

# THE MSTP POST

## *15<sup>th</sup> Annual MSTP Symposium in honor of Deane Mosher*

The symposium will be held on Monday, March 19, 2012 at the Wisconsin Institutes for Discovery.

Presentations will run from noon to 5:15 PM. Dr. Jaehyung Cho, Dr. Joanne Murphy-Ullrich, Dr. Lisa Maurer, and our very own Dr. Brad Schwartz are slated to speak.

At 4 PM, Dr. Erkki Ruoslahti of the Sanford-Burnham Medical Research Institute at CSB will present the keynote talk ("Targeting tumors with tumor-penetrating peptides). An MSTP Student Poster session will follow from 5:15 to 6 PM. Contact Jon Stefely ([stefely@wisc.edu](mailto:stefely@wisc.edu)) and Brendan Floyd ([bjfloyd@wisc.edu](mailto:bjfloyd@wisc.edu)) for more information.

### *Winning, Pt. 1*

Omar Demerdash and his advisor, Julie Mitchell, shared first prize with two other labs in a recent round of the Critical Assessment of Predicted Interactions (CAPRI) competition. This competition judges the ability of computational models to accurately predict protein binding. They invented a scoring function that "discriminates native and designed complexes that bind experimentally from designed complexes and non-native bound configurations". Their work can be seen in the Journal of Molecular Biology. Great job!

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*In the headlines:  
15th Annual MSTP Symposium*

*Jason Chiang wins  
Wiscontreprenuer Whiteboard  
Challenge*

*Omar Demerdash ties for first in  
protein modeling competition*

*Columns  
Author Spotlight: Cecilia  
Westbrook (p. 2)*

*Publications (p.3)*

*Eating Local: A requiem... (p.4)*

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### *Winning, Pt. 2*

Using only a marker and a whiteboard, Jason Chiang was able to convince a panel of Wiscontreprenuer judges in five minutes that his biotechnology idea was unique, realistic, and marketable. He presented a patient-specific microwave ablation applicator, a tool that would be minimally invasive and capable of destroying early solid tumors. The applicator was capable of modifying the heating zone to match the tumor precisely, thus avoiding unnecessary damage. (He also recently won the RSNA Student Trainee prize. Way to go!)

## AUTHOR SPOTLIGHT



Westbrock C, Creswell JD, Golnaz T, Julson E, Kober H, Tindle HA. "Mindful attention reduces neural and self-reported cue-induced craving in smokers." *Social Cognitive and Affective Neuroscience*. 2011 November. [Epub ahead of print]

Among smokers, the desire to quit is increasingly common—more than half of adults who smoke will attempt to quit each year, but only a fraction of them are successful. While the health and monetary benefits are inarguable, the huge amount of stress associated with smoking, a combination of powerful cravings, sleep and mood disturbances, and cognitive changes, often stymie even the most motivated of individuals. That the failure rate remains so high despite the prevalence of support groups, health literature, and medication aids is a testament to both the strength of this addiction and a pressing need for new tactics. This group tackled the challenge of cigarette cravings by teaching smokers in the process of quitting how to utilize mindful reflection. Mindfulness is a strategy of active focus; participants are encouraged to pay attention to their present situation, considering what thoughts, images, feelings, and reactions are conjured up by the stimulus present. Specific thoughts or emotional reactions are neither encouraged nor discouraged—those engaging in mindfulness exercises are told to be nonjudgmental and open as they regard the stimulus and their personal response to it. While one might think that actively focusing on a stimulus associated with cravings and negative behavioral patterns would serve only to enhance these

reactions, studies of mindfulness techniques used during smoking cessation have reported significant declines in cigarette usage. Furthermore, those with personalities that predispose them to mindful reflection report lower dependence on nicotine and a greater sense of agency during the process of quitting, both of which are strong predictors of future success.

In terms of neurologic circuits, there are two possible ways that mindful reflection may reduce cigarette cravings. Mindfulness may recruit regulatory centers that direct circuitry in a way to reduce the perception of craving—this is the “top-down” hypothesis, and has previously been thought to be the primary mechanism responsible for the success of this technique. However, it is also possible that mindfulness directly reduces neural reactivity responsible for the sensation of craving. There haven’t yet been enough studies of mindfulness in different contexts to tease out which might be the case. The exact pathway involved had never before been studied.

