



GREETINGS FROM THE HEAD

Jie Chen

Dear CDB friends,

Welcome to a special edition of the CDB newsletter! This year we celebrate the 30th anniversary of our department.

Founded in 1987, the youngest department in the School of Molecular and Cellular Biology, CDB came into existence at the dawn of eukaryotic cell biology on the heels of the molecular biology revolution. In these pages, the founding head of the department, Dr. Rick Horwitz, gives a nostalgic account of the history of establishing the department, and offers his insights on the past, present, and future of cell and developmental biology. This is followed by a feature of Dr. Alfred Reszka, the first PhD student to have graduated from our department. As always, we also celebrate the achievements by current CDB students and faculty over the past year.

As our country has just undergone an unprecedented transition in the government, one cannot help but reflect on the history of leadership of our institution. In the last 30 years, we have had 6 presidents of the University of Illinois, 9 chancellors for the Urbana campus, and 9 deans of the College of Liberal Arts and Sciences (4 in the last 4 years!). There has been no shortage of controversies and financial hardships. But through it all, the faculty and students have prevailed. We continue to make impactful scientific discoveries, and nurture the next generation of scientists and leaders.

As in the entire university, globalization has been a vital aspect of the research and education in our department. Our faculty's scholarly activities reach many countries – China, India, South Korea, Japan, Israel, Sweden, Germany, and Spain, to name a few. We also have an ethnically diverse population of graduate students, currently representing 9 countries. These students enrich our cultural experiences and, more importantly, their talents have played an essential role in the success of our research programs.

Cell and developmental biology has ushered in a new era of post-genomics, super-resolution imaging, and synthetic biology. Our faculty, students, and academic staff are at the forefront of this revolution. For example, CDB faculty members are leaders in national initiatives such as 4D Nucleome (a concerted effort to probe gene regulation at a new dimension with cutting-edge tools) and BRAIN (Brain Research through Advancing Innovative Neurotechnologies). Stay tuned for future breakthroughs! •

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ABOUT THE NEWSLETTER

The Cell and Developmental Biology Newsletter is an annual publication of the Department of Cell and Developmental Biology in the School of Molecular and Cellular Biology at the University of Illinois, Urbana-Champaign. The newsletter is written by CDB faculty and friends, and is designed by MCB Communications.

Our alumni are important to us. We want to hear from you. Send us your latest news, and we'll include it in the next newsletter's Alumni News. We also welcome articles and suggestions for future newsletters. Here's how to reach us:

Cell & Developmental Biology
University of Illinois at Urbana-Champaign
B107 CLSL, MC-123
601 South Goodwin Avenue
Urbana, IL 61801
email: cdb-news@mcb.illinois.edu



THE ORIGINS OF THE DEPARTMENT OF CELL AND DEVELOPMENTAL BIOLOGY

AN INTERVIEW WITH RICK HORWITZ

The Origins of CDB

Horwitz: 30 years, already? Gosh time goes fast; it seems like yesterday. With apologies to the omissions and mistakes that I will no doubt make, I will try to answer your questions and reconstruct the early days of CDB.

CDB: How was the department formed?

Horwitz: In the mid-80s, biology at Illinois was organized as the School of Life Sciences (SOLS), which comprised several departments that included Genetics and Development, Physiology, Microbiology, Plant Biology, Entomology, and Ecology, Ethology, and Evolution. Biochemistry was in the School of Chemical Sciences.

To complement UIUC's renowned strength in prokaryotic biology and keep pace with national trends in top research universities, Sam Kaplan, the Director of SOLS, saw the need to build eukaryotic cell biology. In contrast to prokaryotic biology, which spawned the molecular genetics revolution, eukaryotic biology was understudied and represented an area of great interest and opportunity – a next step in the molecular biology revolution.

At the time, many institutions were reorganizing and renaming their anatomy departments in medical schools or creating new departments of cell and molecular biology in colleges of arts and sciences. The department of Genetics and Development had been recently dissolved with faculty dispersed among departments where they fit best, and the Anatomical Sciences Department, which was comprised of largely College of Medicine faculty, was chosen to be the home of new cell biology department.

Shortly after I arrived, we petitioned to rename the department. We wanted cell and developmental biology, but in a compromise with the College of Medicine, we named it Cell and Structural Biology. The current name, Cell and Developmental Biology, came much later after the Dean of the College of Medicine changed.

The original faculty was a composite of genetics and development and anatomical sciences faculty. They included: David Stocum (G&D), Jay Mittenthal (AS), Dale Steffenson (G&D), Aulikki Kokko-Cunningham (AS), Jo Ann Cameron (AS), Jim Weyhenmeyer (AS), Chris O'Morchoe (Dean of COM), Pat O'Morchoe (AS), Matilde Holtzwarth (AS), Bill Daniel (G&D); Stephen Kaufman transferred from Microbiology and Rod MacLeod came into the department shortly after it formed. The department was responsible for teaching anatomy, histology and neuroscience (and immunology with the addition of Kaufman) in COM, along with some graduate teaching in SOLS.

The goal of the new department was to create research foci and graduate and undergraduate majors in eukaryotic molecular cell and developmental biology. While a few faculty with these interests had been recruited into the biochemistry department, there was neither a clear home nor focus on either the research or teaching fronts.

