be a full professor (6-10 years)
- **Professor**: destination of the tenure track
- **Distinguished/Endowed Professor**: titles of special distinction
- **Research Scientist/Investigator/Professor**: non-tenure track research appointment
- **Clinical Professor**: non-tenure track teaching position with no research responsibilities
- **Lecturer/Instructor**: full-time teaching position, no research obligations
- **Adjunct**: part-time status
- **Visiting**: temporary appointment
- **Emeritus**: retired faculty member

“...find a scientific problem you really really want to solve, and then attach yourself to it like a barnacle”. - Rich Miller
“Some people think that if getting an R01 doesn’t work out, they can get a teaching position. This is a misconception. If you want to teach, having teaching experience is critically important.”

- Brendan Looyenga

“I knew there were three things that could set me apart. Having 1) a novel technique, 2) some reagent no one else had, or 3) a cool new idea no one else had thought of before.” - Monica Dus, Ph.D., Asiss. Prof. U of M

“...there was no point when I said: at this point in my career is the time to have kids, it was just when [my wife and I] wanted them and you manage from there.” - Billy Tsai, Ph.D., Professor, U of M.

Tenure Track

Average time to first faculty position from graduation: 6 years

50% pursue an academic career

Non-Tenure Track

“I was resistant to doing a traditional postdoc... after being an adjunct faculty] I applied to an assistant manager position at the clinical microbiology lab... and eventually made Assisant Clinical Professor” - Natalie Whitfield, Ph.D., D(ABMM), CMB Alum, Assis. Clinical Prof, Univ. of AZ

Resources of Interest:
At U of M: What Now?; Preparing Future Faculty One Day Conference; CRLT Teaching Certificate
Books: The Academic Job Search Handbook, by Mary Morris Heiberger and Julia Miller Vick
Job Search: higheredjobs.com; postdocjobs.com/jobseekers; academicjobstoday.com;
academic360.com; chroniclevitae.com/job_search/new
Two Body Problem: provost.umich.edu/programs/dual_career
Meet CMB

Margarita Bekiares

by Scott Scholz

CMB administrators, Margarita Bekiares and Jim Musgrave, work miracles to make our program function at its best. From scheduling speakers, to handling student’s moments of crises and making sure interview weekend and symposia go off without a hitch, the CMB administration is a vital part of the success of CMB. We sat down with one of these heroes behind the scenes, Margaria Bekiares, to hear more about her.

Can you fill us in on some of your path here?

I did my undergrad at UM for psychology and went on to get my masters in Clinical Psychology at UMass, which was awesome! The greatest thing I did there was my internship, which was counseling college students. But I was not happy with the job options available with the degree after graduation. Since I also had a love for teaching, I eventually went into the Elementary Master of Arts with Certification Program at UM, where I was able to earn both my M.A. in Education as well as my teaching certificate within one year. It was a year of intense study and experience in the classroom. Then I worked in a charter school in Detroit. It was wonderful, but really intense as far as the amount of work, so I “burned out” rather quickly. When I became engaged, my husband-to-be asked me how I was going to teach and raise a family. I realized I couldn’t. My life would be completely unbalanced. I started working for UM in an administrative role in the Chemistry Department. I worked for 4 years in the financial/business office in order to eventually get a promotion and move into student services, which I then did for 3 years before joining CMB.

What is your role in CMB like compared to other positions that you’ve had?

First of all, Bob is very invested in the program and the students’ experience and success. I also have the freedom here to work more independently, and the opportunity to learn more aspects of the job that were previously fulfilled by others. Finally, there are fewer students, so I hope to get to know everyone a bit better than in my former position.

Has your experience counseling college students helped you here?

In general, yes. I think student services is a good marriage of my counseling background, my administrative skills and my experience in education. While I am not a counselor in this position, I do hope those experiences help me relate better to others and help them feel comfortable in talking with me, if and when needed.

What are some interests that you have outside of your work here at UM?

My kids take up all my spare time! I have two little girls - one is six (Olga) and one is four (Melina). They are involved in ballet, gymnastics and Greek school lessons, so we are busy most nights of the week. On Friday night, thankfully, we do nothing but eat popcorn and watch a movie! I also love the symphony, the theater, concerts, camping, travelling. Those are the things that I’d like to get back to doing. There are also still a lot of places around Michigan that I’d like to visit. I think that the west coast of Michigan is especially beautiful and has a lot of great places to visit.

My Greek culture influences me a lot too. My husband is also Greek. We haven’t been to Greece recently, but we’d like to visit with our children. I’m still trying to learn from my mom how to make good Greek food. And yes, “My Big Fat Greek Wedding” is pretty much an accurate portrayal of my upbringing! My faith is also important. We attend St. Nicholas Greek Orthodox Church here in Ann Arbor, where I also teach church school. Every year St. Nicholas has a great “Yassoo Greek Festival” for the community, which is a lot of fun. ♦