

**California Environmental Health Association – Southwest Chapter
County of San Diego, Department of Environmental Health
57th Annual Greater San Diego
Science & Engineering Fair
March 23, 2011**

As a component of the Department of Environmental Health's (DEH) and the California Environmental Health Association's (CEHA) outreach and recruitment efforts, a Judging team has been assembled for the past 20 years to select and recognize projects with the focus of environmental health at the Greater San Diego Science & Engineering Fair (GSDSEF). This years judging team did an outstanding job in the selection of three amazing projects. Out of 1000 entrants, the field was narrowed down to 50 and then to 10 specific projects. And out of the 10 projects, two Junior and one Senior project were selected as this year's winners.

As in previous years, the projects that focus on environmental health represented a proportionally small number of the greater than 900 total projects and the Junior projects continue to outnumber the Senior projects. Almost identical to last year, 107 schools participated in this year's event with the number of projects slightly less than last year.

This year's winners will receive a Certificate of Merit and a monetary award of \$200.00/each. The monetary award is generously approved by the CEHA Southwest Chapter. The awards will be presented to the students at the Southwest Chapter meeting on July 7, 2011.

The 2010 science fair judging team was chaired by John Kolb and included Debrorah Doggett, Mark Fitzmaurice, Wendy Martinez, Mina Lovrich-Kerr, and Hasti Javid.



GSDSEF AWARD WINNERS FOR 2011

Food Bio Film

By: Deborah Doggett and Wendy Martinez

Jose Luis Sosa is an eighth grader who attends Saint John of the Cross. He has been selected for an award in the Junior Division of the 2011 Greater San Diego Science & Engineering Fair. His project, entered under the category of Consumer Science / Product Testing, was titled “Food Bio Film”. Jose loves strawberries and has been disappointed with how fast they spoil. Jose researched the possibilities of extending the preservation time and found how others had taken the shells from shrimp and extracted the protein. Jose decided to take this idea and see if he could make bio film and use it to extend the life of strawberries.

By adding varying amounts of hydrochloric acid and sodium hydroxide, he extracted chitin from the exoskeletons of shrimp. He dried the shrimp shells and ground the shells into flour. Using the flour, he made bio film. He dipped strawberries in the bio film and documented the amount of time that each strawberry was preserved. The strawberry that lasted for the longest time was 30 days.

Jose’s project came from his original idea. The project was a very sophisticated project for an eighth grade student. Jose did an excellent job presenting his project, explaining each step of his procedure in detail. His display was neat, organized, and easy to read. His photographs provided a quick overview of each step and provided helpful visual aids as he explained his procedure. His binder was neat, organized, and easy to understand yet provided great detail. This was a very well put together science fair project. With all the positive points noted above, the one thing that made this particular project outstanding was Jose. It was obvious through conversation that Jose had performed the project on his own as he readily provided answers to the team’s questions, showing confidence and pride in his project. He was well-dressed, spoke clearly with comprehension of the subject, maintained eye-contact, and was very engaging. It was truly a joy speaking with Jose and being amazed at the complexity of his project.



