



Newsletter

Case Western Reserve University MSTP
mstp.cwru.edu

2003-2004

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From the Director

by Cliff Harding

The Case MSTP has an outstanding set of program offerings, but we are always considering ways to further enhance the MSTP. This year we are trying two new initiatives. The first is the Agre Society (see page 7) and the second new program offering is the MSTP Clinical Refresher Course. This new educational initiative will be for MSTP students who will reenter medical school in July as 3rd year medical students. These students will have been working on their PhD for an average of almost 4 years and may or may not have taken the established longitudinal MSTP Clinical Tutorial for one or more years during the PhD phase. Thus, these students may need refreshment and enhancement of clinical skills prior to starting Med Year 3. This course will aim to refresh and enhance clinical skills that MSTP students acquired in their first two years of medical school. There will be two parts to this clinical initiative. In February, students will observe two different hospital services. Each student will spend two consecutive days on two different services for a total of 4 inpatient observation days. Students will be able to choose observation on medicine and obstetrics/gynecology services, or a pediatrics/surgery combination. The second part of this course will occur over 5 days in late spring. This phase will include didactic review plus performance of an observed history and physical exam. In summary, this course will serve to refresh clinical skills of MSTP students immediately prior to the start of Med Year 3. We will continue to offer the MSTP Clinical Tutorial to students in the PhD phase, since this course serves different goals, including longitudinal development of connections between research and clinical interests. While the MSTP Clinical Tutorial is limited to MSTP students, we will be able to accept other combined degree students into the MSTP Clinical Refresher Course. The course director for both of these courses is Dr. Deb Leizman, who has expended considerable effort in developing these programs. Bravo Dr. Leizman!

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From the Associate Director

by George Dubyak

This is my first contribution to the MSTP Newsletter since assuming the position of Associate Director about a year ago. I'll take this opportunity to describe my background and history with the MSTP at Case. I'll also offer perspective on my various roles as Associate Director.

I'm a native Philadelphian who received a B.S. in Biology in 1974 from Saint Joseph University, a small Jesuit college in Philadelphia similar to John Carroll here in the Cleveland area. (As I write this in early March, the SJU basketball team remains undefeated in its regular season and is ranked 2nd nationally – Go Hawks!)

(continued on page 7)

Transitioning Students 2003

e s n t t u e d r e i n n t g s

- Jeff Beamish**, Troy, OH. *Undergraduate Institution:* Northwestern University.
Scientific interests: Biomedical Engineering.
- Andrew Blum**, Baltimore, MD. *Undergraduate Institution:* University of Pennsylvania.
Scientific Interests: Biochemistry/Pharmacology.
- Sarah Drawz**, Columbus, OH. *Undergraduate institution:* Amherst College.
Scientific interests: Pharmacology.
- Justin Hartup**, St. Louis, MO. *Undergraduate institution:* Washington University.
Scientific interests: Pathology.
- Charlene Kan**, Midland, MI. *Undergraduate institution:* Hope College.
Scientific interests: Pharmacology.
- Phil Larimer**, Goshen, IN. *Undergraduate institution:* Oberlin College.
Scientific interests: Neuroscience.
- Paul Lin**, Cupertino, CA. *Undergraduate institution:* University of California, San Diego.
Scientific interests: Biomedical Engineering.
- Tim Mariano**, Natick, MA. *Undergraduate institution:* Harvard University.
Scientific interests: Biomedical Engineering.
- Eugene Oh**, Portland, OR. *Undergraduate institution:* Johns Hopkins University.
Scientific interests: Neuroscience.
- Analiz Rodriguez**, Cape Coral, FL. *Undergraduate institution:* New College of Florida.
Scientific interests: Pharmacology.
- Michael Sobieraj**, Syracuse, NY. *Undergraduate institution:* Cornell University.
Scientific interests: Biomedical Engineering.
- Kevin Steiner**, Kidron, OH. *Undergraduate institution:* Eastern Mennonite University.
Scientific interests: Pathology.
- Arundhati Undurti**, Norwood, MA. *Undergraduate Institution:* University of Massachusetts - Boston. *Scientific Interests:* Biochemistry.

