eNewsletter

apr 2012

CPMS Physical and Mathematical Sciences

CPMS
College of Physical & Mathematical Sciences

The DEAN'S MESSAGE

Spring has arrived with blooming trees and days of sunshine, which means that the April eNewsletter is also here! I'm glad I have this chance to update you on the many exciting things happening in our college.

March was definitely an eventful month for CPMS. Several professors got pied in the face on Pi Day, a new math student lounge opened and the geology department's stream table opened to the public. However, March's biggest event was definitely the Student Research Conference (SRC).

This year's SRC was quite a success. Students, faculty and members of the community all attended the insightful conference. With research presented on a wide variety of topics, from HIV research to international geology, attendees were enlightened as students presented their hours of hard work.

Education for students in our college means much more than just tests and textbooks — it means experience. Because students continually search for answers to new questions, they excel in academic and research pursuits in their scientific studies. While those who attended the SRC had their eyes opened to new research, the presenters also gained valuable experience presenting research to an audience.

If this reminds you of your own experiences with science over the years, please remember that we would love to hear about them, particularly ones relating to science and religion. Tell us about your experiences with balancing religion and science in the face of doubt from others — or even yourself. Please send your anecdotes (of up to 200 words) to cpms@byu.edu with "Memory Bytes" in the subject line. We'll publish the best ones in the next issue of *Frontiers* magazine. Please remember that submissions may be edited.

As winter semester wraps up, I look forward to watching seniors' excitement, as all their hard work will be honored at graduation. On Thursday, April 19, CPMS seniors will proudly attend commencement ceremonies.

At our college convocation exercises on April 20, Norman Jarvis, the new representative to the university alumni board and a member of the College Volunteer Leadership Council (CVLC), will address graduates. Jarvis is currently a senior technical analyst at Goldman Sachs, and I'm sure his knowledge and words of advice will inspire graduates to dive headfirst into the work force.

This semester has sped by, and I am grateful for opportunities like the SRC and graduation, where students can receive recognition for their academic efforts. But I'm also grateful for your continued interest in our students and our college, and I hope that we can continue to work together to help our students change the world, one experiment at a time.

Scott Sommerfeldt, Dean

DEPT. NEWS

CVLC
CVLC Welcomes New Members

COMPUTER SCIENCE
The Future of Family History

GEOLOGY
Professor Shoots Beyond the Stars
A Very White Christmas in Antarctica

MATHEMATICS
America's Best Math Teacher at BYU

COLLEGE LINKS
CPMS Homepage
Giving to the College
CPMS on Facebook
CPMS on Twitter
LinkedIn
CPMStv

FRONTIERS MAGAZINE
Spring/Summer 2012 Issue & Videos

CPMS-TV VIDEO
Women in Science

BACTERIA BECOMES BIOFUEL

Ever wonder what the true purpose of pond scum is?

Undergraduate student MacKenzie Mayo might have discovered the answer as a result of anaerobic digestion research that she conducted with her advisor, Dr. Jaron Hansen, of the Department of Chemistry and Biochemistry.

Anaerobic digestion involves using a consortium of bacteria to convert organic waste into one or a combination of three gas streams: hydrogen, methane and carbon dioxide.

Hansen and Mayo have focused their research on developing methods to further improve the anaerobic digestion of waste. Mayo concentrated her efforts specifically on testing algae and different pretreatment methods to better convert algae into biogas.

"The big picture of the project is we're trying to use bacteria to turn organic material into biofuel," Mayo said. "My part of the project was working with pretreating the material that we're feeding the bacteria. We have a pretreatment method that we're working on to make it easier for bacteria to digest [grass, sawdust and algae]."

Mayo discovered that by pretreating algae with both hydrogen peroxide and UV light, bacteria can more effectively breakdown plant matter, such as cellulose and lignin in algae, into biogas. The conversion process of algae into natural gas speeds up and is more efficient with Mayo's pretreatment of hydrogen peroxide and UV light.

"The advantage of having a pretreatment method, then, is you increase the efficiency of conversion of plant matter cellulose- and lignin-containing compounds into biogas," Hansen said.

Renewable energy sources will be more readily available as these pretreatment processes are utilized during the anaerobic digestion process. Biogases created from this process can eventually be converted into methane, biodiesel and electricity.

Mayo enjoyed working closely with Dr. Hansen in her undergraduate research and hopes to continue to be involved in environmental conservational research in the future.

Follow this link for the rest of the story.