The group examined a cohort of smokers who had expressed a desire to quit. Prior to the experiment, they were asked to abstain from smoking for 12 hours. None of them had any previous experience with meditation or other forms of mindfulness training. Following a brief teaching session in which the goals of mindful attentiveness were explained, the patients were scanned via fMRI while viewing a series of images. Images were neutral, aversive, or smoking-related. Prior to each picture, the patients were told to “look” at the image to come or to “mindfully attend” to it. (“Look” represented passive watching). During each image, the patients rated both feelings of aversion and craving. Analysis of self-reported data indicated that, as predicted by previous experiments, mindful awareness of a smoking-related image

produced a reduced perception of craving as compared to a passive viewing of the same triggering stimulus. fMRI analysis indicated that viewing smoking images activated the expected craving-related neural regions (specifically, the right precuneus and left medial frontal gyrus/ventral ACC). Average brain activity during “mindful smoking” conditions and “passive watching smoking” conditions were compared. If mindful awareness exerted control over cravings via a top-down mechanism, the researchers expected to find increased activity in the lateral PFC, a region of the brain involved in regulation of emotional reactions. However, no areas in the brain showed enhanced activation during the mindfulness conditions. However, mindful attention to craving-producing stimuli was associated with a decrease in activity in a specific region of the sgACC, a region important in emotion regulation and known to be overactivated in depression and other mood disorders. This finding suggests that mindful attention might act by a “bottom-up” process, by decreasing neural response to craving-inducing images.

Given that none of the smokers had any experience with mindfulness and that the technique was taught in a single brief session, the effectiveness of this method of behavioral modification is extremely impressive. This paper outlined the great treatment potential for a simple change in behavior and simultaneously elucidated neural mechanisms responsible for its success that had previously only been the subject of speculation.

### *Recent Publications*

**Hanson KA**, Kim SH, Tibbets RS. “RNA-binding proteins in neurodegenerative disease: TDP-43 and beyond.” *Wiley Interdiscip Rev RNA*. 2011 October. [Epub ahead of print]

Hu M, Wang F, Li X, Rogers CQ, Lian X, Finck BN, Mitra MS, **Zhang R**, Mitchell DA, You M. “Regulation of hepatic lipin-1 by ethanol: Role of AMPK-SREB-1 signaling.” *Hepatology*. 2011 September. [Epub ahead of print]

**Motzkin JC**, Newman JP, Kiehl KA, Koenigs MR. “Reduced prefrontal connectivity in psychopathy.” *Journal of Neuroscience*. [In press]

Yoo SK, **Starnes TW**, Deng Q, Huttenlocher A. “Lyn is a redox sensor that mediates leukocyte wound attraction in vivo.” *Nature*. 2011 November [Epub ahead of print]

### *Eating Local*

A restaurant review column by Brittany Young

Tex Tubbs Taco Palace/Cadillac Ranch/Cactus Ranch

*In our memories*

At the bottom of University Bay Drive just across University Avenue, there once stood a restaurant called Tex Tubbs Taco Palace. Then one day, as if by magic, Taco Palace was no more, and Tex Tubbs Cadillac Ranch had taken its place. And while news of the change was still being circulated around town, the restaurant was again revamped -- this time taking on the title of Tex Tubb's Cactus Ranch. What prompted the series of overnight name changes? And who, exactly, is "Tex Tubb?" The world may never know, especially because now the eatery on the corner that once so proudly bore his name is no more. Sure, there remains another restaurant by the oh-so familiar name of "Tex Tubb's Taco Palace" on the East side of Madison, but I have never been there and thus cannot comment on this twin establishment out on Atwood Avenue.

When I think about the bygone Tex Tubb's Cactus Ranch, I can't help but think of the mythical Tex Tubb. In my mind, he is a burly Texan man with a taste for tacos who once owned a cattle ranch. A man who then discovered his secret passions for American luxury cars and desert horticulture before riding off into the sunset leaving behind nothing more than memories of Tex-Mex cuisine.