Returning to the Lab

- Candice Bookwalter**, Biomedical Engineering. *Advisor:* Jeffrey Duerk. *Area:* Pulse sequence design for MRI vascular imaging.
- Molly Gallogly**, Pharmacology. *Advisor:* John Mieyal. *Area:* Glutaredoxin levels and activity in explaining the differential susceptibility to heart disease in aged vs. young populations.
- Aryavarta Kumar**, Biomedical Engineering. *Advisor:* Roger Marchant. *Area:* Peptide nucleic acid chains that can be engineered to form repeating patterns on a surface.
- Coby Larsen**, Biomedical Engineering. *Advisor:* Kandice Kottke-Marchant. *Area:* Vascular tissue engineering.
- Michael Lobritz**, Molecular Biology & Virology. *Advisor:* Eric Arts. *Area:* Entry inhibitors of HIV-1 and evaluating mechanisms of resistance and stimulation of virus production.
- Michael Lupa**, Neuroscience. *Advisor:* Jerry Silver. *Area:* Spinal cord injury, including the potential for plasticity following injury and potential for regenerated neurons to form functional synapses with their former targets.
- Svjetlana Miocinovic**, Biomedical Engineering. *Advisor:* Cameron McIntyre. *Area:* Investigating deep brain stimulation mechanisms through computer modeling.
- Marjorie Montanez-Wiscovich**, Pharmacology. *Advisor:* Ruth Keri. *Area:* Downstream targets of ErbB2-induced tumors in the mouse mammary gland.
- Nicole Pecora**, Pathology. *Advisor:* Cliff Harding. *Area:* Modulation of macrophage antigen processing by *Mycobacterium bovis*.
- Mark Samols**, Microbiology. *Advisor:* Rolf Renne. *Area:* Structural analysis of the latency associated nuclear antigen of Kaposi Sarcoma's Associated Herpes Virus.
- Jodi Thompson**, Pharmacology. *Advisor:* Peter Zimmerman. *Area:* Mechanisms of resistance to the antimalarial chloroquine in the malaria species *Plasmodium falciparum*.
- Brent Weinberg**, Biomedical Engineering. *Advisor:* Jinming Gao. *Area:* Extending current imaging techniques, including MRI/CT/nuclear medicine, to monitor the success of new strategies for targeted cancer drug.

Transitioning Students 2003

The New Ph.D.'s

In Spring 2003, these students successfully defended their theses, and they have now reentered medical school to complete their medical degrees.

Jeff Bailey

Evan Eichler, Genetics

Anne Deucher

Richard Eckert, Physiology and Biophysics

Josh Friedman

Sandy Markowitz, Genetics

John Gray

Bryan Roth, Biochemistry

Roe Lazebnik

David Wilson, Biomedical Engineering

Rish Pai

Cliff Harding, Pathology

Edmunds Reineks

Anthony Berdis, Pharmacology

Aneta Reszko

Henri Brunengraber, Biochemistry

Andrew Schade

Alan Levine, Pathology

Philip Verhoef

George Dubyak, Physiology and Biophysics

David Wald

George Stark, Pathology

Zongqi Xia

Bryan Roth, Biochemistry

Dr. Brian Lestini

Pediatrics

Children's Hospital - Los Angeles

Dr. Nicholas Potter

Neurology

Cleveland Clinic Foundation

g r a d u a t i n g
s t u d e n t s

Winter Retreats

2003 - by Tehnaz Parakh

Each year, the Case Medical Scientist Training Program hosts a retreat whose primary objective is to foster the development of "physician-scientists" by providing a forum for scientific exchange that highlights the basic research aspect of their training. While head-banging-against-the-wall and other such activities are relegated to other retreats, this annual MSTP gathering is a snapshot of how students in their research years spend their time. During the day-long retreat, students present their thesis research, either completed or in progress, in short talks or poster sessions. In addition, an outside speaker, whose research, practice, or profession is relevant to the career development of MSTP students, and of outstanding scientific caliber, is invited to give a keynote address. Mentors are also invited in order to expose first and second year students to faculty whom they may choose as their future advisors.

February 5th, 2003 marked the 4th Annual MSTP Winter Retreat, held at the George S. Dively Conference Center (no small feat, but handily taken care of by Deidre Gruning). Almost 70 students and 29 faculty were in attendance for a record 15 talks (10 minutes each due to the large number of students presenting), and 28 posters. Topics covered ranged from interventional magnetic resonance imaging and the identification of Vitamin D target genes in osteoblasts to the study of RNA splicing mechanisms using the *Drosophila* gene *sex-lethal*. The scope of research represented the vast array of PhD programs training MSTP students.

