

December 2010

Mr. Bill Schenkelberg
Chairperson, St Dominic School Board Chairperson St. Dominic School
18105 W. Capitol Drive
Brookfield, WI 53045

Dear Mr. Schenkelberg,

We would like to take a moment to commend your teacher, Donna LaFlamme, for the initiative she has taken to offer an innovative and remarkable program at St. Dominic School for her students. Donna LaFlamme and her students are participating in the MSOE Center for BioMolecular Modeling's SMART (Students Modeling A Research Topic) Team program. The SMART Team program combines high school teachers, their students and research scientists with rapid prototyping technology. In this multi-faceted program, students develop teamwork as they delve into the molecular world, explore science as a process and not just a collection of facts, and work closely with a researcher to understand and model the structure-function relationship of a protein the researcher studies. After designing and building a 3-dimensional model of the protein using 3D printing technology at the Milwaukee School of Engineering, SMART teams create an oral presentation explaining their work to a lay audience and a poster which is presented to a scientific audience.



Amazing Teachers – Working to Benefit More Than Just Themselves...

We recognize that the teachers who usually offer these programs within their schools are often already over-committed with respect to their time, and yet the SMART Team teachers with whom we work typically volunteer to host a SMART Team at their school without any financial compensation for their time. We would like to take the time to acknowledge the commitment and dedication that Donna has demonstrated by offering SMART Teams at St. Dominic School. This is a unique program, with only 19 teams in the Milwaukee area participating. Donna commits her time and expertise for her students to gain invaluable experience working with a research scientist to learn about molecular biology in a dynamic process. We ask that you take some time to acknowledge the commitment that Donna has shown to the students and to St. Dominic School.

SMART Teams – A Professional Development Opportunity, disguised as an extra-curricular activity for students

In order to organize a SMART Team at St. Dominic, Donna attended a professional development course at MSOE, "Modeling the Molecular World Part 1: Tactile Teaching with Physical Models." We invite you to visit our website to learn more about our professional development programs for teachers (<http://cbm.msOE.edu/profDev/mmw1/index.html>). In addition to SMART Teams offering the students

a chance to learn about real science and to delve into a specific topic of molecular biology, this program also offers the teachers a professional development opportunity, as they too learn about molecular biology. Many of our SMART Team teachers incorporate the knowledge that they have gained through participation in the SMART Team program to benefit not just the members of the SMART Team, but all of the students their classrooms. This is a remarkable opportunity for teachers to update their content knowledge and to expand their pedagogical expertise at no cost to the school.

The SMART Team Program, in Three Phases

The SMART Team program is divided into three phases: the Qualification Phase, the Research and Design Phase and the Presentation Phase. During

the Qualification Phase, the team meets several times on Saturday mornings in the fall to learn about protein biochemistry and computer visualization. During this phase, the SMART Team must meet certain expectations, accomplish specific tasks, complete an oral exam and design a model of this year's qualification protein. The qualification model this year focused on a surface protein located on the bacterium *Neisseria meningitidis*, a causative agent of bacterial meningitis. OpcA is a protein on the surface of this bacterium that induces the binding of the bacterium to a host cell, triggering uptake of the bacterium into the host cell. This bacterium has the



ability to cross the blood-brain barrier, meaning that the bacterium can lead to infection of brain tissue. This protein may serve as a future target for medicinal therapeutics to help prevent and/or treat this infection. An image of the St. Dominic OpcA model design is illustrated on the certificate enclosed with this letter. I encourage you to visit your SMART Team and ask them to show you their model, and to tell you the molecular story behind this fascinating protein. Each team that attended the meetings, completed the qualification exam and demonstrated proficiency designing OpcA, qualified to participate in the remainder of the SMART Team program. *The St. Dominic students, under the guidance of Donna, have successfully completed the Qualification Phase of the SMART Team program.*