CDB: How were you recruited to campus?

Horwitz: I was contacted about the position in 1986 by Stephen Kaufman, who was on the search committee and then in the microbiology department. At the time, I was at University of Pennsylvania Medical School. We had recently co-discovered the integrin family of matrix receptors, and my research program was on a sharply upward trajectory. However, my father was terminally ill, residing in the Midwest, so I was thinking about a move and very much liked the idea of living in a college town. I was also serving on an NIH panel (with Lowell Hager, the Head of Biochemistry at



UIUC) that reviewed the cell and molecular biology and medical scientist training programs nationwide, so I knew a lot about graduate education in the field and what worked and didn't work.

However, I was only 41, and a leadership position like this was neither on my radar nor career path. The efforts of search committee members Stephen Kaufman, Jay Mittenthal, and Bob Gennis, the enormous groundwork done by Sam Kaplan, the emerging friendship with Lowell Hager, and the sincere and deep commitment from the higher administration, particularly Bob Berdahl, the new Vice Chancellor for Academic Affairs, convinced me to take on the challenge. Jordan Konisky, who later replaced Sam Kaplan as SOLS director, was an outstanding mentor.

CDB: What were the initial challenges in getting the department started?

Horwitz: Sam Kaplan had acquired substantial resources for the department, including an initial set of 5 new faculty positions, space, and start up with a formula for additional positions up the road. The growth and development of the department was strongly supported by the higher administration.

A couple of years after I arrived, there was a national economic slowdown accompanied by the usual budget freezes at the University; however, the Vice Chancellor for Academic

Affairs phoned to tell me that we could proceed with our plan and would not be affected by the freeze.

My major challenges were naming the department, recruiting new faculty, developing the graduate and undergraduate majors, and catalyzing cell biology across campus. Fortunately, some of the other departments had faculty in the area; we offered them joint appointments, both to be inclusive and to aid in our recruitment of students and faculty.

We then had to determine the areas for strategic growth that both filled immediate needs and pointed to the future. Andy Belmont, a top microscopist, and Ron Blackman, a *Drosophila* geneticist, were our first hires; they were followed by Chris Doe, David Clayton, and then by Ann Marie Craig, Akira Chiba, David Rivier, Volydya Gelfand, Martha Gillette, and Jon Henry, among others. There was much energy in the department as we continued to recruit faculty and graduate students and develop our educational programs.

To launch the department quickly, we used the anatomical sciences department as a “shell” for the new department. The Dean of the College of Medicine wanted to retain the original name; but our goal was to become a modern cell biology department with a name to reflect its new mission. We compromised and changed the name to Cell and Structural Biology.

Developing curricula for both undergraduates and graduates was the first major challenge for our new faculty. The new undergraduate major grew quickly, known for its rigor, innovative teaching and cutting edge faculty and curricula. Our graduate major also grew quickly and attracted top students, as there were few cell biology departments in the Midwest at that time.

Our signature cell biology course differed from the usual memory-oriented biology courses; we had weekly problem sets and allowed one page cheat sheets for exams, since the focus was on using the learning rather than regurgitating it. These “cheat sheets” were

highly creative, as students sought ways to cram and organize as much information as possible onto one page. One year, I made a departmental display of the most unusual creations. At the start of the course, each year, many students did not like it because it was so different and less predictable than the courses they were used to; however, by the middle of the term, most told us it was a transformative learning experience.

The hiring of Ann Zielinski was a major plus for the department. She was highly organized and understood science. She served as a “director of operations,” addressing budgets, space, personnel and most other issues, letting me focus on the academic concerns both within and outside the department. Ann was supported by Lorie Hatfield who administered the graduate program and Judy Hansens, who administered and organized me.

Overall, these were heady times in the department as we added outstanding new faculty, courses, and students. Some of our faculty won major national awards for young faculty, including Searle, Pew, and HHMI (the first at UIUC). Nearly all of the faculty were on the List of Teachers Ranked as Excellent by Their Students.

Some, like Bill Daniel and Rod MacLeod, received several major teaching awards. The hallway talk was always insightful and fun, and the students, both undergraduate and graduate, were outstanding. Some were even inspirational.

While we were good at seeing diamonds in the rough, once we polished them, others saw their shine. This resulted in aggressive recruitment from other institutions. Our early losses included Ann Marie Craig, who went to Washington University at St. Louis, and Chris Doe, who went to the University of Oregon, as a two-position offer with his spouse.

CDB: Did you use outside resources to build the department?

Horwitz: UIUC had a cell and molecular biology training grant for many years; but it was not reviewed favorably just before

I arrived. Lowell Hager, the Head of the Biochemistry Department somehow decided that I should be the new PI and resurrect the program, as if I didn't have enough to do building the department.

However, it became a way to create a community across the campus. We improved the program by reorganizing its curriculum, adding new faculty, changing student recruiting tactics, and sponsoring an annual, day-long, campus-wide retreat. The grant was renewed, and the retreat was a campus staple for many years. It helped our department recruit top graduate students through the prestige of the training program.

