Apollo health career students visit research lab
10.12.05

By Marcia Handahl

Did you know that the U of M is one of the leading institutes for cardiac research in the U.S.? Did you also know that Earl Bakken from Fridley, MN, in collaboration with U of M cardiac surgeon, C. Walt Lillehei, developed the first battery powered pacemaker and first used it on a patient at the university hospital? Earl Bakken later went on to be the founder of Medtronic, a world-class leader in the manufacture and design of biomedical devices. Medtronic’s world headquarters is based in Fridley, MN.

The Health Careers Internship class from Apollo High School with instructor, Marcia Handahl, had the rare opportunity to visit the Visible Heart® research lab at the University of Minnesota, Minneapolis. They were also able to tour the Lillehei Heart Institute which documents the first bypass surgery (1954) ever done in the world using cross-circulation. The technique connected the sick patient to another healthy patient, who acted as the sick patient’s heart and lungs while the surgery was being performed. Bypass surgery was later updated to using a bubble-oxygenator and currently, a heart-lung machine.

The Visible Heart® Lab is located in the Mayo Building and is involved in many different areas of research, such as cardiac pacing, electrophysiology, testing and design of various heart devices and the study of muscle integrity of hibernating black bears. This lab has a strong partnership with Medtronic, collaborates with doctors throughout the U.S and the world, as well as with the Stem Cell Institute and the Mechanical Engineering Department at the U of M developing new technology and procedures.

Dr. Paul Iaizzo, Ph.D., a native of Minnesota, is the Director and Principal Investigator of this lab. In addition to his research responsibilities, he is a Professor of Surgery and Physiology with a joint appointment at the Carlson School of Management, where he works on the New Product Design and Business Development Project, a course combining graduate-level engineers with MBA students to produce a business plan for commercialization of new devices. He is also Medtronic Professor of Visible Heart Research, and Director for Education of the Lillehei Heart Institute. Dr. Iaizzo has mentored 45 graduate students as they have pursued their degrees. He currently has 5 students pursuing a PhD and 3 students pursuing a Master’s degree in his lab.

Sarah (Handahl) Ahlberg, a 1999 graduate of Technical High School in St. Cloud, is currently working with Dr. Iaizzo as she pursues her Ph.D. in Biomedical Engineering. Sarah’s doctoral thesis is in the area of cardiac pacing. Sarah is working with Dr. John Morgan, a world-renowned cardiologist from Wessex Cardiac Centre at Southampton University Hospital, in Southampton, England, in an attempt to determine how the relaxation of the heart is affected by pacing the heart at different sites. Currently, the most common sites for the implantation of pacing leads are the right atrium and the right ventricular apex.

While at the lab, the Health Careers students had the opportunity to observe surgery, during which the heart is used to perform a variety of experimental procedures. In a procedure Dr. Iaizzo co-developed with Medtronic, donor hearts beat on their own, outside of the body. During the experiments, a clear liquid is
pumped through the heart as a blood substitute. This fluid allows for endoscopic videoscopes to be placed inside the heart to record the heart’s inner workings, allowing researchers a new view of the structure and valves in operation. With the experimental surgeries, the goal is to ultimately find new drugs, procedures, pacing sites or nutrient solutions that will increase the chances of survival for people with heart defects, congenital heart failure or ischemia.

The Health Careers students learned about the doctoral research of Sarah Ahlberg and other doctoral candidates in the lab. Dr. Iaizzo also explained his research on hibernating bears, and the students also had the good fortune to meet Dr. Tim Laske, Senior Program Director of Heart Valves at Medtronic. Dr. Laske gave a motivational talk about his career journey that led him from an undergraduate degree in environmental science, to getting his PhD in biomedical engineering in the Visible Heart® lab, to his prestigious position today. He encouraged the students to realize that any goal is attainable with hard work and dedication.

The Health Careers Internship program at Apollo is part of the Mississippi River Partnership, which also includes Technical High School, St. Cloud, Sartell High School and Sauk Rapids-Rice High School. This program is strongly supported by the St. Cloud Hospital as well as by many other health sites and clinics in the greater St. Cloud area. This class allows students who are interested in a career in the health field to participate in internships at various health sites, learn about a variety of medical professions through guest speakers, explore new areas of interest, and be exposed to unique experiences that encourage them to think about their future goals. The field trip to the University of Minnesota was a venture that opened the eyes of these students to yet another area of the health field right in our backyard, that most of them had no idea existed. To learn more about the Visible Heart Lab® and the work done there, visit: www.visibleheart.com