11 students joined the UW MSTP this year

**Erin Theisen**

**Undergrad:** University of Minnesota, Twin Cities  
**Research interests:** Microbiology, immunology  
**Most spectacular lab accident:** I was using non-fat dry milk to make a blocking solution instead of just the casein protein and followed the directions to autoclave the solution. Instead of a usable blocking solution, I got caramel. Pretty sure that was the best-smelling thing to come out of the autoclave ever.  
**Worst part of coming Wisconsin winter:** Dreading the blustery walks to class and lack of tunnels that connect buildings. I was spoiled in Minneapolis.  
**Best part of coming Wisconsin winter:** Looking forward to the copious amounts of chili, hot chocolate, and tea I will be consuming to stay warm.  
**Worst job:** I worked for a summer at Blue Cross Blue Shield in the claims correspondence department doing data entry. Staring at a computer for 8 hours straight drove me crazy!  
**Most fun thing you did this summer:** Sky diving!  
**Favorite baked good:** I’m a sucker for anything chocolate or anything warm out of the oven. Freshly baked brownies or chocolate chip cookies may be the way to my heart.  
**Most exciting part of med school:** Putting all the basic science stuff into a more usable context and being able to see real patients.

---

**Sumit Kar**

**Undergrad:** Creighton University  
**Research interests:** Cardiovascular research  
**Most spectacular lab accident:** As part of my research, I collect tissue samples from animals in dry ice. The day I first did this successfully after a couple of tries, I was so excited that I didn’t have a good hold of the dry ice box and spilled all the tissue and blood samples onto the floor.  
**Best part of coming Wisconsin winter:** This winter, I am looking forward to when Nebraska wins the Big 10 football championship.  
**Worst job:** My worst job was the first job I ever had: restocking hundreds of small metal instrument parts and cardboard boxes in a dark warehouse.
**Most fun thing you did this summer:**
Going to the Harry Potter midnight premiere.

**Favorite baked good:** Strawberry cheesecake

**Most exciting part of med school:** Meeting new people

---

**Kim Krautkramer**

**Undergrad:** UW Madison

**Research interests:** Immunology, infectious disease, biochemistry

**Most spectacular lab accident:** When pulling a cane of boxes out of the liquid N2 tank, I managed to lose ONE little microcentrifuge tube at the bottom of the tank. It took hours to get it out and to be able to put the cane back in to close the tank again—disaster!

**Worst part of coming Wisconsin winter:** I grew up in Wisconsin, but I still don’t like the cold! I’m dreading how long winter is!

**Best part of coming Wisconsin winter:** I’m looking forward to having an opportunity to snowboard again.

**Worst job:** Ginseng farm work—it’s great to be outside while working, but it’s hard work!

**Most fun thing you did this summer:** Took a climbing trip to Red River Gorge.

**Favorite baked good:** Scones!

**Most exciting part of med school:** I’m really excited for the opportunity to meet all of my classmates, and I’m looking forward to the wealth of knowledge and skills we’ll all gain.

---

**Brett Morris**

**Undergrad:** St Olaf College

**Research interests:** Cancer biology

**Most spectacular lab accident:** Using a running buffer for a Western blot at 10X strength.

**Worst part of coming Wisconsin winter:** I dread the mid-April snowstorm that seems to occur every year.

---

**HUTTENLOCHER TO BECOME MSTP DIRECTOR**

Anna Huttenlocher, MD, associate director for the UW SMPH Medical Scientist Training Program will become the MSTP director on July 1, 2012, taking over from Deane Mosher, MD, who has held that position since 1999.

SMPH Dean Robert Golden wishes to announce this appointment now so that Anna and Deane have a year to execute a smooth transition.