In the early '90s, Ted Brown, the Director of the newly formed Beckman Institute, asked Bill Greenough and me to apply to the Markey Trust for support to recruit a faculty focus in the molecular/cellular neurosciences. The campus contributed 4 new faculty lines. The goal was to recruit the best faculty and let them choose the department in which they might fit best. The proposal was successful, and we recruited Ann Marie Craig and Akira Chiba to the department as the first hires.

CDB: After the department was launched, how did the department agenda and opportunities change?

Horwitz: While the original vision for the School and the department included a new building, its reality seemed distant, at best. However, it rose in the state's funding priorities, due in part to the efforts of LAS Dean Faulkner and the vision of a combined, interdisciplinary chemistry and life sciences building. A group of us, led by Paul Mortensen and Jordan Konisky spent an enormous amount of time with the architects designing the building and the labs. Budgetary issues delayed the construction start, and the ensuing inflation demanded a reduced building size overall. Suddenly our carefully planned labs were simply shrunk by a fixed percentage, across the entire building!

The School of Life Sciences functioned like a traditional biology department split into divisions. However, in response to the

molecular biology revolution, many institutions had either changed their entire biology focus to cell and molecular biology, eliminating other areas of biology, or reorganized biology into a cell and molecular biology department and an integrative, ecological and/or evolutionary biology department.

This possibility gained traction since the biochemistry department was isolated in the school of chemical sciences, and research in cell biology had much affinity with the chemical/biochemical sciences.

After much discussion and planning, the School of Life Sciences split into the two schools that represent biology at UIUC today. Some senior faculty, Andy Wang, Tom Ebrey, and Mary Schuler, joined the department in the wake of the reorganization. They provided additional, needed senior leadership for our growing cohort of junior faculty.

CDB: Why did you step down as head?

Horwitz: While I greatly enjoyed the challenge of planning and launching the department, in the end I was less interested in managing and realized that teaching and research were my passion. It was not possible for me to run a cutting-edge research program and be effective in administration. While I thought briefly about trying to move into administration full time, perhaps as a Vice Chancellor for Research, full time teaching and research fit much better with my interests, temperament, and the exciting opportunities emerging in my field. I liked working in the trenches with my colleagues.

Overall, I thoroughly enjoyed my time as Head; the challenges were significant but so were the rewards. Our faculty and students were the highlight!! Also, I greatly appreciated the intense research culture and focus on excellence at UIUC.

CDB: What have been your endeavors after Illinois?

Horwitz: The University of Virginia contacted me in 1998 about their new initiative in morphogenesis, planning to make my field a focal point at the institution. A move there would allow me to get back to research and teaching full time, functioning like a

new “assistant professor” again, proving myself anew and focusing on research. With Martha Gillette as the new head of CDB, I knew that the department was in terrific hands and that I could move on with a clear conscience.

As I ramped up my research, it became apparent that some significant barriers were limiting progress in cell biology. They dealt with the spatial-temporal nature of most cellular processes and the complex structures and poorly understood signaling networks that drive and regulate them. Around that time, the NIH decided to experiment with large-scale collaborative research mechanisms (Glue Grants). This initiative would allow us to put together teams to approach these barriers. Our successful application conjoined about 20 labs across the US and Europe, paving the way for the needed advances that would move the field forward. As a side product, it catalyzed several interdisciplinary collaborations and initiatives that continue today.

The collaborative grant had a mandatory 10-year sunset. In its wake, I was looking for the opportunity to build another interdisciplinary program and was offered a position as Associate Vice President for Biosciences and Research Programs at UVa. In this position, I identified and supported new collaborative, interdisciplinary research initiatives. The big win was a University-wide “Big Data” initiative, leading to the formation of a new Data Science Institute, conjoining data-related teaching, research and services in the sciences, engineering, math and statistics, biomedical research, the humanities, commerce and business and the social sciences, procuring private funding through endowed chairs and a \$10M donor.

The data science institute was a year-long endeavor; shortly after its launch, I was contacted about my interest in planning and launching a new Cell Science Institute in Seattle, funded by Paul Allen, the co-founder of Microsoft and philanthropist. By this time, I had experienced the power of large scale collaborative and interdisciplinary research. I also realized that my own research was becoming increasingly incremental, largely



Rick Horwitz (2nd from right) with early cell biology graduate students Kevin McDonald (3rd from right) and Eileen Crowley (4th from right)

due to the small lab bias of NIH funding. The institute, in contrast, would allow us to tackle cell biology problems on a large scale and in ways outside the typical NIH funding mechanisms. The Institute goal is to develop predictive models for cellular behaviors using live cell image data that captures the important transient, localized phenomena that comprise cellular activities. In doing this, we are conjoining genome editing, induced pluripotent stem cells, large scale live cell imaging, computational modeling, and animation. All our data, reagents, and methods are open to the public.

CDB: Thirty years later, what do you now see for the future directions of molecular cell biology as a field and what kind of administrative organization might work best?

Horwitz: Cell biology now sits in an interesting position, largely a product of its enormous success. When our department was launched at UIUC, molecular cell biology was the new discipline, due to a pivot from understanding DNA and genetics in molecular terms to understanding cells as complex systems of molecules and molecular assemblies. Now, we have the rough outlines of how cells work and most biomedical scientists embrace the view that cells are the language of biomedical research and disease. So, the discipline sits in this metastable position of knowing a lot superficially but little in detail and also in the center of translational research, envisioning alterations in cellular behaviors as the origin of most diseases. Thus, the field is moving in two directions – one is increasingly chemical and biophysical as we seek to learn about cellular processes in

increasing detail. The other is translational, specializing on specific differentiated cell types and diseases. In other words, the field is fracturing into translational and highly detailed mechanistic approaches.