Pharmaceuticals at Sea

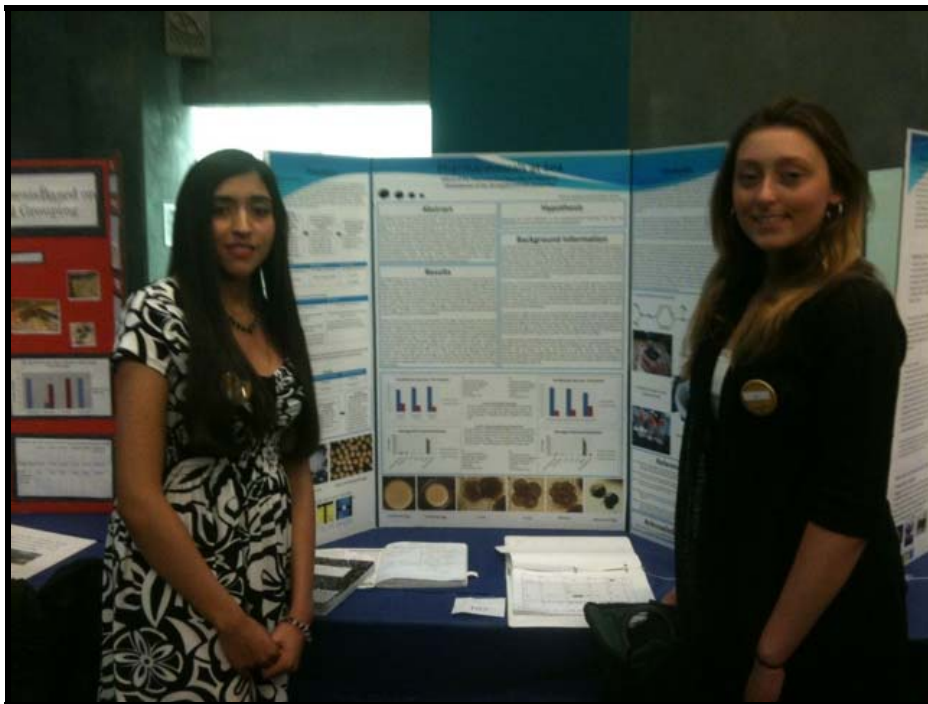
By: Hasti Javid

Emma Jackson and Christina Torres are both 10th graders at High Tech High who share concern over the high levels of pharmaceuticals in our waterways and the negative effects that these pharmaceuticals have on aquatic life. As a result of their concern (and their love for the environment), they decided to do their Science Fair project on “Pharmaceuticals at Sea,” in which they tested the effects of Ibuprofen on the fertilization success and embryonic development of sea urchins. Sea urchins were chosen as the test subject because they serve as great bioindicators and can be found locally. They are also very easy to cultivate.

Emma and Christina believed that exposure to Ibuprofen would slow the fertilization success and alter embryonic development in sea urchin gametes. To test their hypothesis, Emma and Christina collected sea urchins and induced spawning by injecting them with potassium chloride (KCl). Urchin gametes were then exposed to two different concentrations of Ibuprofen: one was based on the concentration levels found in wastewater treatment plants and the other was at a much higher concentration. A seawater control was also used and the seawater was obtained from Scripps Research Institute. After performing two tests – fertilization success and embryonic development – their results showed that fertilization success was not affected by exposure to Ibuprofen. As it turns out, Ibuprofen has the same consistency as water so the aquatic locomotion of the sperm was not hindered. Embryonic development, on the other hand, was affected by exposure to Ibuprofen. Therefore, half of Emma and Christina’s hypothesis was rejected (i.e. fertilization success was not affected) and the other half was accepted (i.e. embryonic development was affected).

I was very impressed with Emma and Christina’s level of professionalism and understanding of their research. As I listened to them explain the results of their project I felt confident that they not only understood the material, but that they were genuinely concerned with the topic at hand. Every spoken word was filled with their passion for the environment and the living organisms within it. As I looked over their display and lab notes, I had to remind myself that I was looking at work conducted by 10th graders and not that of a college student. These two girls not only impressed me with their brilliance, but they managed to keep my attention from start to finish...and that’s not easy to do at all!

Well done, Emma and Christina!



Which Type of Disposable Grocery Bag Material will Decompose the Most in a Measured Time Period

By: Mark Fitzmaurice and Mina Lovrich-Kerr

Josebel Gaspar is in eighth grade student attending Wangenheim Middle School. Her well organized display booth clearly stated her hypothesis, and the results & conclusion of her project. At the Science Fair she acted in a very professional manner as she explained her project with knowledge and enthusiasm. She had used scientific methods to gather measurable data to test her hypothesis, and then clearly explained each phase of her project.

The project was an experiment to determine which type of disposable grocery bag (paper, plastic, or biodegradable plastic) will decompose the most during a measured time period. Her hypothesis was that a bag made of biodegradable plastic will decompose the fastest, followed by paper and then plastic, because biodegradable plastic was created to be a more biodegradable and earth friendly material. Plastic bags, which are made of 100% polyethylene, were thought be the slowest to decompose because plastic typically requires decades to naturally compose. Results of the experiment showed the difference in the weights of the bags after they were allowed to decompose by biodegradation over time.

The conclusion of the experiment showed that the paper bags decomposed the most, followed by the biodegradable plastic bags, with plastic bags having no measureable decomposition. The results of this experiment may benefit manufacturers, consumers, and the world in general because they show that even small choices made, such as requesting plastic or paper bags at the grocery store, can have a lasting impact on our environment.

CEHA is proud to recognize this high achiever as she shows the impact that our actions have on the environment.

GREAT JOB!