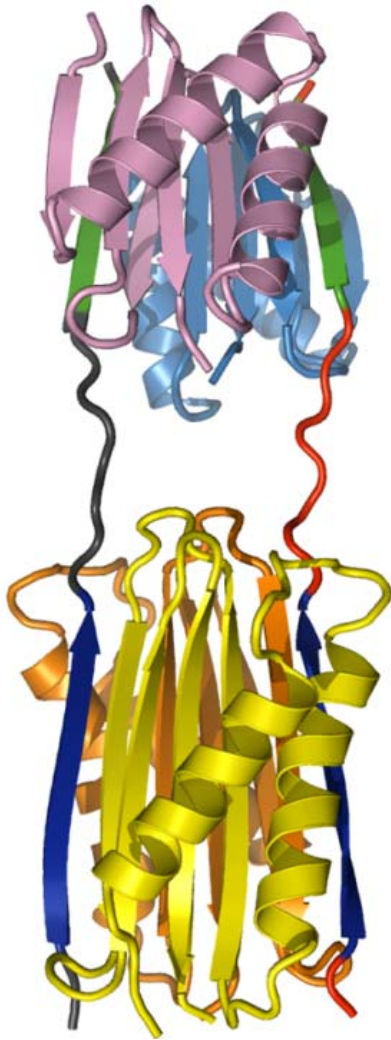


Department of Biochemistry & Biophysics Oregon State University

January 2011



“Revealing how life works”

December 2010

To: Worldwide members of the
OSU Biochemistry and Biophysics Community
From: P. Andrew Karplus (outgoing Chair)

Dear Friends and Colleagues:

As 2010 draws to a close, it is with a sense of joy, satisfaction, and deep gratitude that I write this letter, knowing that the department is doing well and that I am handing off the reins to **Gary Merrill**, who will carry the leadership torch for the next leg. Last year, I wrote that “I expect Biochemistry and Biophysics will no longer be its own department,” but I am pleased to say that has not come to pass. In fact, it not only appears that we will survive, but also that we will be stronger through new hires and through a closer working relationship with the other life sciences departments at OSU.

OSU and Department News

As Oregon and much of the nation are still struggling with high unemployment and budget cuts resulting from the ongoing economic downturn, OSU is surprisingly experiencing its most financially rosy year at least since my arrival 12 years ago. This is the first year in many that OSU is looking to grow the faculty and programs rather than let them shrink to make ends meet. Specifically, the Provost announced a “New Faculty Initiative” creating 30 new faculty positions this year and another 30 next year, in addition to the searches that would have occurred anyway. The upshot is that this year the College of Science has about 15 searches underway compared with three last year. A major reason for the positive picture is the increase in tuition dollars that have been associated with record student enrollment (at nearly 24,000 students). Two other contributors are our strong research funding, again setting a new record with \$275 million in grants and contracts, and the successful Capital Campaign. In October, it was announced that the campaign had reached its \$625 million goal one year ahead of schedule, and that with this momentum, the campaign was being extended by 2 years and \$225 million (to \$850 million total). Major foci for the coming period are endowed faculty positions and scholarships. Over 50,000 individuals have participated, and if you have interest in using your philanthropy to support Oregon State, please get in touch with the OSU Foundation (see <http://campaignforosu.org/>). The Linus Pauling Science Center, which is the centerpiece of the campaign and future home to some BB faculty, is on schedule to be complete in August (you might enjoy the webcam of the developing building at webcam.oregonstate.edu/lpsc/).



In major sports, most of Oregon's attention has been on the Ducks football team, who completed an undefeated regular season and won a trip to the national championship game. Highlights of Beavers sports were a Pac-10 wrestling championship and a women's soccer team that had their best record ever at 16-4-1 and made it to the second round of the NCAA playoffs. Another highlight was an eighth place finish for the gymnastics team led by freshman standout Makayla Stambaugh and seniors Mandi Rodriguez and Laura-Ann Chong. The "lowlight" of the year involved a difficult season for women's basketball; many players left the program and eventually coach LaVonda Wagner was fired.