However, I see the complexity of the cell as a major underappreciated basic science challenge, viewing the cell as a complex system of molecular machines and regulatory complexes that act at particular locations and times. This demands new experimental and computational strategies including machine learning/AI, biochemical, 'omic measurements made inside living cells, elucidating complex structures at high resolution *in situ*, and increasingly accessible *in vivo*-like tissue and organ models.

All of the aforementioned, i.e., the highly mechanistic, translational, and integrated approaches, will increasingly require collaboration, as the problems are too complex, both technically and intellectually, for most individual investigators with small grants and labs. Administrative structures

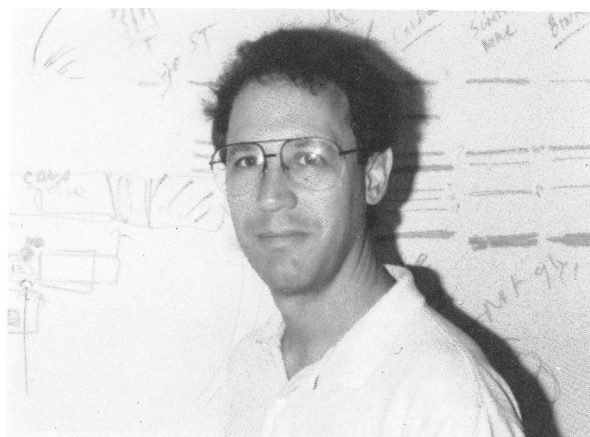
that are somewhat fluid and enable this kind of collaboration will position their faculty to succeed best in this environment. Institutions, like UIUC, that conjoin biology with the outstanding science and engineering departments will have an advantage.

Coda

Horwitz: I thoroughly enjoyed visiting UIUC this past fall, when I spoke at the Carl R. Woese Institute for Genomic Biology. When I met with Jie Chen, she walked me over to the building and showed me around. What great memories!! She pointed out that the department head's office is used as a conference room – something we did when I was Head. It was nice to see the continuity; but it was especially pleasing to hear about Jie Chen's vision and the culture she is supporting in the department. Over the years, CSB/CDB has

benefitted from its committed and gifted leaders: Martha Gillette, Andy Belmont, and now Jie Chen. •

Rick Horwitz was Head of Cell and Structural Biology from 1987 to 1998. He is currently Executive Director of the Allen Institute for Cell Science in Seattle.



Rick Horwitz in the '80s

CDB ALUMNI NEWS

Daniel Barnett, MD/PhD (2011/2010) – Started as Radiation Oncologist, Carle Cancer Center, Urbana, IL, August 2016

Neal Kitchen, PhD (2010) – Promoted to Chief Operating Officer, HydroPeptide LLC, Issaquah, WA, January 2017

Nidhi Khanna, PhD (2014) – Started as Research Scientist, Sorrento Therapeutics, San Diego, CA, November 2016

Jeong-Ho Kim, PhD (2008) – Started as Associate Scientist, Xycrobe Therapeutics, San Diego, CA, January 2016

Paul Nuzzi, MS (2002) – Started as Lead Generation Specialist, CisBio, Bedford, MA, January 2017

Cyril Ramathal, PhD (2010) – Promoted to Senior Scientist II, AbbVie, North Chicago, August 2016

Chia-Yun Sun, PhD (2010) – Started as Senior R & D Engineer, Pall Life Sciences, Westborough, MA, January 2017

Hongbo Yang, PhD (2009) – Promoted to Vice President, Analysis Group, January 2017

Min Zeng, PhD (2015) – Started as Data Analyst, AIDS Healthcare Foundation, Los Angeles, CA, January 2017

Yupeng Zheng, PhD (2010) – Started as Senior Scientist, Sanofi Genzyme, Cambridge, MA, April 2016

Please send your news for the next newsletter to cdb-news@illinois.edu, and let us know if your email changes.

EXCITING TIMES

MERCK RESEARCHER'S CAREER LAUNCHED AT THE SAME TIME AS CDB

by Doug Peterson

Alfred Reszka's future was intertwined with the Department of Cell and Developmental Biology in ways he never could have predicted when he came to the University of Illinois in the 1980s. Reszka was one of the first graduate students in the new department, and the connections he made in CDB laid the groundwork for his entire career.

CDB was created in 1987, although it was known as the Department of Cell and Structural Biology, or CSB, at the time. Shortly after, in early 1988, Reszka joined Professor Rick Horwitz's new laboratory, so he says there was a feeling of exhilaration and freshness.

"Rick was warm and welcoming, and there was a lot of excitement around his mission for the department," recalls Reszka, who completed his PhD in CSB in 1992.

He went on to do his postdoc under a Nobel Prize winner and has so far spent his entire career at the Merck pharmaceutical company. But he credits Horwitz with setting him on this path and teaching him lessons that he carried with him, such as how to generate good testable hypotheses.