In addition to the student presentations, Dr. Richard Weinshilboum, Professor of Medicine and Pharmacology at the Mayo Clinic College of Medicine, gave the keynote address on the pharmacogenetics and pharmacogenomics of enzymes that catalyze the metabolism of drugs, as an exemplar of translational research. Such research contributes to our understanding of the role of inheritance in individual variation in response to drugs and in the pathophysiology of human diseases. A small group of students also had the additional pleasure of a breakfast meeting with Dr. Weinshilboum. As a member of the MSTP community at the Mayo Clinic, Dr. Weinshilboum led an energetic discussion of many hurdles facing MSTP students both during their training and beyond, especially those concerning the proverbial balance between the bedside and the bench. Of note, Dr. Weinshilboum accepted our invitation with enthusiasm, and went through some difficulty to join us, despite a very busy teaching and clinical schedule-serving once again, albeit unwittingly, as an inspiration to students.

Of course, the final measure of success at MSTP events is the-food, and I can't possibly leave out the fact that the menu was discussed, rediscussed, and finally...delicious...and plentiful. Thanks to Deidre and Donna for all the hard work!

2004 - by Aaron Tobian

The winter retreat in 2003 took place on January 21st at the Cleveland Clinic International Hotel. The keynote speaker was Dr. Krisiti Anseth, a Howard Hughes medical investigator and biochemical engineer from the University of Colorado. Her research is at the forefront of the interface between biology and the engineering of polymeric biomaterials. She spoke about the development of biofunctional, polymeric bioscaffolds that facilitate tissue regeneration.

The retreat focused around MSTP students presenting their research. Ten students from the departments of Biomedical Engineering, Genetics, Neurosciences, Pathology, and Pharmacology gave oral presentations. There were also two poster sessions where all the other Ph.D. phase students presented their research. The 2004 MSTP Winter Retreat was once again successful in allowing students to present their work and allowing the community to learn about the research activities of Case MSTP students.

Summer Retreats

by Shibani Mukerji

The summer retreat is a great time for friends in the MST program to get out of their labs and enjoy great food, the outdoors, and speakers who talk about not only the science of medicine but also its applications. This year's annual summer retreat was held on July 30th-31st at the beautiful Sawmill Creek Resort in Huron, Ohio. The resort included a golf course, fishing, tennis courts, crucial baseball and soccer fields, and swimming. It also had a nice overall outdoor/hunting theme which was apparent with large stuffed animals in various places.

Our keynote speaker was Dr. James R. Gavin, III, President of Morehouse School of Medicine in Atlanta, Georgia. Dr. Gavin received his PhD in biochemistry at Emory University in 1970 and from there went on to earn his MD from Duke University in 1975. His career in medicine has been marked by impressive achievements and honors from both the clinical and scientific community. He served as the president of the American Diabetes Association and was named Internist of the Year from the National Medical Association. As for research, he became a Howard Hughes senior scientific officer in 1991 and was later promoted to director of its Health Research Scholars Program. However, it was Dr. Gavin's charismatic personality and evident enthusiasm for tying in the science with the clinic that made him an exceptional and fascinating speaker. His speech was loosely based on the question of how to be an MD/PhD in today's world and at the end of his talk, the group came away feeling that with the dual degree anything and everything is possible in medicine.

For our evening speaker, we had the very lively and much-beloved biochemistry professor, Dr. Richard Hanson, who spent dinner entertaining us with his scientific interpretation of the late Dr. Atkins' diet. Dr. Hanson is one of the very few professors endowed with the unique ability to make biochemistry understandable and enjoyable for everyone and he did not disappoint us in his explanation of the Atkins revolution. This spirited discussion on whether or not bacon can truly be a staple of a weight loss diet was an excellent transition to the greasy, meat filled snacks and multitude of beverages provided for the nighttime activities. Of course, the main attraction of the night was the recently made annual karaoke-fest and it was a night that lasted well into the morning with the sweetly sung, admirable rendition of "Fat Bottomed Girls" permeating the air.

The retreat also featured lectures describing gene knock-out technologies using two distinctive approaches. Dr. Ruth Keri, Assistant Professor of Pharmacology and Faculty Advisor for the Transgenic Core Facility, discussed the methods and application of the widely used transgenic and knock-out mice technology. Dr. Edward Greenfield, Associate Professor of Orthopedics, later provided us with the procedures and uses for the more recently developed skill of gene knock-downs using novel silent RNA techniques. And finally, it would not be possible to have a retreat without a practical everyday life question being answered in a theoretical, abstract manner, so this year we had one workshop where we were able to get some advice and ask questions about the much heated topic of taxes from a representative of H&R Block.

