**Los Angeles: Animo High School Microplastics Project Teams**

**S**tudents began this advanced and innovative project, like they would a science fair project, with a hypothesis.

* *Our team hypothesizes that our research will discover high concentrations of plastic in marine environments along Southern California beaches and waterways due to population size, street and stream runoff and numerous ways in which plastics are used and then discarded.*

They focused on sampling and analyzing microplastic particulates in ocean waters, harbors, and beaches.

As a component, they collaborated with a similar team at Wakasa HS in Obama City, Japan to align their hypothesis, research methods, data collection, analysis techniques, and perspectives with efforts to present solutions to the problems of plastic in the ocean. They collaborated on a PowerPoint which is being shown to other students in both countries and will be further expanded as new data is collected. The Los Angeles team also presented at: LA County Science Fair; Intel international science fair under the auspices of Sea Grant.

They are working in close collaboration with USC Sea Grant, Algalita, 5Gyres, Heal the Bay, Cabrillo Marine Aquarium, Reef Check, USC Wrigley Marine Science Center, LA Maritime Institute, Plastic Ocean, City2Sea, etc. to ascertain the most accurate data collection & analysis to be made public & integrated into plastic collection studies taking place in Florida, Oregon, Alabama & internationally in Thailand, Singapore & Chile.

The students in this project come from underserved, impoverished and immigrant communities. All Latino/a, they lack self-confidence in their ability to succeed in fields of science and medicine. As team mentor, my 14-year teaching objective has been to rectify the lack of Black and Latino/a youth entering the fields of science, medicine, and especially Marine biology. Our school has been successful in increasing the percentage of graduating students who identify a future career in science and medicine from 5% to 43 - 48%. In addition, through special scholarships numbering nearly 20 every year, we provide students opportunities to see what is possible. These have included full scholarships at the Coastal Studies School for Girls, Woodshole, UCLA medical school, USC marine science center on Catalina island, National Hispanic Environmental Council, Earthwatch, JPL, COSMOS, SMASH, etc. thus, they gain self-confidence and experience. This project helps make their participation in such opportunities and a future career in science MUCH more likely.

**Beginning fall 2017, their focus is the analysis of the molecular composition of plastics obtained at the aforementioned and new locations. Through the use of mass spectrometry, we hope to determine possible origin of the plastics but certainly which polymers mimic hormone disruptors, which are especially dangerous to infants, adolescents and pregnant women. *Teams will:***

1. Harvest local marine invertebrates/vertebrates to analyze microplastic contents in their tissues/organs.
2. Experiment with possible solutions including: plastic eating worms/beetles and bacteria
3. Research open ocean and beach plastic collection devices, new technological innovations
4. Produce bi-lingual educational materials: brochures, media releases, website…with data, articles, videos
5. Collaborate nationally, internationally with student researchers, attend conferences/outreach activities

Short Video. 9th grade team members. <https://www.youtube.com/watch?v=SnFNRxwNzJQ>

Team subject categories: Teams of 3 students will develop the following projects

1. **Microplastics:** Beach *Identification macro & micro; mass spectrometry (molecular analysis, endocrine disruption)*
2. **Microplastics:** Ocean & Harbors. *Identify macro & micro; mass spectrometry (molecular analysis, endocrine disruptor)*
3. **Microplastics:** Within organisms (invertebrates & vertebrates (fish)) *(marine, freshwater: research, specimen analysis)*

**Solutions:**

1. Plastic eating worms (*research, experiment, long-term study analysis, data collection, results)*

*5.* Plastic eating bacteria (*research, experiment, long-term study analysis, data collection, results) (On hold, bacteria unavailable) 6.*  Gyre booms, physical collection & elimination potentials and innovations *(Collaborate with Algalita, 5Gyres,*

 *Plastic Ocean, Last Plastic Straw, City2Sea, and attend Plastic Youth Summit, