

Press Release:



Stem Cell-a-bration

features

Scientist from Buck Institute



Thursday, October 22, Piner STEM students were challenged to think beyond the classroom walls and engage in Science Literacy. What better topic that Stem Cells to start that conversation? Modeled after the California Institute of Regenerative Medicine (CIRM) “Stem Cell Day”, Piner teachers used this day to bring together students of History, Biology, English and Health Science/Biotechnology (HSB) as part of their integrated curricular unit. History students are learning about the development of the tools of technology - their conception and impact on Stem cell research. Health Science students are learning the types of Stem cells and their use in medical research. English sophomores, as well as HSB students, are reading excerpts from The Immortal Life of Henrietta Lacks, paying tribute to the person she was, as well as the impact her cells had on advancing tissue culture techniques.

Students first heard from keynote speaker Dr. Julie Mangada, Science Educator and Stem Cell Scientist from the Buck Institute on the Research of Aging. (pictured below)



She challenged them to think critically about where they learn their scientific facts (most from TV!) and to question such statements as “High Fructose Corn Syrup is ok in moderation”.

Showing the science facts behind HFCS gave them insight to that fallacy and she drove home her point of being science literate by reviewing (and learning from) classic scientific paradigms that are now debunked and in the graveyard. What a great introduction to Stem Cells since controversy is embedded in the topic! She explained where Embryonic SC are harvested from (remaining embryos from In Vitro

Fertilization), the exciting science they have taught us (Dr. Yamanaka proved he could revert a skin cell into a stem cell with “genetic gymnastics”) and the promise they hold for our future with neuronal stem cells to recover movement in Parkinson's patients.

Our second round of activities involved 4 Stem Cell stations. Mr. Dante DePaola had students explore the life cycle of *C. elegans*, a nematode indispensable to molecular studies as it only has 1000 body cells so making mutants to explore the effect of DNA damage an easy lab task.

Mr. Mantoani used CIRM curriculum where collaborative groups of students take on a societal point of view and for the sake of discussion and awareness. Afterwards he remarked, "It was great to hear students voice their own views and concerns regarding Embryonic Stem cells "

Ms. Barcelon had students modeling embryonic development, (seen here to the right,) with playdough as students went from conception to the blastula stage, and identified the cells harvested from the inner cell mass as undifferentiated cells that can take on almost any identity needed (with a little help from some growth factors that scientists provide). Dr. Managada also took on a station where she met with students to show them

HeLa cells (similar to those taken from **Henrietta Lacks**) how they are "fed" and used in the lab to help scientists test out medical treatments reminding students these cells were instrumental in developing the Polio vaccine. Water bears (Tardigrades) were also shown mainly because they are darling and captivate any student's attention - long enough to marvel at how their DNA repairs itself so incredibly; they can survive space travel - on the **OUTSIDE** of the rocket. Yesenia (picture below) was so inspired by the talk of cell culture she has completed a proposal for her Level 3 STEM certificate work on just such a project.



Our last segment was fabulous! HSB students reviewed their assigned chapters of the book (Science side of the story) to bring up our fellow history students then we were all treated to a dynamic presentation by Sandra Orr (Pictured here at the right). Sandra is a retired medical technologist and biomedical sales representative, and a natural-born storyteller who recounted her 35-year career to Piner students. Students were captivated as they listened to Ms. Orr explain how a career working with cell cultures, especially HeLa cells, can be exciting and rewarding and she was honest about the struggles she felt as a woman trying to advance in the medical field in the 60's!



"Students were engaged and excited by Dr. Mangada and the history of HeLa cells! I personally loved learning about the impact of HeLa cells on the development of the Polio vaccine." - Alex Saltzman, Work-based Learning Coordinator, *Social Advocates for Youth*.



Dr. Mangada (pictured here- in PHS SPARQ center) again took the floor to identify key events in history that have shaped medical research. In 1912, chicken cells remained alive outside the body for an extended period of time but it wasn't until HeLa cells were discovered (a bit unethically at the time) that science could create and maintain cells lines for tissue culture research. Sciences such as Virology blossomed as a result. We learned how Dr. Salk injected himself and his family to prove his vaccination for smallpox worked and coming full circle we now have a technique (pap smear) and vaccine for HPV (the main cause of cervical

cancer that killed Ms. Lacks). The story of Henrietta Lacks created a fascination for the science behind her cells but just as important an empathy for the person and the process in which her and her family have been through. Lily, an HSB student, remarked, "Henrietta's story has affected me on many levels, I am fascinated by the science, somewhat mortified by how science was done back then but hopeful that her cells have made the world a better place!"

Students will continue their integrated work into the next few weeks as History and HSB students work on Stem cell science using kits of the same name so graciously donated by Buck supporters. Another point of contact will be spent as HSB presents a research proposal for a Stem cell clinical trial and History students select those that meet their criteria of efficacy. Students in HSB will be emulating specific careers that would be typically involved in a case such as Ms. Lacks' cervical cancer - and with the assistance of the support of the NCCPA grant hope to do informational interviews and on-site visits to get some hands on work with how their career would use today's



knowledge and technology to diagnose and treat cervical cancer.



This project is one of many STEM integrated projects at Piner High and under the direction of their STEM coordinator, Judy Barcelon (pictured left), "**Student Engagement,**" states Ms. Barcelon, "is the key factor in collaborative projects such as this and provides the motivation for teachers to seek externships, collaborate with peers and industry partners and work above and beyond. The fact that their projects are professionally satisfying and fun is just an extra side benefit." This project has been selected to be published on the CTEonline website and the teachers will be attending a Sacramento workshop to get the deed done, then refined and ready to go again next year !