And lastly, a distinctive function of the summer retreat, as opposed to the winter retreat, is to provide a forum for all students to offer feedback and give suggestions on ways to improve the MSTP. Included with the section on feedback this year, we had a panel of predominately PhD phase students giving much needed advice on how to pick a lab and/or mentor.

I want to especially thank Fatima McKindra for all her help and support in planning this event. She personally invited Dr. Gavin and Dr. Greenfield as well as organized the student rap session, and I truly appreciate all her efforts. I would also like to thank Deidre and Donna for all their help in organizing the retreat. It is an understatement to state that this retreat would have been impossible without their continued dedication. We are definitely looking forward to a great new MSTP year and the summer retreat in 2004!

Student Activities

MSTP Council 2002-2003

by Ram Balu, President Emeritus

One of the unique features of the Medical Scientist Training Program is that it is not only student centered, but in many aspects, student driven. The MSTP council is the forum by which students can voice their opinions and effect change on aspects of the MD/PhD program that directly affect them. The work of MSTP council representatives has touched many aspects of the program, from curricular issues (with the establishment of the student initiated Clinical Tutorial program), to the design and maintenance of the program website.

The 2002-2003 academic year has been a fruitful and productive one for the MSTP council. As always, the council's main responsibilities were to plan the annual summer retreat, plan social events for the MSTP student body, maintain and improve the website, and plan a monthly dinner/seminar series for the MSTP community. In addition to these tasks, several new initiatives were brought forward. First, the council has started a community service/outreach program. This program has been well received by students and is sure to grow and prosper in the future. Second, in collaboration with the department of Medicine, the student council has launched a new monthly seminar series that emphasizes how basic bench research and clinical medicine are integrated. The Agre Society (named after Peter Agre, 2003 Nobel Laureate in Chemistry and former resident in Medicine at University Hospitals), brings together both MSTP students and residents and clinical fellows who have a strong interest in research together to discuss their respective research projects and how research and clinical practice can be combined. The Society will also sponsor the visits of prominent physician/scientists to Case. Future visits in the upcoming year include Henry Bourne and Arthur Weiss (both from UCSF) and Peter Agre (from Johns Hopkins).

Artists in Medicine

by Michael Drage

The annual gathering and display of artistic talent known as Artists in Medicine (AiM) took place in early December. This year was a little different than those of yore, in that the live performance rocked the Barking Spider instead of the student lounge. The familiar faces of the Barking Spider served up some beverages, catering was provided by Amir's, and good cheer was provided by artists and spectators alike. The live show consisted of 11 acts through a tightly packed, two-hour period. I was surprised to learn that our ranks have been infiltrated by masters of rock and roll, classical music, rockabilly, Scottish dancing, DJ spinning, and even animation. Each performance was characterized by impressive enthusiasm and talent. There also was a week-long, 35-piece display of art in the fourth floor student lounge of the medical school. This display was also wonderfully eclectic, including photographs, ceramics, paintings, drawings, millinery, and jewelry. Deserving special mention are the brave faculty who extended themselves beyond their professional shells to reveal the soft, pink underbellies of their humanity: Dr. Joe LaManna for his Old-School, Child-of-the-Sixties Rock & Roll performance, Dr. Michael Maguire's "Recent Stoneware"—featuring some unusual and beautiful glazing techniques, and Dr. Mireille Boutry's creative "French Woman Hat." Also, fantastic performances were put forth by our fellow MSTP students; Phil Verhoef (of the Capgun Cowboys), David Chang, and Lenette Lu. Reality-expanding works of genius were exhibited by the Michaels Lupa & Drage. I have to say, being a part of the art show was a very rewarding experience, and remarkably little work. It was fun to try something new. I think it safe to say my comrades (Elisa Chiang, Claudia Munoz, and Tara Sheets) all feel the same. I encourage anyone interested in art to take up the torch next year, and bring your own ideas into the show.