Dr. Huttenlocher received her bachelor’s degree in biology from Oberlin College, Oberlin, Ohio, and her medical degree from Harvard Medical School. After her internship and residency at Boston Children's Hospital and a postdoc at the University of California-San Francisco, she then took a faculty position at the University of Illinois-Champaign and soon became involved with the Illinois MD/PhD program. Dr. Huttenlocher joined the faculty of UW-Madison in 1999 with a joint appointment in the Departments of Pediatrics and Pharmacology and has been associate director of the Medical Scientist Training Program since that time. In 2006, she moved her basic science appointment to Medical Microbiology and Immunology.

Dr. Huttenlocher is a practicing pediatric rheumatologist. She is recognized internationally for her pioneering studies of cell migration and alterations of cell migration in human diseases. She is an outstanding example of a female physician-scientist who combines family life, research, teaching and clinical work. Dr. Huttenlocher is deeply committed to the education of physician-scientists and has served on various task forces that address this issue.

Dean Golden would like to thank Deane for his many years of outstanding leadership. His deep commitment and loyalty to the program and the school have created an outstanding legacy of excellence.
**Best part of coming Wisconsin winter:** Hockey season and learning how to snow kite.

**Worst job ever:** Industrial roofing

**Most fun thing you did this summer:** Wreck diving in Hawaii.

**Favorite baked good:** Apple pie

**Most exciting part of med school:** Interacting with patients

---

**Mitch Biermann**

**Undergrad:** University of Minnesota

**Research interests:** Stem cells, biochemistry

**Most spectacular lab accident:** Kind of boring—broke NMR tube ($80)

**Best part of coming Wisconsin winter:** Looking forward to the fact that it’s marginally better than the Minnesota winter.

**Worst job:** One time I cleaned out a bunch of junk from underneath (at the foundation of) an old house. There wasn’t enough room to stand up or even crawl around on all fours, so I had to crawl around on my stomach. It sucked.

**Most fun thing you did this summer:** Visited Chicago for the first time. It was interesting, and there was amazing Korean food. Stayed at this creepy and really cheap motel that looked like the ones in No Country for Old Men.

**Favorite baked good:** Baked goods are illogical. I feel like whenever something needs to be baked you have 4 times the volume of dishes to clean as the dish itself. Also, I think most people mean sweets when they say “baked goods”, like cookies, which is problematic because most of the grad students I know are fat, even if they’re not that much older than me, and that’s a scary aspect of the cookie-and-cake lifestyle I feel the question implicitly condones.

**Most exciting part of med school:** I guess I’m looking forward to meeting new people, but then again, the incoming med student FB page has largely been a dispiriting display of typeAness. I couldn’t believe it when people were asking “how is it”? to the online safety training module, and then met with a round of reassurances—as though it were a real test or something. I’ll write it off as a misprojection of a desire to talk about something shared for now.

---

**Drew Sheldon**

**Undergrad:** UC Berkeley

**Research interests:** Biophysics, neuroscience

**Most spectacular lab accident:** (Un-?) Fortunately I haven’t had any spectacular accidents…one time I spilled 300 mL or so of someone else’s glycerol on the floor, and it was kinda messy, I guess? It only took like 5 minutes to clean up though....Sorry, that’s the best I got.

**Best part of coming Wisconsin winter:** OUTDOOR BROOMBALL!

**Worst job:** I was a produce stocker at a grocery store one summer. It was ridiculously boring, I had to work nights and weekends, and I only got paid around $5/hour.

**Most fun thing you did this summer:** Getting ice cream and/or beer with friends/family on the terrace.

**Favorite baked good:** Chocolate crinkles (cookie)

**Most exciting part of med school:** Meeting everybody!

---

**Carly Loner**

**Undergrad:** University of Colorado at Boulder

**Research interests:** Human transcription

**Most spectacular lab accident:** Turning the Bunsen burner on too high.

**Worst part of coming Wisconsin winter:** Knowing what it’s like to have my eyes freeze shut

**Best part of coming Wisconsin winter:** Learning to cross country ski

**Worst job:** Washing out glassware after fly experiments for a genetics lab.
Most fun thing you did this summer: Went caving in Eagle, CO.
Favorite baked good: Chocolate chip oatmeal cookie
Most exciting part of med school: Meeting a lot of awesome new people, getting started on a new chapter

