



Expanding Your Horizons Conference 2005 at UCSD

Nancy Hsieh and Megan Blewis

The third annual Expanding Your Horizons (EYH Conference) was held on Saturday, April 2nd, at the University of California, San Diego. Participants included 600 girls and 150 parents from over 150 schools in the San Diego and Imperial Counties.

The EYH conference provides experiences in science, mathematics, engineering and technology for girls in grades 6-10. Throughout the day, the girls attend three of 45 different hands-on workshops coordinated by educators, industry professionals, and college students. The EYH conference also provides workshops for parents, which focus on encouraging and supporting their daughters' education and interests.

The "Knees Do More Than Just Bend" workshop, put together by the students from the Cartilage Tissue Engineering Lab in the

Department of Bioengineering, offered a lot of answers and presented opportunities for the girls in the field of tissue engineering.



Co-workshop organizer Megan Blewis (middle) explains tissue mechanics to a small group of participants.

Two workshops were held to accommodate 30 girls. Each workshop consisted of four 10 minute stations: Anatomy, Mechanical Properties, Imaging and Histology.

The Anatomy station demonstrated the structural components of the bovine knee joint and how these structures contribute to the physiological function. The girls had a chance to do some hands-on manipulations of the joint and get a feel for tissue texture and joint range of motion.



Graduate student Gayle Nugent (right) shows a participant how to use a microscope.

The Mechanical Properties station demonstrated the mechanical properties of bovine menisci, relating the structural protein content to mechanical strength. The girls had a chance to see first-hand how mechanical strength varies with orientation by stretching menisci in different directions.

The Histology station demonstrated fluorescent live/dead staining that stains live cells green and dead cells red. Different geometric designs were carved into live cartilage, damaging cells in those specific areas. When the resulting cartilage is stained with live/dead stain and viewed under a microscope, designs showed up in red on the green background of live cells. Each of the girls viewed the results under a microscope.

The Imaging station showed how an entire mouse knee joint can be visualized in 3D by combining a series of 2D microscope images. The girls could manipulate the 3D image on the computer and view it from different angles and different magnifications.

The workshop was a good introduction to the anatomy and mechanics of a knee joint as well as some experimental techniques used to study cartilage and other biological tissues. In addition, the girls had a chance to talk with undergraduate and graduate students in bioengineering and share their interests and inspirations in science and technology.



EYH girls looked on at a 3D image of cartilage while co-workshop organizer Michele Temple explained (right).

The workshop was a success thanks to the organizers: Michele Temple, Nancy Hsieh and Megan Blewis, and the workshop presenters: Gayle Nugent, Anya Asanbaeva, Eun Hee Han, Jennifer Hwang and Kanika Chawla.

For more information about EYH and the Cartilage Tissue Engineering Lab at UCSD visit:

- <http://www.sdsa.org/eyh/index.html>
- <http://cte.ucsd.edu>.