Student Activities

CapGun Cowboys by Phil Verhoff

While science/medicine may be my interest and vocation, one of my most important non-science interests is music, of any and all sorts. As many of you know, during my time at Case, I've co-directed the DocOpera, directed Docappella, played in a med student jazz combo, I sing in a church choir, and I sing with the Cleveland Orchestra Chorus. Perhaps my most unusual musical experience is that I co-founded a band, the Cap Gun Cowboys. We've been playing together for around 3.5 years, and we're a foursome: I play acoustic guitars, trombone, and sing, Greg Yanito plays electric guitars, accordion, and sings, Mark Loncaravic plays electric bass, and Todd Martin plays the drums. We decided to get a band together in 2000, since we'd written enough of our own material and were curious to see what would happen.

I'm the only band-member associated with Case in any way: Greg is a city planner with City Architecture, and possibly the best swing dancer in Northern Ohio; Mark is a laborer who makes huge commercial signs; and Todd is a bartender down at La Cave du Vin on Coventry. We've recorded an album and are in the process of recording another, we were nominated this year for best Americana band in Cleveland, and we've gotten to play around the region, including Buffalo, Baltimore, Cincinnati, and West Virginia, as well as all over Northern Ohio. Our music is a strange blend of country, alt-country, rock, punk, rockabilly, and roots rock... sort of defies categorization. And who wouldn't love playing in a band? It was certainly my dream as a kid (along with millions of other 10 year olds) to "make it" as a rock star, and while this doesn't exactly qualify, I get the chance to meet lots of cool people and share the stage with them. We've played shows with people like David Allan Coe, Lee Rocker (former bassist for the Stray Cats), the Sadies, and the Red Elvises, to name a few. We've even played some Case functions, like the Department of Physiology and Biophysics retreat or the Department of Pharmacology holiday party. Fortunately, lots of you in the MSTP have been out to see us, which of course, we appreciate. I'm just glad the program (and being a med student in general) isn't so constrictive that I can't explore an artistic avenue like this. As for how I balance everything? Sleep deprivation, coffee, and studying in the back of the van. Who knows? Maybe I'll ditch medicine and science and be a rock star full time. Check out our website at www.capguncowboys.com.

The Agre Society by Cliff Harding

The institution of the Agre Society is designed to advance understanding of biomedical research by clinical residents, fellows, and MSTP students. The Society's activities involve residents and fellows from clinical training programs at Case-affiliated hospitals (Internal Medicine, Pediatrics, Surgery, Pathology, and Genetics), MSTP students in all phases of the program, and associated faculty. The main focus of the Agre Society is a series of informal monthly dinner meetings featuring one of two formats, either a pair of brief research presentations by a clinical trainee and an MSTP student, or a presentation by a prominent outside speaker who is a leader in his or her research field with an interest in education of future biomedical researchers. The design of the Agre Society promotes interactions between MSTP students, residents and fellows with interests in biomedical research, allowing these groups to enrich each other with their different experiences and viewpoints. The program helps clinical residents and fellows to learn about research and identify potential mentors within the wider Case research community. It also helps MSTP students to understand the clinical context of their research and enables them to form contacts with people at more advanced stages of training. The society is named for Peter Agre, M.D., a medicine resident in the University Hospitals of Cleveland/VA program in the mid 1970's who won the Nobel Prize in Chemistry in 2003 for the discovery of aquaporins. The Agre Society is sponsored by the Case/UHC Department of Medicine and is run jointly by the Department of Medicine and MSTP Council. Ram Balu deserves special credit for helping to spearhead the launch of this new program.

From the Directors

From the Associate Director by George Dubyak

(continued from page 1)

My graduate training (Ph.D., Physiology, 1979), post-doctoral studies (Biophysics), and first research-track faculty position (also in Biophysics) were all at the University of Pennsylvania. I've been associated with the MSTP at various levels since joining Case in 1986. During my first summer as an assistant professor in the Department of Physiology and Biophysics, I was fortunate to serve as a research rotation mentor to Dan Cowen and Theodore Marks, two MSTP students who had just completed their first year. Dan subsequently joined my lab as my first Ph.D. student; because Dan was a Pharmacology graduate student, Dr. Les Webster (who was then Chair of Pharmacology and also MSTP Director) offered me a secondary appointment in that department. I relate this first-hand experience to emphasize both flexibility of the Case MSTP and its frequent role in fostering junior faculty research programs. I would also note that Dan, after graduating with his M.D., Ph.D. in 1992, pursued residency training in Psychiatry and post-doctoral research in Pharmacology at Penn. He is currently an Assistant Professor of Psychiatry at the Robert Wood Johnson Medical School of the University of Medicine and Dentistry of New Jersey. His NIH-funded research focuses on the molecular pharmacology of CNS serotonin receptors and their coupling to MAP kinase and Akt kinase signaling pathways. Dan combines this basic research program with his clinical responsibilities as a psychiatrist. I relate this first-hand experience to emphasize the success of the Case MSTP in producing physician-scientists who really do combine bench science with bedside clinical service.