For the department, this has been a notably positive year. At the top of the list is that we are carrying out two faculty searches. One (chaired by **Elisar Barbar**) is for an enzymologist/protein biochemist and the other (chaired by **Tory Hagen**) is a joint position with the Linus Pauling Institute for someone with expertise in the biochemistry of aging. The aging-related position will contribute to a growing contingent of aging researchers at OSU who just brought an NSF IGERT training grant to campus and are working on extending the human "health-span" ... something that would be a direct practical benefit to all of us!

In terms of OSU's reorganization, we are still working out the details. The plan at the moment is that BB, Microbiology and Zoology will remain as departments, but will be confederated into a School of Life Sciences. The School will serve to build cooperation and collaboration between the units, especially coordinating strategic planning and curricular development that will meet the needs of about 2000 undergraduate majors covering the current departmental majors plus Biology and General Science. In terms of curriculum, a joint curricular planning committee is currently asking what I think is the right question: "if we start from scratch, what is the optimal way to organize life science majors." By spring, we should know the plan and be working to implement it. Interestingly, the building of a new Western University osteopathic medical school in Lebanon (Oregon) may open additional possibilities for collaboration both in teaching and research.

A terrific development this year, that recent (and future) undergrads will be especially pleased to hear, is our updating of the teaching lab. New spectrophotometers, microfuges and a gel documentation system are long overdue and will alleviate the need for students to go up to the second floor to get their work done. Also, a couple of state-of-the-art quantitative PCR machines will open new doors for student training. On a related note, with our largest ever class of about 65 incoming freshman Biochemistry & Biophysics majors, the Provost and Dean provided \$5000 to enhance our students' first-year experience. With these funds **Gary Merrill** has guided the students in a lab experience to create glow-in-the-dark bacteria, and **Kevin Ahern** organized a community-building excursion to Cape Perpetua after which we distributed BB travel mugs and highlighters that our students are now using with pride to make known that they are BB majors.



After the coast trip, students pose with their BB travel mugs

In terms of community activities, during the Governor's Food Drive in February we combined efforts with Microbiology and Food Science and raised over \$4000, worth 20,000 pounds of food. A highlight spearheaded by **Mary Fulton** was a very entertaining Pub Trivia Night and Silent Auction at the Old World Deli with about 100 people participating. I was on a team with five BB undergrads and we tied for first ... and could have won if only we'd known the name of Benny Beaver's girlfriend. Departmental summer activities were an excursion to the 10-falls trail at Silver Falls State Park and the annual Fall Picnic, punctuated this year by the appearance of post-doc **Russell Carpenter's** albino python. The holidays were made festive both by our traditional holiday dessert and ornament exchange and a faculty-staff gathering at the Karplus home to celebrate the changing of the Chairs.



Grad Student Jun Ding holding the albino snake at the BB picnic



Regis Moreau

In terms of transitions, I am pleased to report that this year we added **Regis Moreau** to the faculty as a second Research Assistant Professor from the Linus Pauling Institute. Regis came to OSU as a post-doc with Tory Hagen and has now developed his own research focus involving lipids and aging. A couple of projects are looking into how lipoic acid down-regulates serum triglyceride levels and how the lipid content of mitochondria changes during aging and how that impacts mitochondrial function. The second addition to our faculty is the hiring of **Kari van Zee** this month as a part-time instructor in order to expand the delivery of our laboratory courses to three sections. Also, **Alvaro Estevez**, a former post-doc and collaborator of Joe Beckman, was with us for about 6 months before starting a position at the University of Central Florida. He and Joe completed exciting work identifying a specific tyrosine on HSP90 that when nitrated can cause cell death. In one further transition, **Stewart Gorney**, an MD who had been working independently in Chris Mathews' laboratory since 1999, left to take a position as Chief of Anesthesiology at a Veteran's Hospital in Montana.