Katie Fisher
Undergrad: Half at UW Madison, half at the University of Michigan.
Research interests: Microbiology, immunology
Most spectacular lab accident to date: A few years ago I was working with samples that were radioactive—they had tritium (3-H) in them (it actually can’t penetrate the skin, but has a ridiculously long half life so is especially dangerous if it gets in you). Anyway, I was in proper radioactive attire: long pants, shoes, long white coat, goggles, gloves, so that the only part of me showing was my nose and mouth. When I grab an epi tube and flick the cap open to retrieve my sample, it sprays everywhere. Including on my face. I stick my head under the faucet and wash my face well with soap and water. The funniest part was probably that to ensure I hadn’t been exposed to too much radioactivity, I had to perform "wipe tests" on myself. I had to wipe test my face, my spit and even my urine! Turns out I was only exposed to a very small amount that technically isn’t higher than environmental levels of radioactivity so I survived. My lab now has a special plexiglass shield that the got in my honor. Nobody else uses it when they do radioactive stuff, but they all insist that I do.
Also, a few weeks ago I managed to completely snap a mercury thermometer in the water bath-contaminating the entire thing with mercury. Needless to say, water baths don’t empty easily and are kind of a challenge to decontaminate.

Worst part of coming Wisconsin winter: I hate winter. Especially in Wisconsin.

Worst job: Lifeguarding in high school. So boring and we had to clean the bathrooms after a hot, busy day at the pool.
Most fun thing you did this summer: Spent a week at a friend’s condo on Miami Beach.
Favorite baked good: Chocolate chip cookies
Most exciting part of med school: Meeting all my new classmates! And beating the law students for the Dean’s cup.

Ray Zhang
Undergrad: UC Berkeley
Research interests: Molecular pharmacology
Most spectacular lab accident: Created a ring of fire on my lab bench. Long story. Basically, I put the dessicator lid on the benchtop. We were making glass capillaries to spot TLC plates that day, so we had the Bunsen burners out. The connection between the rubber tubing and the Bunsen burner was loose. When I ignited the fire, the fire spread to the ring of grease deposited by the dessicator lid. Hence, the Ring of Fire.

Worst part of coming Wisconsin winter: The sun sets before you get out of class at 4 in the afternoon.

Worst job: Tutoring my 12-year-old cousin algebra
Most fun thing you did this summer: Whitewater rafting
Favorite baked good: Chocolate chip cookies
Most exciting part of med school: Tons of physiology!

Layla Barkal
Undergrad: MIT
Research interests: Bioengineering
Most spectacular lab accident: Well, on my very first day in a new lab, I broke my mentor’s P1000. No amount of flawless pipetting ever let me live that one down.
Best part of coming Wisconsin winter: I can’t wait to try playing hockey!
Worst job: Hmm…that would be the one that involved sitting alone in a cubicle all day.
Most fun thing you did this summer: I had a great time traveling with my family to Yosemite for a little hiking and a lot of picture-taking.
Favorite baked good: Lemon bars
Most exciting part of med school: I’m really looking forward to meeting new people and seeing how science and engineering impact medicine from the medicine side of things.

Heavy-metal goodness courtesy of Jon Stefely

Bento blast courtesy of Ted Griggs

-Mike Cook has been appointed as the representative of MSTP administrators to the GREAT Steering Committee. As a little background information, in the fall of 2004, the AAMC Executive Council approved a proposal to establish a new MD-PhD Section of the GREAT Group. Membership in this body includes the faculty who serve as the institutional leaders of MD-PhD programs (MSTP and others) at medical schools. The mission of the MD-PhD Section is to advance the education, training and career development of physician-scientists, with an emphasis on training in the MD-PhD programs of LCME accredited medical schools. If you are interested in more information about GREAT, here is their web site: https://www.aamc.org/members/great/about/

-Our T32 training grant has been renewed with 2 extra positions this year! We now have 11 training grant slots awarded by the NIH. Thanks to everyone for their help in not only a successful renewal, but also an increase in slots!