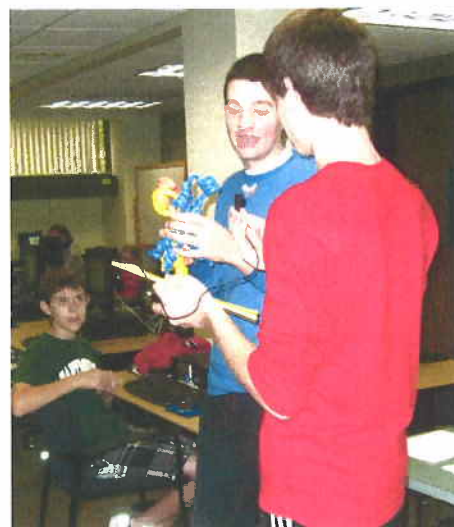
On Saturday, November 6th, we kicked off the Research and Design Phase of the program when we introduced our newly Qualified SMART Teams to their research scientist mentors. *The St. Dominic SMART Team has been matched with Dr. Cecilia Hillard and her graduate student, Lalita Shrestha, from the Medical College of Wisconsin.* Together, the team will explore the endocannabinoid system, which is involved in a variety of processes, including mood regulators, motor learning, appetite and pain sensation. THC, a chemical in marijuana, triggers this system. The St. Dominic SMART Team is currently working with Dr. Hillard and Lalita to learn about their chosen biomolecule and will be designing this model soon. Following the Research and Design Phase, the students will learn how to develop an oral presentation as well as a poster presentation during the final phase of the SMART Team program: the Presentation Phase. **Each team will present their topic and model at our SMART**

Team Poster Session on Friday, March 11, 2011 and will deliver an oral presentation at the SMART Team Final Presentations on Saturday, March 19, 2011. We will send you an invitation to these events

as we approach the dates. We hope that you will be able to attend to support Donna and the St. Dominic SMART Team.

An Authentic Exposure to the World of Research

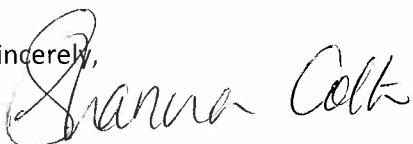
One of the goals for the SMART Team program is to provide students with an authentic experience in the field of science. The SMART Teams have an opportunity to present their completed project at an international research conference in April 2011. The American Society of Biochemistry and Molecular Biology (ASBMB) meeting will take place in Washington, DC April 9-13, 2011. The organizers of the undergraduate research poster session have invited SMART Teams to present their posters and models alongside the undergraduate posters at this meeting. We have encouraged each team to take advantage of this opportunity to attend this meeting. The ASBMB meeting is attended by thousands of researchers. This is an amazing opportunity for the students to see how researchers communicate in their fields, to learn more about specific topics by attending sessions and to meet researchers in the field. Registration fees for students and teachers are waived, but the teams will need to cover the cost of travel, room and board. Each team has been charged with the task of locating funding to help cover this cost and many teams are pursuing fundraising options. **Any resources that you might be able to share with the team would be greatly appreciated!** A school board member from a school that hosts SMART Teams has said ***"SMART Teams is a remarkable program, ...one that changes students' lives"***. We hope that you agree that a program that changes students' lives is worth supporting at your school! The opportunity to attend the ASBMB meeting in April would greatly enhance the students' SMART Team experience.



The dedication and commitment that Donna has shown over the last 10 years of hosting SMART Teams at St. Dominic is amazing. She has truly been inspirational to the students that have participated in this program. The receipt by the school of the "Exemplary Status" award for hosting this program acknowledges the passion demonstrated each year by Donna and her students. We look forward to another great project by the St. Dominic students.

Please find enclosed a ***Certificate of Qualification*** that your school's SMART Team has worked diligently to earn. We applaud the accomplishments of Donna and her students and their successful qualification. Thank you for your continued support of Donna. Her motivation and excellence in teaching introduces students to the "real world of science" that exists outside of the textbook.

Please visit our website for further information about the SMART Team program and to view the progress of your school's SMART Team (<http://cbm.msos.edu/stupro/smart/local/index.html>).

Sincerely,


Shannon Colton, Ph.D.
SMART Team Program Director
Center for BioMolecular Modeling