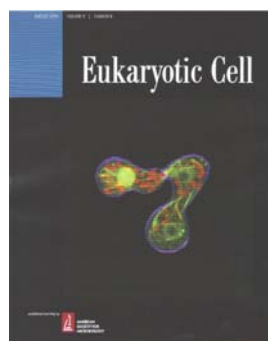


Kari Van Zee

As with last year, individual faculty have been invited to prepare separate mini-newsletters for posting on the web. So to learn more about individual faculty activities and to see our publications from last year, please visit our website at <http://biochem.science.oregonstate.edu/2010-newsletter>. However, a few major accomplishments I'd like to note here. First, this was an extra special year for **Balz Frei**. In recognition of his scholarly achievements (in studies of vitamin C and cardiovascular disease) and his extraordinary leadership of the Linus Pauling Institute, he was named an OSU Distinguished Professor. Since 1988, fewer than 45 faculty have been given this honor, among whom are BB faculty **Ken van Holde**, **Don Reed**, and **Chris Mathews**. In another honor, **Elisar Barbar** was organizer of the Gibbs Conference on Biothermodynamics, an annual gathering of about 200 of the top scientists in that field; she is also this year Chair-elect of the Intrinsically Disordered Proteins subgroup of the Biophysical Society. **Michael Freitag** was in the news for work published in *Nature* showing that horizontal gene transfer is surprisingly common in fungi and must be considered when thinking about antifungal strategies for human, animal and plant health.



Balz Frei



On the grant proposal front, we have our fingers crossed for a couple of collaborative NIH major equipment proposals spearheaded by BB faculty that have scored well: these are **Jeff Greenwood's** proposal for a laser-capture microscope system and **Elisar Barbar's** proposal to update the 600 Mhz NMR facility. Finally, I note that this summer the HHMI program run by **Kevin Ahern** supported 47 students (including 17 BB majors) doing summer research. Disappointing news was the non-renewal of the HHMI funding for the program. Hopefully new sources of funding can be found to continue the program. If you might be interested in donating to sponsor scholarships for summer undergraduate researchers, please contact Kevin.

Among emeritus faculty, **Chris Mathews** is remaining very active, reviewing nearly 100 manuscripts for *JBC* and other journals, getting into the lab to work alongside **Linda Benson** and **Korakod Chimplo** (Ph.D. Mathews, 2002), and completing work on the 4th edition of “Biochemistry” to be published about a year from now. **Ken van Holde** is doing well and while he has recently stopped serving as an editor for *JBC*, he has successfully pursued one of his side interests to the point of publishing with Heinz Decker a fascinating monograph on “Oxygen And The Evolution Of Life.” A big loss for Ken and all who knew her was the passing last February of Ken’s wife Barbara, his life partner for over 60 years. **Bob Becker** and **Wil Gamble**, in addition to caring for their wives, continue to bring their cheer to the department, sit in on seminars and marvel at the new developments of science. Wil is also still trying to learn more about how it is that bears don’t get atherosclerosis.

Recognition of current Graduate Students



First-year students (from left) Sara, Jing, Ariam, Nick, and Yijun

This year we welcomed five doctoral students in the incoming class: **Ariam Kidane** (U Asmara, Eritrea), **Nick Thomas** (Colorado State, Ft. Collins), **Sara Coddling** (Humboldt State), **Jing Jie** (Nankai U), and Yijun Chen (Nankai U). Although Yijun Chen has dropped out, the other four continue. At the other end of the program, three students successfully defending their Ph.D. degrees this year were **Hui Nian** (Dashwood Lab), **Justin Hall** (Barbar Lab), **Andrea Hall** (Karplus Lab) and **Sangeet Lal** (Greenwood Lab). Hui also completed an MS in Statistics and is now working as a Biostatistician at Vanderbilt University.

