

# Myra Halpin: The backbone of Chemistry Research

By KATHERINE WANG

Sports Editor

Whether it be through posters around NCSSM, through news about the latest research winnings, or through the many school activities she sponsors, everyone knows Myra Halpin, the Research in Chemistry instructor here at NCSSM.

Comments about her range from "Dr. Halpin is glorious. An opportunity to be a mentee of someone like her comes, for the lucky, once in a lifetime." from senior Guy Blanc to "one of the most inspiring teachers I've ever had" from senior Praruj Pant. Halpin has made a strong impact on students that have had her as a teacher.

Simone Griffith, one of her research students, is appreciative of Halpin's efforts:

"Dr. Halpin is a truly amazing person. She does so much to ensure that students like us can go wherever our dreams take us in the future. Before knowing her, I just loved chemistry. Now, I have the knowledge and the confidence to really do it. She works so hard, sometimes staying at school until 10 at night. And it is all for us. There are not enough ways to say thank you for me to truly express my gratitude for her."

Out of Halpin's 45 years of experience teaching kindergarten through second-year college students, 25 of them have been spent at NCSSM.

Some of her fondest memories before NCSSM stem from Goose Creek High School in Goose Creek South Carolina, which she described as "a lot of fun." She began a research program there and still keeps in touch with a few of her former students.

Here at NCSSM, Halpin's impact can be seen everywhere. She began programs in the school such as iGEM, BioGeneius, the Applications in Entrepreneurship class, and the Research in Chemistry Program. She also started sponsoring students for prestigious programs like NASA HUNCH and Conrad, both of which are deeply entrenched in aerospace and aviation, a long-time pursuit for Halpin.

She has applied for the teacher in space program twice, and her high school research project was on orbital mechanics. Halpin describes herself as "just as nerdy as you guys."

Her experience with research in high school inspired her to start the Research in Chemistry program here at

NCSSM. She said that while she was in high school, she "gained more from special projects and independent stuff than from regular class."

She wants to allow her students to gain outside applicable experience and take ownership of their own efforts. She also believes that research can help better student-teacher relationships:

"I would rather be a colleague or a coach than an adversary. As a teacher and a partner, the student and I can work together towards a common goal."

Earlier this year, Sakol Warintaraporn, a chemistry teacher in the new Science and Mathematics school Halpin is helping to create in Thailand, came to NCSSM to learn under her mentorship.

He says that he wants to be a teacher like Halpin, since she portrays "the ideal properties of a teacher." He describes her as a very active teacher that gives many demonstrations in class; she keeps her students interested by deviating from the typical lecture.

Halpin is known for asking the all-important question "What's in your beaker?" in her chemistry classes. So, of course, the students needed to find out the real answer.

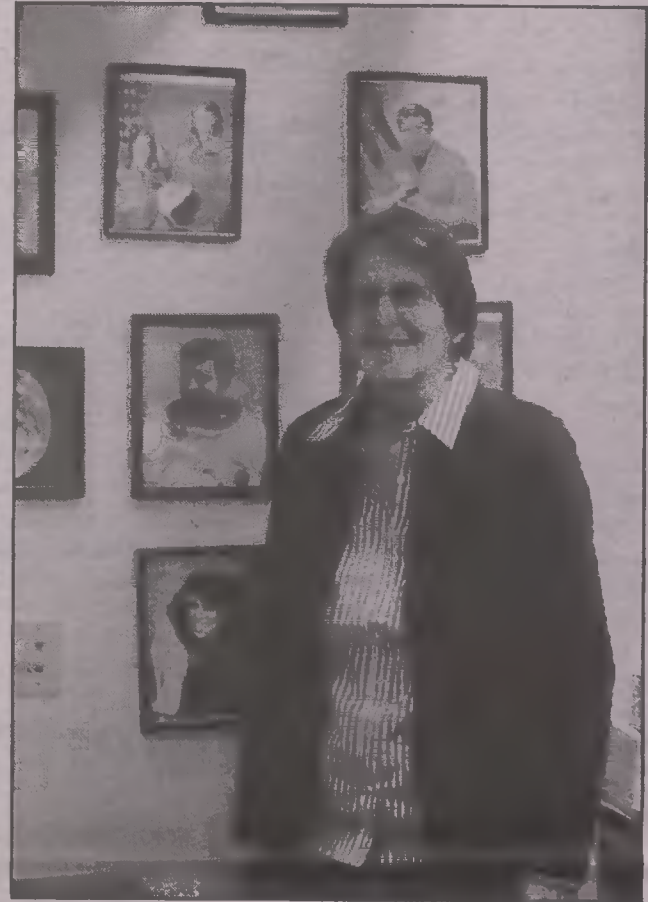
When asked to recall the

contents of her beaker, Halpin said "An extract of a bean; water is the solvent. It's caffeine..." Lastly, when asked to give a piece of advice to past, present, and future students, she said "Have fun. Never stop learning. Always try to figure out what's in your beaker."

