

# The Micelle

Fall 2008

**Micelle:** (pronounced: my-cell) 1) Unit of structure built up from polymeric molecules as a molecular aggregate that constitutes a colloidal particle. 2) The Newsletter of Augsburg Biophysics

## GREETINGS FROM THE LAB

A terrific group of Augsburg students spent the summer of 2008 studying biophysics, at Augsburg College and across the country. Their dedication and efforts have resulted in new equipment for the lab, ideas for future experiments and presentations at local and national meetings. In this issue of the Micelle we show off their successes and catch up with a Lipids Lab Alum, Ben Sonquist, who is now working to excite the next generation of scientists at STARBASE Minnesota.

## RECENT NEWS

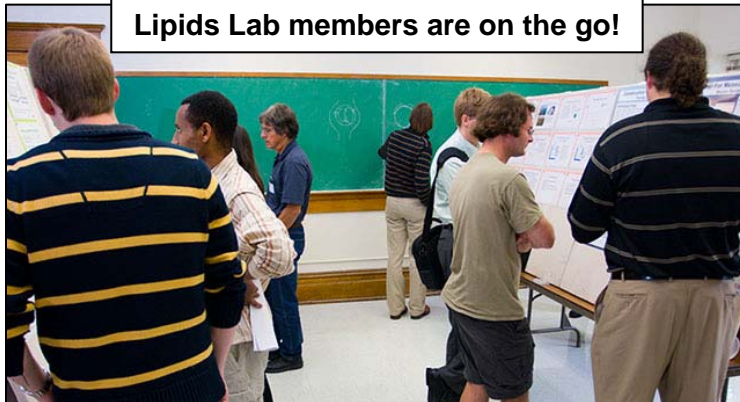
- The Lipids Lab was happy to host Ravi Narayan of the University of Minnesota's Nanobiotechnology lab. Ravi is studying new ways to synthesize drugs using enzymes localized at immiscible fluid interfaces.
- In May, Professor Stottrup participated in a workshop on *Cell Motility and Chemotaxis* held at the University of Minnesota. He co-authored a poster with his colleagues at NIST on live cell imaging.
- The Lipids Lab contributed to a published manuscript by Dr. Yang Deng at the University of Minnesota. The paper which appears in JACS describes a process for making and preserving fluidity of lipid bilayers after they have been exposed to air.
- Andrew Nguyen (2010) will appear in a video for the STARBASE Minnesota Program which encourages elementary students to study science. The video clip describes Andrew's work in the Lipids Lab. Andrew also won the MAAPT's prize for best student poster at their spring meeting.
- During the Summer of 2008 Nate Johnson (2011) and Sergio Romero-Garcia (2011) both were awarded internships through the Augsburg's URGO program to fund their research.
- The Lipids Lab welcomed its newest member. Eli Moe Stottrup was born 3.24.2008. Eli instituted lab naptime and afternoon feedings.

## Our Summer 2008 Crew!



Back: Matt G (U of M), Ben S., Sergio R., Ben H., Andrew N., Leif S. (Rutgers), front: Nate J., Christine S., Tom L.

## Lipids Lab members are on the go!



Four summer 2008 students (Andrew, Ben, Nate, and Tom) presented posters at NDSU's second annual undergraduate research symposium. Augsburg's own Dr. Zobitz and Ravi Narayan (U of M) also gave talks on their research.



Alison Heussler spent the summer working at the University of Minnesota. Her project was to design and construct a temperature controlled stage for biological samples. Alison's poster took 3<sup>rd</sup> place in the U of M's MRSEC poster competition.



Cait Kortuem spent the summer working for Dr. Ka Yee Lee (U of Chicago), a long time friend of the lab. Her project was to track lipid domains over long time periods and to extract monolayer viscosities. Cait reports her summer was a great experience.



Tom Lopez visited research labs in applied physics at Stanford. While in the Bay area Tom tried his hand at photography (above).



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**Lipids Lab alum Ben Sonquist (2006) shares his excitement for science with kids at STARBASE Minnesota**



**What is a typical day like at STARBASE Minnesota?** At STARBASE my primary role is to teach 4th and 6th grade students drawn from the Minneapolis and St. Paul Area. Students, along with their teacher, come with their entire class for a five day STARBASE experience. Our goal is to present science, math, technology and engineering as viable and attainable options for students now and in the future. We reach our goal by putting students in a situation where they are using science to answer real questions while using tools from math and technology to help them along the way. When I'm not teaching I am working with the rest of the instructor team developing new curriculum and working in other areas to keep the organization moving

**What do you see is the biggest obstacle to overcome in getting elementary students to consider studying science?** The biggest challenge in getting elementary students to consider studying science is allowing them to see themselves in that role and to experience success when they are doing science now. To many people, science is done by someone in a lab coat who has unimaginable intelligence and spent decades in school preparing for that work. In education, we need to break this stereotype and show students that being a scientist is more about how you approach a question than the degree you obtain or even the job you work in.

**How did your experience in the Lipids Lab prepare you for your current position?** My experience in the Lipids Lab gave me a glimpse into the world of research science that the general public doesn't normally get to see. This was one of a few significant moments in my education where my paradigm of science was shaken at its core. In the Lipids Lab I saw that real science is done by real people and is completely obtainable for those who are interested and motivated. The lipid lab also gave me insights into experimentation,

collaboration and the development of experimental apparatus that has contributed greatly to my success at STARBASE. This summer we had an intern and the advice I gave him was to use his summers well by getting involved with research or internships.

## **What made you consider an alternative path in science education?**

After graduation I became aware of the mission of STARBASE and how it fit in with my goals as a science educator. Both STARBASE and I share the desire to open students' eyes to science and let them develop a passion for it like we have. We both recognize that developing the next generation is the only way to ensure advancement in science and we now work together toward that common goal.

## **What advice would you give our science students at Augsburg College?**

The advice I would give Augsburg science students is the same advice that I received in my junior year biology seminar. Do something productive with your summers. During my college years I spent summers driving a truck, aerating lawns, parking cars, isolating and analyzing plant DNA and studying the miscibility and phase change behavior of lipid molecules. I'm sure you can pick out which of those activities strengthened my understanding of science and that I'm most likely to reference during a job interview. There is a lot to learn in your required science classes but none of that can give you the perspective or appreciation of your discipline like living and breathing the work of a scientist.

## **Biophysicist Profile: Harden McConnell**

Born in 1927, Dr. McConnell has recently studied lipid membranes and the importance of cholesterol. Additionally, "his studies of the electronic structure of molecules through paramagnetic resonance spectroscopy and for the introduction and biological applications of spin label techniques" was recognized with the Wolf prize in 1983.



**Special Thanks To:** Professor Zhu and members of his lab for their continuing support, Erkan Tuzel; Sylvio May, Dan Kroll, and the rest of the NDSU biophysicists; Mike Halter and his colleagues at NIST; Augsburg College and URGO; Dean and Amy Sundquist; Research Corporation; The McNair Program; and MN Space Grant Consortium.

**GET INVOLVED!** We have many great projects for students in the lab. If you're interested in becoming involved, please contact:

Ben Stottrup, Assistant Professor of Physics  
Augsburg College  
2211 Riverside Ave.  
Minneapolis, MN 55454  
stottrup@augsborg.edu  
(612) 330-1035  
<http://www.augsburg.edu/ppages/~stottrup>

