

HANDS ON

Building Interest in the Human Body

Eight middle-school science teachers have come to Omaha to “Build a Human.” First they must take one apart.

Wearing lab coats and latex gloves, they gather gamely around a cadaver in the basement anatomy lab of Creighton University School of Medicine. “That’s part of the large intestine,” says Thomas Quinn, professor of anatomy and director of the Build a Human Project. “You can touch it if you want.” No one wants.

A two-week summer program supported by an hmi grant, Build a Human gives middle-school teachers and students some close-up experiences to help them learn about the structure and function of the human body. They acquire a more visceral understanding, so to speak, of the body, from the molecular level on up through cells, tissues, organ systems and the organism as a whole.

Only the teachers come face to face with a cadaver. In morning labs, however, students and teachers work together to build models of sugar molecules, “eyeballs” of Styrofoam and cotton, and “skin tissue” of felt, sponge and yarn. Cracking fertile eggs into Petri dishes, they observe the development of chicken embryos. They color diagrams of the parts of the human brain and dissect a real one. In a bone-naming competition, tosses of a die determine who must identify different parts of a human skeleton.

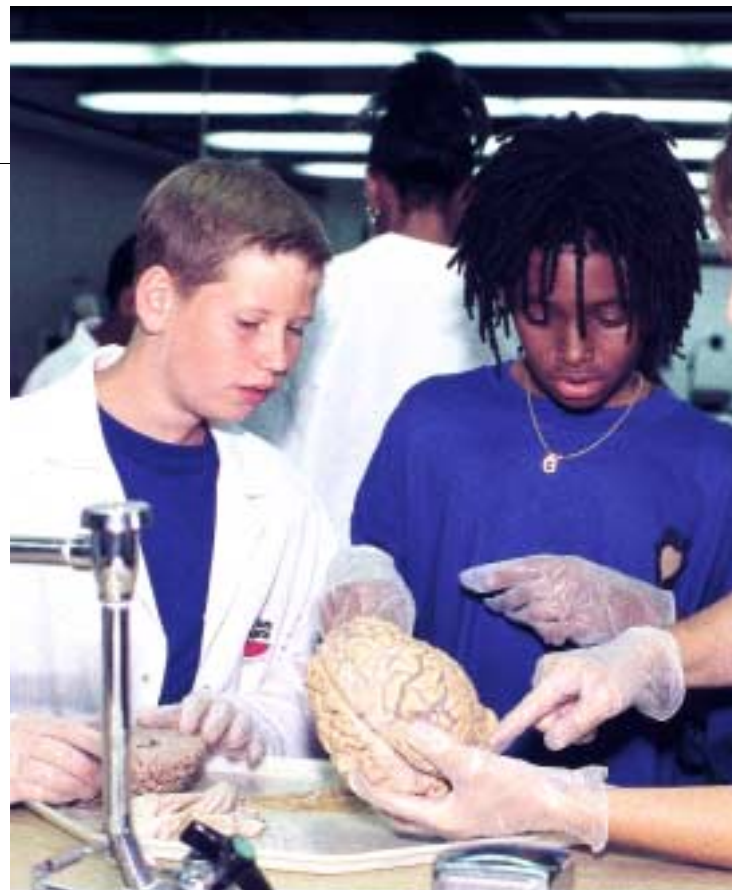
Everyone goes home with plenty of souvenirs. Teachers get models their students can build as well as hands-on lesson plans they’ve designed themselves (including at least one with extensive modifications for students with special needs). They also earn three hours of graduate credit and a stipend for their summer effort.

The seventh- and eighth-graders take home packets of practical health and medical information—on topics such as diabetes, heart disease, lead poisoning and organ donation—to share with their families. They also return with experiences they will never forget: looking at motor neurons under a microscope, experimenting with digestive enzymes to see how they break down food, dissecting cow eyes, touring a medical school and hospital and getting to know the culturally and ethnically diverse graduate students who serve as lab assistants—and role models. As a bonus, students and teachers share the remarkable experience of working side-by-side as colleagues and even friends.

—JENNIFER BOETH DONOVAN

» For more on the Build a Human Project, visit: puffin.creighton.edu/edu/BuildAHuman/index.html

» For information on HHMI’s precollege science education biomedical initiative, visit: www.hhmi.org/grants/precollege/overview/biomed.htm



■ Above: Examining a human brain is one of the students’ favorite hands-on activities in the Build a Human project. Teachers and students learn the location and function of the frontal, temporal, occipital and parietal lobes, the ridges called gyri and the valleys called sulci, the cerebellum and the brain stem. Creighton University School of Medicine assistant professor Andrea Zardetto-Smith quizzes seventh grader Jonathan Van Erdewyk and sixth grader Gordon Walls, Jr., on brain anatomy.

■ After cracking fertile eggs into glass cups and placing them in an incubator, Carvie Erwin, a seventh grade teacher at Jesuit Middle School in Omaha, sixth grader Camille Keaulana and seventh grader Petrolyn Stephenson chart the daily progress of the shell-less chick embryos as they develop. In addition to a developmental biology lesson, the activity enables students to apply fundamentals of the scientific method, such as observing, measuring, predicting and interpreting data.





■ At left: Seventh grade twins Allison and Katie Gorga use vinyl, foam, cotton batting, felt and colored yarn to build a model of the skin. As they glue the layers together, they learn about the structure and function of the epidermis, dermis, collagen, muscle tissue, blood vessels and nerves. They also learn the role of melanin in skin pigmentation, using varying shades of tan and brown vinyl for the "epidermis" and discovering that under the top layer, people really are all made the same.

■ Below: Using balloons in plastic soda bottles, sixth graders Andrew Taylor and Peter Koneck-Wilcox see how changes in air pressure caused by the movement of a flexible diaphragm force air in and out of the lungs. Libby Putz, who teaches eighth grade at Anderson Middle School, explains that decreasing pressure in the bottle—or the chest cavity—causes inspiration, the intake of air to fill the lungs. Increasing the pressure causes expiration or air movement out of the lungs.