Justin and Andrea have moved to Connecticut where Justin took a post-doctoral position with Pfizer pharmaceuticals and Andrea is taking some time off before deciding on her next step. Sangeet, who just defended in December, will be here a few more months wrapping things up and lining up his next position.

This year we were very pleased to get word that a BB student once again won the top Grad school award of the Yerex Fellowship! It went to **Rick Cooley**, who has done outstanding work with Dan Arp on the enzymology and physiology of alkane metabolism by microbes and has, with me, done groundbreaking structural work on identifying the evolutionary origins of pi-helices. A highlight of the fall was fourth-year students **Tim Rhoads** and **Luis Gomez** hosting Dr. Mike Marletta from University of California at Berkeley as the 2010 Tsoo King lecturer. Dr. Marletta gave two talks about nitric oxide in biology. It was exciting to hear the inside story of its discovery as a biological signaling molecule from one of the people involved in the work.



Dan Arp, Rick Cooley, Andy Karplus

Recognition of Current and Recent Undergraduates - see undergrad news section by Kevin Ahern

Alumni News

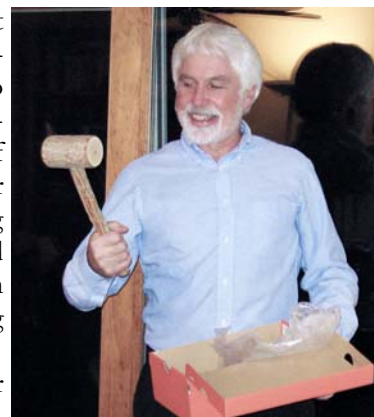
This year I just have news of a few graduate alumni. Among grad alumni, **Donnie Berkholz** (PhD Karplus, 2009), who is continuing his postdoc at the Mayo Clinic, both won an American Heart Association fellowship and with his wife Noel, celebrated the birth of their second child. **Cameron Long** (MS Merrill, 2009) got married this summer and this fall started medical school at OHSU. **Dave Stephenson** (MS Anderson, 1999) is an instructor in the Department of Internal Medicine at the University of Michigan. **Nancy Ray** (PhD Mathews, 1992) continues as a research faculty member at the University of Iowa College of Medicine and was the first author on a paper in *Nature Medicine*: “A new model for Pneumonia.” Chris notes that the paper was full of lipid metabolism, which she certainly did not learn in his lab! Also **Patrick Young** (PhD Mathews, 1992) has graduated three Ph.D. students of his own while serving in the faculty of the Department of Molecular Biology at Stockholm University, Sweden.

Greetings from the New Chair



Outgoing Chair, Andy Karplus and current chair, Gary Merrill

After a week on the job, I have new-found empathy for the pointy-haired boss in Dilbert comics. As a regular member of the faculty, I did not appreciate the skill and dedication my predecessors mustered in running the Department so smoothly. It is an exciting time for BB. Our alumni report they feel well prepared in tackling their careers—music to the ears of their former professors. A record number of freshmen have elected to major in BB - the most challenging and yet rewarding major offered at OSU. Our faculty also do an outstanding job of educating



Gary Merrill with “Attitude Adjuster” gavel

non-majors. Yesterday, I learned that Biology majors, who take our BB450/451 General Biochemistry series, scored an astounding 13 percentage points higher than the national average on the biochemistry section of a nationally standardized exam they take before graduating. After a long hiatus, we were recently given the green light to hire two new faculty members—a development essential to the vitality of the teaching and research mission of the Department. Job interviews should start in a few months and the excitement is palpable. Due to the energies of our faculty in securing research grants, the development of new electronic courses, and the generosity of donors, we have begun to invest in needed infrastructure improvements and were able to institute a new program to match our undergraduate majors with research mentors. Continuing this upward trajectory of accomplishment and promise is a goal all of us—faculty, staff, students and alumni—share, and I will try my best to make it a smooth journey.