In 1990, Dr. Webster invited me to join the MSTP Steering Committee and I've been pleased to serve on that committee since that time under the successive directorships of Les Webster, Steve Younkin, John Nilson, and Cliff Harding. It's been gratifying to observe (and be part of) of a medical school entity that manages to continuously adapt and evolve while maintaining steady-state excellence in the never-ending cycle of student recruitment, research training, and fostering of professional development. Of the many committees and programs in the medical school and in the university in which I've served, few match the MSTP with respect to offering tangible output on such a consistent basis. I've come to realize from the experience of 14 years that this reflects the truly synergistic efforts of the faculty, students, and administrative staff who comprise the MSTP community. I can't emphasize and applaud the sense of the "community" in this MSTP enough.

During my association with the MSTP steering committee, I've also served on the thesis committees of over 20 MSTP students including three (besides Dan Cowen) who performed dissertation research in my lab: Ben Humphreys, Phil Verhoef, and Michelle Kahlenberg. At the risk of sounding overly effusive, I continue to be amazed by the ability of most MSTP students to juggle (and only rarely drop) their research efforts, participation in departmental and programmatic events (i.e., the ongoing cycle of journal clubs, seminars, dinners, interviews, retreats, etc.), and a rich life "outside" the lab and medical school. Again, I relate this from my first-hand experience watching Ben Humphreys train for marathons, Phil Verhoef organize his "Cap Gun Cowboys" gigs, and Michelle Kahlenberg set up Westerns late in the evening before running down to Severence Hall to practice for a Cleveland Orchestra Choir performance.

Given the efforts and input of Deidre Gruning, Donna McIlwain, the students themselves, and the other faculty associated with the MSTP, my job as Associate Director is pretty easy. As most of the students know, I track progress through the first two years of the medical school core academic progress and the early research rotations. I also assist in the identification and choice of research rotation mentors, graduate courses, Ph.D. training programs, and thesis advisors. With regard to possible new initiatives and future endeavors, this is an interesting time to hold a position at the nexus between the "medical student world" and the "graduate student world".

(continued on page 9)

From the Directors

From the Associate Director by George Dubyak

(continued from page 8)

Dean Horwitz's commitment to both graduate student training – with the appointment of Alison Hall to the newly created position of Associate Dean for Graduate Education – and research training for medical students – with the appointment of Claire Doerschuk to the equally new position of Associate Dean for Medical Student Research – should provide more infrastructure for the generation of institutional databases and coordination of research training venues that will undoubtedly be of great value to the MSTP in general, and the associate director's job, in particular. For example, during the next few months, I will work to generate “one page synopses” that will summarize how each departmental and non-departmental Ph.D. training program sets the course requirements, course waivers, training trajectory, and dissertation research requirements for a typical MSTP student who matriculates within each of these training programs. I look forward to continued participation in, and improvement of, the Case MSTP.

Special Thanks

The MSTP community would like to thank Deidre and Donna for their tireless help organizing and managing not only the MSTP events and retreats, but also providing their assistance (and candy) on a daily basis.

From the Director by Cliff Harding

(continued from page 1)

There is one other initiative on the horizon. The medical school curriculum is being evaluated and will be revised within the next few years. We are exploring the possibility of offering extra teaching components to enrich the scientific content of the medical core academic program (CAP) for MSTP students. We may include a couple hours/week of enrichment activities that would focus on research aspects of fields covered in the CAP. This modest time commitment is appropriate because the medical AND graduate school courses taken during this period already cover a lot of ground and time, making it possible for focused addition of material to the CAP to efficiently enhance the curriculum for students interested in research. I will update the MSTP community on this initiative when our plans become better defined. Suggestions from students or faculty would be appreciated!

We can be quite proud of the accomplishments of our students and the efforts of our faculty on behalf of the program. I am looking forward to another year of outstanding accomplishments by Case MSTP students!

A First-Year's Transition to MSTP

From Surf to Snow by Paul Lin

Ouch! I picked myself off the iced pavement and reminded myself that I was no longer in San Diego. I was no longer at UCSD. It has been almost a year since graduation. In five years the University of California, San Diego or UCSD and San Diego had become my home. Looking back at graduation day, I wasn't sure what to expect after walking down the isle, having post graduation dinner with friends and family, and the inevitable next day. Of course, my path ahead was probably more set in stone than most. I was to head out to Case and start medical school in two weeks.