"Many scientists believe they have to advocate for their hypotheses," Reszka says. But Horwitz emphasized to him the importance of doing whatever you can to *destroy* a hypothesis. "In failing to destroy it, the hypothesis gets to stand."

Reszka grew up in Northbrook, Illinois, and he originally came to the U of I with the goal of becoming a physician. He entered as a pre-med student in general biology, but the experience of seeing two cadavers convinced him that he wasn't suited to being a doctor.

"I think I turned green," Reszka says.

So he switched to microbiology, obtaining his undergraduate degree from U of I in 1985. After spending a year as a lab technician, he began his graduate studies under Manfred Reichmann, working on viruses. But when funding for their research project didn't come through, Reichmann advised him to switch to Horwitz's new lab in a new, dynamic department—CSB.

In Horwitz's lab, Reszka worked on integrins—cell adhesion receptors that have both developmental and cancer implications. As he studied the role of integrins on cell structure, the structure of his career was coming together in unexpected ways.



For example, the department brought Edmond Fischer from the University of Washington to campus to speak about his research, and this contact led directly to Reszka's postdoctoral work under Fischer. Also, Horwitz sent Reszka to speak at Merck about his integrin research at Illinois, and during this trip he met Gideon Rodan—the researcher who would later hire him at Merck.

Reszka has had a knack for dropping into the midst of exciting, new situations, and that was the case when he started his postdoc under Fischer in August of 1992. Only a couple of months later, Fischer was awarded the Nobel Prize in Physiology or Medicine along with his collaborator, Edwin Krebs, a 1940 alumnus of the U of I.

On the morning of the Nobel announcement, Reszka says, "I remember the clock radio going off, with the station set for NPR. My wife suddenly sat up and said, 'Alfred, your professor just won the Nobel Prize!' It was another stunningly exciting time."



Alfred Reszka in 1988

Reszka became Fischer's last postdoc, which was only fitting because he had been the first student at U of I to complete a graduate degree under Horwitz.

After his postdoc, Reszka joined Merck to do research on Fosamax, which was the leading treatment for osteoporosis. Fosamax went on to sell about \$30 billion over its lifetime, but when Reszka joined Merck in 1997, they didn't yet know how it worked.

"Most people go to pharma companies with the intent of discovering a new medicine, not to find out how an existing drug worked," he says.

"But I was the new guy and I thought it was an interesting opportunity, so I said sure I'll do it."

One year later, they had identified the enzymes and pathways behind Fosamax.

After 10 years with Merck, Reszka began exploring new opportunities in the company and found that they were looking for someone who had knowledge of basic science and marketing and had experience working with physician groups. His research on Fosamax had given him all of these qualities, so he became executive director and head of Strategic Business Intelligence, working in the bone, respiratory, endocrinology, and immunology areas. Most recently, he also became interim head of Global Competitive Intelligence.

Once again, he says the skills for these jobs can be traced back to his time in CSB working in Rick Horwitz's lab.

"Rick taught me to look at the larger picture," he says. "Yes, you're working on something very specific in a lab, but I learned it plays a role in a much larger picture."

"So Rick trained me to be a good scientist," he adds, "but he also trained me to be a good businessman." •

PRACTICE MAKES PERFECT

PROFESSOR DAVID RIVIER RECEIVES 2016 LAS DEAN'S AWARD FOR EXCELLENCE IN UNDERGRADUATE TEACHING

by Dr. Sayantani Sarkar

Until her junior year as an undergraduate majoring in Molecular and Cellular Biology (MCB), Sarah Tucker was having a hard time deciding between graduate school and medical school. Then she took a course with Professor David Rivier, and her future plans started to crystallize.

For the first time, Sarah observed biological concepts coming to life during Prof. Rivier's lectures. She learned the art of demystifying the complex biological concepts and delving deep into the actual research as the foundation of these concepts.

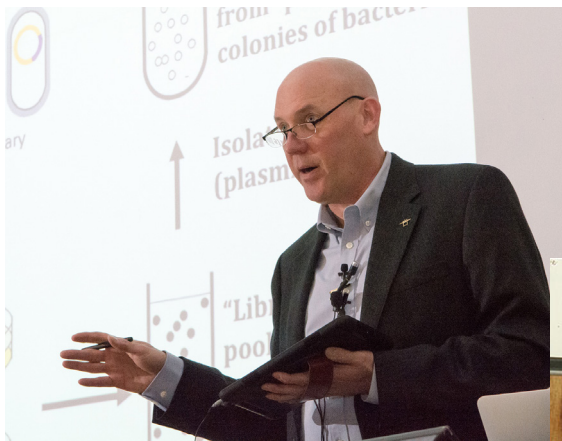
"Dr. Rivier was a significant factor in my decision to pursue a PhD in molecular biology," she said.

Ms. Tucker is just one of numerous students who have credited Prof. Rivier for making pivotal contributions to their undergraduate education over the years at UIUC.

Another student, Brittany Cline said, "David taught our class by telling the story of how we know what we know in science." This is the class where she learned to think about questions that are relevant to current biological scientists. "Here, I learned to think like a biologist," said Ms. Cline. "It is truly rare to find a professor, like Dr. Rivier, who can make nearly every topic seem interesting and relevant."