MSTP RETREAT: September 9th-10th, at George Williams College on Lake Geneva
Don’t forget to bring cups!
Introducing…

**Eating Local**

A restaurant review column by Brittany Young

**Dumpling Haus**

*Hilldale Mall, 608-661-4287*

*Mon-Sat 11am-9pm, Sun 11am-6pm*

Ever since moving to Madison from Southern California, I’ve been on a quest to find delicious food. Not just any delicious food, but authentic ethnic food. Maybe even some real Chinese food -- the kind that comes steaming to your table but never packaged to your front door. It’s an ongoing adventure with a few minor successes here and there.

When I first noticed the vacant space under construction in the Hilldale Mall labeled by nothing more than the words “Dumpling Haus,” I couldn’t help but wonder what sort of food the owners intended to serve. Was this supposed to be a new restaurant specializing in German fare? Or would they serve Asian dumplings? I was almost afraid to get my hopes up.

Luckily, the menu features a variety of fresh-steamed Asian flavors. So let’s talk food. Between my two visits I ordered what the menu lists as “shrimp dumpling” and “pork shaomai,” two classic dim sum dumplings that I associate with things like childhood and happiness. For some reason, these dishes arrived in a pair of rather nontraditional puddles of soy sauce. In the case of the shrimp dumplings, I suspect this is done to distract the diner from the fact that the filling is a little too mushy, the skin is a bit too saggy, and the dumpling as a whole is an unsatisfactory experience. The shaomai, on the other hand, would actually be pretty good without the gratuitous addition of thin brown liquid. What a shame.

The noodles, I’m told by friends who ordered them, are neither disastrous nor particularly noteworthy. Long white noodles in a timid clear broth, topped with whatever the menu promises to add. Maybe these are the dishes those errant splashes of soy sauce found on my dumplings were really meant for. Their selection of “bao zi” are pretty good on the whole, but also curiously sometimes served with dipping sauce (and other times not).

I tried the “taco bao,” which was was surprisingly good. Chilled braised pork belly with veggies and a bit of hoisin sauce nestled in a taco-shaped steamed bun. The perfect mini sandwich for a hot afternoon. The other high point of my meals there has been dessert. Both the red bean bao and custard bao are fairly representative of traditional sweet-but-not-too-sweet Chinese desserts.
While the food may be a bit hit-and-miss, the service at Dumpling Haus is pretty standard. A nice older gentleman takes your order at the front counter and gives you a number. A short while later, someone brings a steaming plate or two from the kitchen right to your table. When you’re finished eating, someone may or may not swing by and clear your dishes. If they don’t get around to it, you’re free to bus them yourself. Similarly, all other basic necessities of restaurant dining -- utensils, water glasses, etc. -- can be found at the back counter. And that’s convenient, since if someone really needs the extra sodium on their shaomai there are soy sauce bottles available there too. It’s not that the service is lacking. After all, the staff are friendly, attentive, and polite. It’s that they don’t make a fuss over anything that restaurants like this one shouldn’t need to fuss over (and that customers shouldn’t necessarily expect anyway), and I appreciate that.

If Dumpling Haus is trying to approximate the feel of a Chinese cafe while still marketing towards a Midwestern clientele, then they’re doing a pretty good job. In addition to the you-are-free-to-get-basic-things-for-yourself-and-save-us-both-some-time approach toward table service, the noise level hits that sweet spot between being concerned that your animated conversation is disturbing other diners and needing to shout to converse with your dinner partner. Don’t expect a quiet romantic setting, and don’t be afraid to bring your two-year-old. Fueled by a steady stream of customers, ranging from families with young children to grad students to small clusters of retirees, the restaurant has been bustling during the past few weeks. Despite the high traffic, tables turn over quickly and cleanly as efficiently as possible. Still, it’s not a bad idea to be on the lookout for a table or a stool at the counter right when you arrive.