As I drove across the country to my new home, I felt as anxious as I felt when I entered UCSD, which seemed like an eternity ago. I was again braving the unknown. What would winter with actual snow, not just the "fake" snow put on our plaza by our student government, be like? How would I like my new roommates? Could I handle meeting all new people again?

Back in high school, I had made a pact with myself. I would either attend undergrad or graduate school outside of California. Many friends, including my parents, shook their heads at the thought. Who would want to live outside of CA? But similar to the reason why I decided to study abroad, I wanted adventure. I wanted to see what I was missing. (They still shook their heads after this explanation. Adventure is for Indiana Jones!, they proclaimed.)

Fortunately, this past year has been eventful! The drive across country was an adventure in itself (I made sure to stop at Reno, a miniature Las Vegas, and gambled only a little – truthfully!). The car was so stuffed that you couldn't really see out the back mirror and occasionally I was afraid it wouldn't make it up the hill. I got to see more states than I've ever visited before, from the stone faces at Mt. Rushmore, South Dakota, to the rolling hills of Wyoming and the grass fields of Nebraska. On my second day in Ohio, I bought my first car and then had an accident one month later to the day. My friend's apartment caught on fire the day before a big exam. I have holes in the ceiling where they are fixing the pipes at my rental house, and my roommate is so weird that he talks about eating our cadavers!

Life, despite remaining at school, has been different than undergrad. It is as if I've gone back to high school. Gone are the flexible class schedules and true to high school, gossip fills the air (Did you hear that Dean Horwitz wants to make Case a five year medical school?! – False. Did you hear so and so just got engaged?! – True!). Yet, it is also different. I remember the day that one of my classmates brought his newborn to school and thinking to myself, he's my classmate, near my age, but he's also a *father!* How we have grown.

The weather has also been a learning experience. Here I am, a person who grew up his entire life in California, and skied only once in his life. I remember the tenseness of driving at a slow pace head on into a blizzard (at least it was a blizzard to me!) where visibility was only a few feet or the panic I was in when my car glided on ice like Bond's car in *Die Another Day*. I also remember the joy when I eagerly ran outside to build my first-ever snowman with only a few inches of snow! I practically cleared the entire blanket of snow from my yard. My friends from in town chuckled and muttered under their breath, "Californians."

I have grown accustomed to Cleveland after the initial culture shock and do not regret my decision to come here. I have had adventure and fun and experienced life in a different part of the U.S., something I feel is very important in understanding the rest of our country. However, I occasionally find myself thinking fondly back to UCSD and San Diego. As I have changed, I wonder how much UCSD has changed and how much things are different even after one year. I've had to experience from afar the California wildfires and (fortunately or not) the craziness of the governor recall election (where one of my classmates, whom I personally knew, actually ran for governor and did better than 2/3 of the candidates!). I miss the warm weather, though there is something to be said for the crispness in the chilled air, and the warmth of a home after walking in subzero weather. I've also missed the way roads make so much sense in California (Five or six way intersections? I'm always afraid I'd be driving against traffic!) or the ability to see the sunset at the beach.

But I'm lucky. I hear MTV Real World is at San Diego.

Recent Student Publications

Ram Balu

Balu R, Larimer P, Strowbridge BW. Phasic stimuli evoke precisely timed spikes in intermittently-discharging mitral cells. *Journal of Neurophysiology*, in press.

Christy Butler

Butler CD, Schnetz SA, Yu EY, Davis JB, Temple K, Silver J, Malouf AT. Keratan sulfate proteoglycan phosphacan regulates mossy fiber outgrowth and regeneration. *J Neurosci*. 2004;24:462-73.

Joshua Friedman

Friedman JB, Brunschwig EB, Platzer P, Wilson K, Markowitz SD. C8orf4 is a Transforming Growth Factor β Induced Transcript Down-regulated in Metastatic Colon Cancer. *International Journal of Cancer*, in press.

Michelle Kahlenberg

Kahlenberg, J.M. and DUBYAK, G.R. Mechanisms of Caspase-1 Activation by P2X7 Receptor-Mediated K⁺ Release. *Am J Physiol Cell Physiol*, in press.

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Phil Larimer

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