Martin Musuruana, a former student of Professor Rivier, describes how he has applied the learning strategies he discovered in Professor Rivier's course to his current medical school classes, noting that he has "approached medical school first by understanding the larger picture and then diving into the small, yet equally important, specifics."

These students' testimonials stand to support Dr. Rivier's tireless dedication to undergraduate teaching, which has been recognized with a 2016 LAS Dean's Award for Excellence in Undergraduate Teaching.



David Rivier, 2016

Prof. Bill Brieher, a CDB faculty and an outstanding teacher himself, says of Rivier's lectures: "David is the clearest lecturer I have ever heard in all of my scientific training." Prof. Brieher notes, "Such polished delivery requires a gift for presentation as well as long hours practicing and preparing. No amount of practice could produce these lectures without pure talent, and no amount of talent could produce this without lots of practice."

Over the two decades of his career at Illinois, Prof. Rivier has made a broad impact on undergraduate education. He is the only faculty member in the history of the department who has taught undergraduate classes at all levels: 100, 200, 300, and 400.

Professor Rivier is known for constantly adopting new technologies and adapting to the evolving needs of students. He was among the first on campus to pilot the Kaltura Video Platform hosted on Illinois Media Space. Kaltura is like YouTube



David Rivier, 1993

for classroom lectures that can only be accessed by registered students. Rivier has been recording lectures in his classrooms for over two years now, and the videos have been very popular with the students. Over 90% of students reported these video-lectures helped them achieve a better grade.

The first semester of video-capturing used an expensive device located in only a few classrooms, later replaced with an inexpensive substitute suggested by Rivier, in collaboration with colleagues in the Center for Innovation in Teaching and Learning (CITL), that works in virtually any classroom on campus.

The Director of CITL, Prof. Michel Bellini, who co-taught MCB 252, "Cells, Tissues & Development," with Dr. Rivier says, "More than a teacher, David is a wonderful educator who deeply cares about what and how his students learn."

Despite the accolades, Dr. Rivier maintains a humble stance; he asks students to address him by his first name and he tells them, "I consider us to be on the same footing with the common goal of your education." •

JIM SPUDICH WINS A 2016 COLLEGE OF LIBERAL ARTS AND SCIENCES ALUMNI ACHIEVEMENT AWARD

The life of James Spudich changed forever, thanks to two years in the laboratory of University of Illinois biochemist Woody Hastings, as well as two summers in Woods Hole, Massachusetts, where he helped Hastings teach a physiology course. These experiences led Jim to switch from chemistry to biochemistry, and Woods Hole is where he met his wife, Anna. They have now been married 52 years.

And Jim has become one of the most renowned biochemists in the world. He is currently the Douglass M. and Nola Leishman Professor of Cardiovascular Disease at Stanford University Medical School.

His parents always encouraged him and his brother to pursue chemistry. It was their burning passion—literally, at times, as punctuated by experimental explosions in drainage ditches.

Jim began studying molecular motors during his postdoctoral work at Cambridge, England, from 1969 to 1971. In 1986, Jim and his PhD student Steve Kron proved that out of the thousands of proteins in a cell, you only needed two of them—actin and myosin—to create movement that was the equivalent of a muscle contraction. In another breakthrough, this one in 1994, Jim's work on actin and myosin helped open up the field of single molecule biology.

Today, scientists around the world use the laboratory procedures that Jim and his students developed from their research.

Jim's decades of innovative and groundbreaking contributions to the scientific field have earned him practically every award in biomedical research. He is a member of the National Academy of Sciences since 1991. In 2012, Jim received the Albert Lasker Award in basic medical research, often referred to as "America's Nobel prize."



Together with Nobel laureate Steve Chu, Jim founded Bio-X, a Stanford program that brings together over 600 faculty for interdisciplinary research in biosciences. Jim served as the first Bio-X director from 1998 to 2001. He also started two companies that have drugs in late-stage clinical trials, against heart failure and ALS. And whenever he wants a break, Jim goes to the air. He has been flying small planes for more than 40 years, and has even written a book on flying.

Jim quotes Antoine de Saint-Exupéry who once said, "I fly because it releases my mind from the tyranny of petty things." •

2016 DEPARTMENTAL AWARDS

Graduate Students

Oyetunji A. Tungoon Memorial Award for Outstanding Research Achievements
Sumanprava Giri, adviser: Dr. Supriya Prasanth

Outstanding Teaching Assistant Award
Alvin Thomas, adviser: Dr. Jonathan Henry

Chester and Nadine Houston Fellowship
Yo-Chuen Lin, adviser: Dr. Supriya Prasanth

CDB Graduate Student Platform Presentation Award
Kook Son, adviser: Dr. Jie Chen

Undergraduate Students

Roderick MacLeod Awards for Academic Excellence
Ayana Jamal, adviser: Dr. Phillip Newmark
Jeonghun Park, adviser: Dr. Andrew Belmont

CDB Award for Excellence in Undergraduate Research
Ayana Jamal, adviser: Dr. Phillip Newmark

Outstanding Undergraduate Research Achievement Awards
Caitlin Dingwall, adviser: Dr. Phillip Newmark
Diana Fan, adviser: Dr. Lisa Stubbs
Abhijith Matur, adviser: Dr. Supriya Prasanth