I know I’ll be back to Dumpling Haus again sometime, now that I have a better sense of what to order (and what to avoid). I’ll be back, but only when my cravings for a taste of home are strong enough to justify a meal that leaves your stomach half empty and your wallet much the same. In essence, Dumpling Haus offers fine-dining portions at fine-dining prices with dishes and digs that are decidedly casual. I can’t decide if this, as a business strategy, is terrible or brilliant. Their prices are steep, but they are also (as far as I know) the only place in town where you can buy fresh-steamed bao filled with egg custard. I even asked that nice man at the front if they served the elusive xiaolongbao, also known as Shanghai soup dumplings. His response? “Not yet.” Here’s hoping. Maybe one day they’ll even serve boba tea!

Recent Publications

During my first rotation this summer, a postdoc in the lab spoke favorably of the PI’s tendency to encourage students to write reviews. As someone who had previously measured the success of a PhD by experiments, poster presentations, and published results, the significance of scientific reviews had been completely lost on me. I had never considered the sheer amount of research that went into constructing a review; furthermore, the creation of a review article demands an extremely high level of skill and scientific comprehension in order to sift through hundreds of articles, identify the relevant details, and work them into a coherent, informative piece. The recently-published paper, “Regulation of axonal outgrowth and pathfinding by integrin-ECM interactions”, a collaborative work by Jonathan Myers and two others, is an excellent example of a well-executed review and serves as a great reminder of the unique niche such papers occupy.

Neurons are able to make their way through the developing nervous system due to the presence of growth cones on the tips of axons and dendrites; these growth cones are highly specialized regions capable of detecting growth cues and directing growth toward or away from various types of stimuli. They are highly sensitive to the extracellular matrix (ECM), and complex interactions between neural receptors and matrix proteins enables the neural network to develop and mature. While it is easy to think of the extracellular matrix as a non-descriptive mishmash of supporting glycoproteins, it is becoming clear that individual components have discrete effects on neural outgrowth. Collagens are hugely abundant in nearly all tissues, but up until recently have largely been appreciated only from a structural perspective. However, they have been shown to be critical for neural outgrowth. Mutations in non-fibril-forming collagens or proteins responsible for collagenous modifications (such as the lysyl hydroxylases) have been shown to severely disrupt motor axon pathfinding. Laminins, glycoproteins composed of three distinct subunits, are well-known for their role in cell adhesion and differentiation. They are capable of modulating neural outgrowth: if presented in tandem with known neural attractants such as netrin, they can repel developing axons. Likewise, they appear capable of reversing or nullifying inhibitory signals, as a study on the effect of neural growth on laminin media containing a gradient of the inhibitory ligand ephrin-A5. Knock-out studies in both invertebrate and vertebrate model organisms have shown that laminin is essential for axon guidance. Like laminin, tenascin modulates neuronal development; it is secreted by immature astrocytes and radial glia cells, but it persists in the adult brain in highly plastic regions, such as the hypothalamus. Fibronectin, another highly-expressed ECM protein, influences cell division and cell fate. Interestingly, it is produced by neurons that target specific areas of the cortex, indicating that it may help neurons discriminate as they migrate.

Perhaps even more interesting than the effect of ECM proteins on neural network development is the possibility of the network itself modifying its surrounding environment. It was originally thought that developing neurons act in a manner similar to metastatic cancer, degrading the surrounding ECM to make way...
for axonal outgrowth. Now, it appears that this proteolytic cleavage is not a random process; it is directed toward specific ECM ligands and receptors on the growth cones themselves in order to enable the developing axons to grow in a specific direction. This process is still poorly understood, as the mechanisms controlling the proteolytic enzymes have yet to be elucidated, but it presents fascinating possibilities for future research.