It seems a little silly to comment on food no longer available at a restaurant no longer in operation. Suffice to say that the menu featured plenty of strengths to offset its shortcomings. Strengths which included plenty of vegetarian options, surprisingly satisfactory tacos, and a respectable variety

of imbibable offerings. The margaritas in particular seemed popular among more than a few MSTP students.

The atmosphere was relaxed and unpretentious, welcoming to patrons as varied as families with young children to solitary diners on a lunch break to groups of chattering cynical med students. The service was personable without being pushy. Rather than the all-too-common plastic smiles dripping with sticky-sweet insincerity, the waitstaff had quirks that rendered them distinctly human.

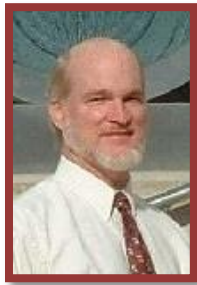
Overall the prices at Tex Tubb's Cactus Ranch were pretty reasonable, particularly when comparing them to other sit-down restaurants within walking distance of the hospital. Their biggest fiscal offense was their practice of charging for chips and salsa. True, they didn't charge much, but the fact that they did was almost unacceptable. Clearly, this was the reason that they went out of business (or so I assume).

And yet, while it was there, we continued to return to Tex Tubb's Cactus Ranch. We continued to take part in the magic of that mythical Texan rancher because it addressed a very specific set of needs. That is, it addressed our needs when we were hungry, we were broke, and we had to be back at school in a few short hours. Slowly but surely Tex Tubb, that enigmatic Southern man of mystery, carved himself a place in our hearts and minds through his restaurant. Like many before me, I learned to appreciate his filling fare and agreeable beverages that aren't too hard on the budget of a perpetual student. I learned what "Tex-Mex food" was, or at least what passes for "Tex-Mex" food in this part of the world. And more than anything, I learned to love it because at only a ten-minute walk from the HSLC, Tex Tubbs Cactus Ranch was a

perfect place to spend those awkward post-class pre-journal-club hours with some friends on a Wednesday afternoon. And then it was gone.

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### COOK'S CORNER *with Ben Krasity*



*Readers may know about your hockey group, that plays outdoors on Lake Mendota and other locations. Please tell us a bit about the (international news!) story of the fall and rise of the hockey shanty on Lake Mendota this winter.*

It was the best of winters, it was the worst of winters! The group of guys I play pond hockey with were chomping at the bit to get the Shanty on to Lake Mendota and have a shelter for after the game analysis. One of them, Al, went out and drilled, finding 5" of ice, the minimum to support the Shanty's weight. So the cry went out and we pushed her out on the lake on a Sunday. The weather forecast was for a gentle warming trend before a cool down. Well, it only got warmer and listening to the snow melt off my roof that night I became concerned. Monday was even warmer than the forecast predicted and Al went out at 5:00pm to check. He found the Shanty had pushed the ice down at least 8 inches, the water was up to the door. So, Al decided to jack it up off the blocks at the corners and move it to a new location. However, instead of jacking the Shanty up, he jacked the ice down and the jack broke through, ending up on the bottom of the lake with the Shanty following. Luckily, it was only 4-5 feet

deep.

That Wednesday we got together and discussed what to do. Al had a plan to build a wooden structure supported by 4x4x10' posts at the corners. (The two pictures that made it around the world were of the start of this project. If you want to see them, Google "iceholers shanty".) Winches and a come-along were attached to the ends of the structure and secured to the Shanty. We then proceeded to slowly winch her out of the water and much to our amazement, it worked! We hoped to keep her suspended until the ice refroze underneath, but the weather didn't cooperate and the crew used 20' 2x10's and homemade ramps for the wheels and were able to roll her off the ice on Friday. It was less than a week, but it seemed like an eternity.

The photos made it into the local paper and were picked up by news services that sent it around the world. A British paper described us as "workers risking their lives in a death-defying task to save a sinking ice shanty." The fame hasn't gone to our heads, Jay Leno hasn't called for an interview. We just feel fortunate that none of us won a Darwin Award!



*Holy cow!  
Photo courtesy of photoblog.msnbc.msn.com*