Best wishes for the New Year, Gary Merrill



Biochemistry and Biophysics Faculty and Staff at end of year party for Andy on his last day at the helm

BB Undergrad News

by Kevin Ahern

Happy holidays to everyone. 2010 was another exciting year for BB students (present and past) and we were pleased to both see and keep in touch with so many of you. Keep those cards and letters coming. The BB major is literally exploding with students now. The incoming freshman class in 2010 brought 65 freshmen students plus an additional 16 transfer students for a total of 81 new students and 180 total students in the major.

Milestones for several BB graduates included **Jackie Wirz's** completion of her Ph.D. at OHSU and she is currently an Assistant Professor/Biomedical Sciences Information Specialist at OHSU. We learned also of **Anne Marie Corgan** completing her Ph.D. at UT Southwestern in Dallas, TX. She is working as a medical writer. **Dr. Jennifer Atkin Shepard** graduated from OHSU and got married in almost one fell swoop last summer.

Georgi Mitev has decided to pursue a M.S. degree here in Microbiology. **Dan Zollinger** left earlier this year for a graduate program at the Baylor College of Medicine. **Katie Lebold** is working on an M.S. in nutrition with Maret Traber at OSU before applying to medical school. She has a couple of papers in print, a couple more accepted and a couple more at the writing stage. Not bad for one year post-graduation. **Dr. Anna Hsu** celebrated the birth of her second child this year. **Heather Bolstad** reports she is getting close to defending her Ph.D. in Toxicology at UC Davis. **Alex Hadduck** is set for a June departure to sub-Saharan Africa to teach "multiple sciences" for the Peace Corps. **Jessica (Perry) Thorpe** is still working on campus at the National Pesticide Information Center and got married in June to Alex Thorpe in Avery Park. **Len Schulwitz**, working at OHSU doing biophysical studies of lung surfactant proteins, published his first paper this year. **Alexandra Frolova** is looking into European graduate programs in biochemistry and molecular biology.

On the medical front, **Dr. Jeremy Gregory** is a Resident Physician in the Department of Internal Medicine at Mayo Clinic. **Dr. Minh Ho** is a military physician at Keesler AFB in Mississippi. **Drs. Nima Motamedi (MD)** and **Laura Miller (DDS)** are doing well in Miami, FL. Also, several BB alums were accepted into medical programs. They included **Michael Layoun (OHSU)**, **Hank McNett (OHSU)**, **Tony Rianprakaisang (Boston U.)**, **Travis Edmiston (OHSU)**, and **Trevor Starnes (UC Davis)**. **Daniel Bai** completed an M.S. in Biochemistry at the University of Alberta and is now enrolled in medical school at the University of Calgary.



Caitlin Crimp is a 2010 Goldwater Scholar and also BB club president

Nationally, BB students were recognized with two awards. **Caitlin Crimp** received a Barry M. Goldwater scholarship given to the top students in science, math, and engineering. She is the seventh BB student to be so recognized in the past six years. Caitlin was also invited by President Ray to speak at the President's Lunch before the first football game of the year and got to sit in the President's box with her father. BB alumna, **Tari Tan**, was one of three national recipients of the Phi Kappa Phi \$15,000 Fellowship given to students entering graduate study. Tari is pursuing a Ph.D. in Neuroscience and Neurobiology at Harvard University. Two current undergrads (**Shawn Johnson** and **Kyle Ireton**) won national research internships (Harvard and UT Southwestern, respectively). One BB major, **Rebecca Pankow**, received an international internship at the Large Hadron Collider at CERN in Switzerland. Sixteen BB majors received HHMI fellowships this past summer, 6 received URISC awards (half of all the awards given!), 27 received scholarships from the College of Science and 7 were recognized with University awards. Several BB students currently serve as Presidents of campus organizations. They include **Caitlin Crimp (BB Club)**, **Mark Hall (Mortar Board)**, **Rakan Khaki (Sigma Chi)**, **Josh Raines (Lambda Chi Alpha)**, **Steven Brantley (OSU Student Alumni Association)**, **Christine Schneider (Sigma Delta Omega)**, and **Anna Vigeland (Bug Zoo)**.