Undergraduate Research Achievement Awards
Mellissa Grana, adviser: Dr. Mary Schuler
Jeonghun Park, adviser: Dr. Andrew Belmont
Jeremy Quinones, adviser: Dr. Mary Schuler
Allyson Ray, adviser: Dr. Gene Robinson
Jessica Strzepka, adviser: Dr. Mary Schuler
Amanda Sul, adviser: Dr. Rachel Smith-Bolton

STUDENT AND POSTDOC NEWS 2016

Derek Caetano-Anolles awarded PhD, May 2016 (Adviser: Lisa Stubbs)

Thesis title: "Gene duplication and alternative splicing play a role in modulating the functions of the ZNF286A transcription factor"

Current position: Postdoctoral Researcher, Max-Planck-Institut für Evolutionsbiologie

Dr. Arindam Chakraborty, formerly postdoc in the S. Prasanth lab, started his position as Principal Scientist, Enzene Biosciences Ltd (a part of Alkem Laboratories Ltd), Pune, India

Yu Chen awarded PhD, August 2016 (Adviser: Andrew Belmont)

Thesis title: "TSA-Seq": a novel proximity mapping approach for studying three dimensional genome organization and function"

Current position: Postdoctoral Researcher, UIUC

Xiang Deng awarded PhD, December 2016 (Adviser: Andrew Belmont)

Thesis title: "Analyzing large-scale chromatin fiber via studying cytology of DNA replication and in vivo immunogold labeling"

Current position: Postdoctoral Fellow, Harvard Medical School

Dr. David Forsthoefel, formerly postdoc in the Newmark lab, started his position as Assistant Member in the Functional & Chemical Genomics Research Program, Oklahoma Medical Research Foundation

Sumanprava Giri awarded PhD, May 2016 (Adviser: Supriya Prasanth)

Thesis title: "Role of ORCA and ORC in chromatin organization and DNA replication"

Current position: Postdoctoral Research Fellow, Harvard Medical School

Paul Hamilton awarded PhD, August 2016 (Adviser: Jonathan Henry)

Thesis title: "New insights into cornea-lens regeneration in *Xenopus laevis*: the role of Wnt/beta-catenin signaling and the regenerative capacity of the limbal region"

Current position: Assistant Professor, Department of Biology, Illinois College

Mahdieh Jadalaha received a travel award from the Cold Spring Harbor Regulatory & Non-Coding RNAs Meeting, August 2016.

Dr. Maryna Lesoway, Postdoctoral Fellow in the Henry lab, received an Emerging Models Grant from the Society for Developmental Biology and the MBL's Whitman Center Early Career Investigator Award.

Yo-Chuen Lin was awarded a National Cancer Institute Stipend for his participation in the Cold Spring Harbor course on Expression, Purification, and Analysis of Protein and Protein Complexes, April 2016

Ambika Nadkarni awarded PhD, August 2016 (Adviser: William Brieher)

Thesis title: "A biochemical investigation of actin disassembly mechanisms"

Current position: Postdoctoral Fellow, University of California, Berkeley

Christina Rosenberger awarded PhD, August 2016 (Adviser: Jie Chen)

Thesis title: "Regulation of mTORC1 by phosphatidic acid: mechanism and structural insight"

Current position: Medical Writer, Technical Resources International, Inc.

Amir Saberi awarded PhD, August 2016 (Adviser: Phillip Newmark)

Thesis title: "Somatic regulation of germ cell development in the planarian *Schmidtea mediterranea*: the role of systemic and local factors"

Current position: Postdoctoral Fellow, Johns Hopkins University School of Medicine

Kook Son received a travel award from the 26th tRNA Conference, Korea, September 2016

Younguk Sun awarded PhD, August 2016 (Adviser: Lisa Stubbs)

Thesis title: "Dissecting the regulatory roles and cellular functions of mammalian ZSCAN5B and primate-specific paralogs"

Current position: Postdoctoral Associate, Sanford Burnham Prebys Medical Discovery Institute

Alvin Thomas awarded PhD, May 2016 (Adviser: Jonathan Henry)

Thesis title: "Investigating the role of CYP26 and retinoic acid signaling regulation in vertebrate cornea and lens regeneration"

Current position: Medical Student, UIUC

Rachel Waldemer-Streyer awarded PhD, August 2016 (Adviser: Jie Chen)

Thesis title: "Muscle-derived cytokines: novel regulators of skeletal myogenesis"

Current position: Medical Student, UIUC

Yating Wang received a travel award from the Cold Spring Harbor Laboratory Epigenetics & Chromatin Meeting, September 2016

Hui-Chia Yu-Kemp awarded PhD, December 2016 (Adviser: William Brieher)

Thesis title: "The characterization of collapsin response mediator protein-1 (CRMP-1) for Arp2/3 dependent actin structures"

Current position: Lineberger Cancer Center Postdoctoral Trainee, University of North Carolina, Chapel Hill

REUNITED AT LAST



Mahdiah Jadaliha and Mohsen Jamaali
UIUC, February 2017

Mahdiah Jadaliha did not see her husband for two and a half years.