Halpin has changed the

lives of many. She is one of those teachers that most people never have the chance to encounter, and if they are lucky, meet once in a lifetime.

Dedicated and encouraging, Halpin not only teaches the magic of science, but also the magic behind ordinary objects and happenings, the magic of life itself.



## NCSSM teams win first, second in Moody's Math Challenge

By ADDY LIU

Features Editor

This year, NCSSM swept the 2015 Moody's Mega Math Challenge, with the two teams NCSSM sent placing first and second place in the mathematical modeling competition.

Last year, NCSSM's teams placed first and third. The M<sup>3</sup> challenge is designed to introduce high school upperclassmen to applied mathematics by giving them an opportunity to work in teams to tackle a real-world problem under time and resource constraints similar to those that industrial applied mathematicians work with.

This year, NCSSM's two teams joined 1,518 other teams in the 14-hour contest. At 7 a.m. on the designated day, the students received their problem. At 9 p.m., they had to upload their papers. The papers were read by applied mathematicians, and the top six teams were invited to present their papers at Moody's headquarters in New York City to a panel of judges.

The 2015 NCSSM teams made it to the final six and, on Monday, April 27, after presenting their work, finished first and second in the nation. The team made up of Michael An, Guy Blanc,

Evan Liang, Sandeep Silwal, and Jenny Wang took first place, followed by the team of Vinay Kshirsagar, Alex Li, Howard Li, Graham Pash, and Keshav Patel. Between the two teams, they earned a combined \$35,000 in scholarships.

The question that teams had to answer this year was: "Is graduating from college with a STEM degree worth the cost?" To answer this question, teams created mathematical models to determine the true cost of earning a degree, accounted for the impact of President Obama's recent free two-year community college proposal, contrasted potential financial outcomes for those pursuing STEM and non-STEM degrees, and quantified factors that would influence a graduate's overall quality of life after school.

"As a group of five seniors, we couldn't help but laugh at the problem when we first read it," said Keshav Patel, the second place team's spokesperson. "The competition happened at the end of February, so the only thing on our minds at the time was college decisions. Part of how we answered our problem came from our ability to relate to the question. We wanted to create a solution that was personalized to each person, because the question of

college is so subjective to each person. So a great deal of our experience was put into our solution."

When asked, both teams attributed their success to experience, focus, and teamwork. One way the teams gained experience was by taking the Mathematical Modeling course offered at NCSSM. "In this class," said Guy Blanc, the first place team's spokesperson, "we started with questions similar to 'regular' math problems for which it was relatively easy to deduce a solution direction, and gradually moved to open ended problems that at first seemed unrelated to math. By practicing these types of problems for a trimester, we eventually learned how to break down the most open-ended of problems into parts that we could tackle logically."

"Dr. Teague and Ms. Belledin were great resources for us," added Patel. "It was easy to talk to them about our papers and get feedback for the next competition." Another way the teams practiced the specific skills needed to excel in the M<sup>3</sup> challenge was by participating in other math competitions.

Some of the other math competitions the teams competed in beforehand

included hiMCM, a 36-hour competition, and MCM, a 96-hour competition primarily intended for college students. "By the time Moody's came around," Blanc commented, "We were already used to modeling on overdrive for a long period of time."

Team dynamics also played a key role in their success. "As a team, we had mostly all worked with each other in previous modeling competitions, but before Moody's, we ensured that we knew all of each other's strengths and weaknesses. And with only 14 hours, we didn't have time for all five of us to work together on each small part of the work," said Blanc.

Following the same thread, Patel noted that their team "had different people work on different portions once we came up with a plan for each section as a group."

Time was one of the most significant constraints in this competition. "Fourteen hours seems like a lot of time, but it's not," said Blanc. "After my group barely finished in time during MCM, the 96-hour one, Moody's was nothing but a sprint. We essentially wrote a research paper, with nearly no prior knowledge, in 14 hours."

"It's amazing how much work you can compress into a small amount of time - NCSSM taught me that somewhat, but this was a new record," Blanc said.

"Math is much more versatile than we thought," the team comprising Kshirsagar, A. Li, H. Li, Pash, and Patel said. "In class we always wondered, 'when are we going to use this?' and now we have an answer. Who knew that we could use stuff from theory classes to figure out what college to go to? These competitions are a way to finally use the math we've been learning for the last 12 years," they reflected.

"Mathematical modeling requires much more than mathematics," noted Instructor Dan Teague, the teams' coach. "It requires knowledge of how things work, which comes from the students' experiences in the sciences, both natural and social, their programming ability, and their ability to explain complicated ideas clearly and persuasively in written form."

"Our success in this competition is a true testament to our students," Teague said. "Credit also goes to our outstanding faculty. Every English and humanities teacher who helped these students express complex ideas along the way shares this honor."