

CTE Research Included in SDSC Genomics Workshop

by Brad Hansen; ed. Johnny Du

On July 28, 2009, the Cartilage Tissue Engineering Lab took part in a Genomics Workshop hosted by the San Diego Supercomputer Center. The workshop sought to educate high school teachers on the latest technologies and major breakthroughs in genomics research. Eight of those teachers, who were from high schools nationwide, visited the CTE Lab to see the technologies in action and to see how genomics information is used in a lab setting.

To display the role of genomics in the CTE Lab, the teachers were given an in-depth presentation on several ongoing lab projects. First, graduate researcher Brad Hansen gave an overview presentation of the major aims and methods of the CTE Lab to determine the important players in osteoarthritis progression and treatment. Brad was followed by graduate researcher Elaine Chan, who discussed the genomic determinants of joint shape, from normal development and use to age and disease. Graduate researcher Bill McCarty then gave a presentation on the components of synovial fluid and synthesizing these in a culture. Brad then gave a second presentation, this time explaining the lubricating nature of synovial fluid and one of its major components, PRG4. Post-doctoral fellow Chris Raub wrapped up the presentation by showing what can be done in a genetically altered mouse model of joint disease.

Following these presentations, the teachers were split into groups of two or three to observe lab experiments being performed. Relating to his presentation of secretion of synovial fluid components, Bill showed his group how media is collected from synovial joint tissues in culture for subsequent analysis by scintillation scanning. Bill was looking for particular proteins necessary for synovial joint nutrition and function.

Elaine's group observed three-dimensional volumetric scanning of synovial joints. The 3D data can be used to analyze and compare joint shapes in a variety of animals at various stages of development.

Brad's group saw how synovial fluids can be investigated for lubricant function. Brad explained that during normal articulation, cartilage surfaces are pushed together and slide over each other, creating compression and shear forces. The friction test

simulates this environment so that the lubrication properties of synovial fluids from different species at various stages of development or disease can be investigated.

The teachers were very interested in the CTE Lab's research, as evidenced by curious and enthusiastic questioning during the observation process. The CTE Lab was proud to be a part of the Genomics Workshop, improving the education of educators of youth around the country.

For more information on the CTE Lab or the SDSC, please visit <http://cte.ucsd.edu> and <http://www.sdsc.edu>.