The graduating class of 2010 had many wonderful successes and it was hard watching them leave. **Sammy Khalil** is working for a couple of years while deciding on medical school. **Adam Ragle** plans to apply to veterinary school. **Caroline Hilburn** is working in Salem and plans to apply to graduate school in Germany. **Andres Cardenas** has decided to enter an MPH program while deciding on medical school. **Meher Vasdev** plans to enter the MPR program at OHSU. **Jonathan Sun** is deciding whether or not to pursue M.S. or Ph.D. in graduate school. **Colin (and Shauna) Tominey** had a beautiful baby girl and left for the MD/Ph.D. program at Yale. Speaking of MD/Ph.D. students, **Chris Brown** joined the MD/Ph.D. program at OHSU. **Kyle Geelan** is following in the footsteps of his brother Aron and is in dental school at OHSU. **Bryan Beall** is working and is in the midst of numerous medical school interviews. **Patty Heinz** has decided to work for a couple of years before applying to medical school. **Sydney Radding** entered the medical program at Eastern Virginia and is aiming to specialize in pediatric oncology. **Sam Albeke** is working and weighing his options for graduate school in the longer term. **Scott Hollingsworth** is working in Salem and has decided to apply to Ph.D. programs in structural biology. He also had his second first author paper accepted for publication. **Elizabeth Cobarrubias** has been finishing up a few additional classes and is preparing for the MCAT. **Alex Dukes Aljets** got married, defended her UHC thesis, and moved to Ohio State University in whirlwind fashion over the summer. She is pursuing a Masters degree in Higher Education and Student Affairs. **Carly Dougher** is in the MPH program at Columbia University.



Many students from the BB Class of 2010 gathered together with their families and some BB faculty to celebrate their accomplishments, enjoy dessert and conversation, and the traditional singing of a couple of Dr. Ahern's metabolic melodies

We were very pleased to have visits this year from several of our graduates, including **Sylvia Tu**, **Tari Tan**, **Travis Edmiston**, **Tony Rianprakaisang**, **Crystal Ives**, **Duy Pham**, **Eric Brooks**, **Gina Capri**, **Keith Hazleton** (who got married in August), and **Dr. Kevan Stanton**.

I apologize if I've overlooked your news or a visit. If you'll remind me, I'll make sure it gets into the news next year. Meanwhile, best wishes for a happy, healthy, and prosperous 2011.

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Closing Thoughts

As noted at the outset of this letter, my term as Chair has ended and Gary Merrill will be taking over. I feel deeply grateful for the support that the faculty and staff and students in the department have given me, and for the patience and grace that they have shown to me. I have had to learn many things as Chair both about the job and about myself, and it has been a stretching and humbling, but rewarding experience. It has been especially rewarding to get to know the breadth of our program and the impact we have through the training and advising of students (both majors and non-majors) and through the research we do and communicate. As a department, we are both a part of discoveries that change lives and a part of an unbelievable number of students achieving their dreams of becoming effective doctors, dentists, researchers, pharmacists, college advisors, military personnel, stay-at-home-parents who volunteer in their kids classrooms, and on and on and on. It is exciting! As Chair I have also been very pleased to get to know some of you, the broader group of alumni and friends of the department, many of whom have been impacted by this department and all of whom are a part of the community whose support and interest in our work is a key part of our every success.

I thank you from the bottom of my heart; and once again on behalf of the faculty, staff, and students in the Department, I wish you a 2011 that is richly filled with the most important things in life.

Yours warmly, Andy Karplus

P.S. For those still wondering, the name of Benny Beaver's girlfriend was named Bernice. I thank my colleagues and especially Kevin Ahern, Chris Mathews, Barbara Hanson, and Mary Fulton for their help assembling information for and editing this letter.