The second half of the review focuses on integrins, the heterodimeric cell receptors that anchor cells to the ECM. Integrins vary greatly in terms of binding specificity, which is defined by the specificity of the neural subunits. Neural expression of multiple integrins ensures that neurons can successfully extend to many kinds of proteins in the ECM. In fact, ectopic integrin expression can cause a neuron to attach to a substrate to which it was previously insensitive, suggesting that research in this field will likely prove invaluable to neural regeneration experiments. Integrin function is influenced heavily by “inside-out” signaling; for example, binding of talin, a scaffolding protein, enables integrin activation by shifting the head of the protein to alter the conformation in a way that facilitates ligand binding. Likewise, the trafficking of integrins to the plasma membrane is accomplished by growth cone endocytosis and exocytosis, processes that may prove to be influenced by environmental cues. However, integrins do not work alone—syndecan functions as a co-receptor, and its loss results in axon guidance deficits. In addition, integrins must somehow coordinate their signals with those produced by neurotrophin receptors and axon-guidance cue receptors. FAK and Src, both non-receptor tyrosine kinases, are good candidates for integration of integrin and growth-factor signals. FAK acts downstream of growth-factor receptors, integrins, and axon-guidance cue receptors, a position that may make it indispensable for axon pathfinding. The point contacts of neuronal growth cones, adhesion complexes that attach the developing neuron to the ECM that mediate the generation of force, contain FAK and Src. Thus, it appears that these adhesion sites function as active signaling centers; the point contacts may modulate protein translation within the growth cones.

Further complicating this story is the effect of axon guidance factors on integrins; by altering these receptors or their associated adhesion complexes, they are capable of directly or indirectly altering axon growth. Many of these receptors activate FAK, but the effect of activation varies widely depending on the activating ligand. Several of the key guidance factors are discussed in detail, including netrin, a ligand that promotes cell adhesion and acts in tandem with integrin. Semaphorins, a family which includes both secreted and membrane-associated guidance cues, are capable of stimulating integrin-dependent axon extension. Ephs/ephrins are cell surface molecules that act as both signaling ligands and receptors, and they have a modulatory effect on integrin signaling. Their ability to both activate and inactivate integrin signaling suggests that changes in the cellular environment can switch the response from inhibitory to attractive or vice versa.

In the final paragraph, the authors neatly summarize the gaps in our understanding of this topic: little is known about the influence of cell-ECM adhesions on motility and the role of mechanical signals in vivo. Given the newness of this topic of study, I was greatly impressed by the article’s coherency. This review successfully highlights the extreme complexity of growth cone pathfinding without devolving into confusion.

---------------------------------------
COOK’S CORNER

Tell us a little bit about the MD/PhD conference in Minneapolis

The GREAT (Graduate Research, Education and Training) Group MD/PhD Section meeting was held in Minneapolis this year, not in Keystone, Colorado. Many missed the mountains but not the altitude-related issues. Wisconsin was well represented as Deane, Rob, Brad and I attended. The theme of the meeting was "Training the Modern Day MD-PhD Workforce: Rich Opportunities and New Challenges." There was an interesting session on the current political/economic situation and its impact on MD/PhD programs, mostly related to funding. Another dealt with medical school curriculum reform. I have to say that there were some sessions that had no practical relevance to current MSTPs. However, Deane gave a presentation on the "Interface of CTSA (Clinical and Translational Science Award) Programs with MD-PhD Training" at the same time I was on a panel discussing "Professional Skills Development of the MD-PhD Administrator: Managing Relationships." I was also nominated to fill one of three administrator seats on the GREAT Steering Committee.

How are you staying sane in this heat we’ve been having?

Visualize ice, either for playing hockey or putting in a glass, preferably while in an air conditioned building.

What are your thoughts about the UW MSTP heading into a new school year?

The MSTP here at the UW is in great shape! With the renewed funding of our T32 grant and the increase of slots from 9 to 11, the NIH has shown its recognition of an excellent program. We have a lot to be proud of, our students, faculty, research opportunities and climate of collaboration, and the city of Madison. The fact that 11 students decided to accept our offer this year reinforces our feeling that we are doing something right!