A 6th-year graduate student in the CDB PhD program, Mahdiah will soon defend her dissertation. For fear that a lengthy visa renewal process would delay her studies, Mahdiah has not traveled to her home country, Iran, since 2014.

Her husband Mohsen Jamaali, a PhD mathematician in Iran, spent the last two years going through an extreme vetting process for a visa to visit her in the US. On January 21, 2017, Mohsen's visa was approved and the passport was sent to the US embassy to be stamped.

Unfortunately their reunion faced an additional delay. A few days after the visa was approved, a presidential executive order banned travel to US from seven countries, including Iran, and Mohsen's visa was immediately revoked.

A week later, the travel ban was blocked by the ruling of a federal judge, and the freeze on the executive order was maintained by a federal appeals court panel. Mohsen's visa was reinstated, and he arrived in Champaign-Urbana on February 16. The couple's separation of 919 days has finally come to a happy ending.

Here is a brief account of the couple's challenges in their own words:

Mahdiah: Being a graduate student has its own challenges, and being an international student adds even more. I came to the US three weeks after my marriage, and my husband used to live with me in US until the last time we went for a conference in Canada. To come back to US, we had to re-apply for a US visa. My visa was approved after two months, but my husband's got stuck in a very long administrative process. We had not seen each other for more than 900 days and those days were full of uncertainty for me. We did not know when his visa would be granted, and we did not know why it was taking so long since he had been to the US two times before without any problem. We were just getting generic emails from the embassy whenever we contacted them. Finally, we received the good news of visa approval, but then the president's Executive Order took effect. Our moments were like riding on roller coaster continuously for three weeks until he finally made it here on February 16. Now, words are not able to describe my happiness of being reunited. However, I am still worried about more individuals who might have and may have been affected by the anticipated new executive order.

Mohsen: Mahdiah and I went through lots of ups and downs during these tough two and half years. We were not able to plan our future because we did not know how long the visa application procedure would last. I had declined a faculty position offer at the University of Tehran to join Mahdiah. Mahdiah was here alone for a long time, and I was always worried if our difficult situation would affect her education and her future career. After more than two years, I received the good news in late January 2017 that my visa had been processed. I did not tell Mahdiah right away because I wanted to surprise her. But when I sent my passport to the embassy for visa stamp, I was informed about the executive order for a visa ban on all citizens from seven countries, including Iran. You know the rest of the story. Now, I feel very relieved that we are together again. •

SECOND ANNUAL DEPARTMENTAL RETREAT, 1992



FACES FROM THE PAST (AND SOME CURRENT)



Andy Belmont



Ron Blackman



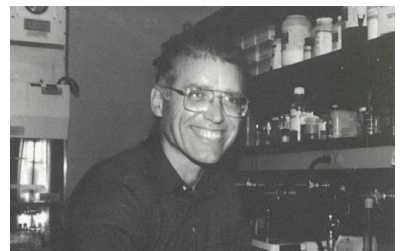
Jo Ann Cameron



Mair Churchill



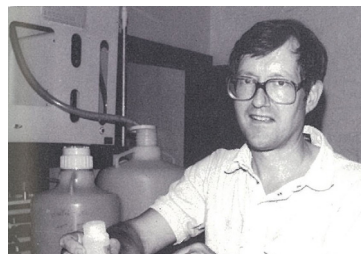
David Clayton



Bill Daniel



Chris Doe



Tom Ebrey



Volodya Gelfand



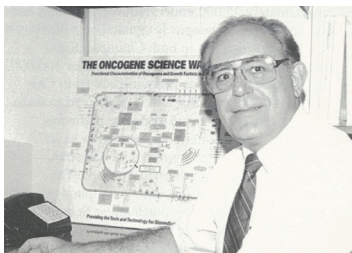
Martha Gillette



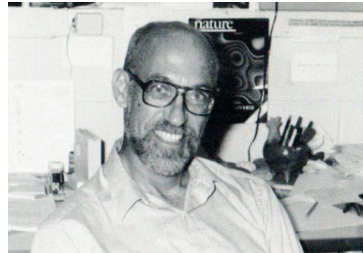
Jon Henry



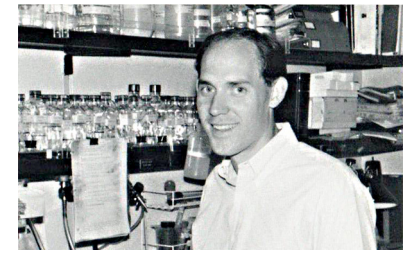
Stephen Kaufman



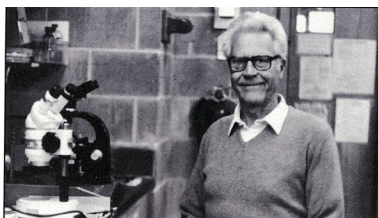
Rod MacLeod



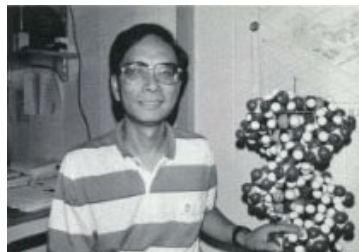
Jay Mittenthal



David Rivier



Dale Steffensen



Andy Wang



Jim Weyhenmeyer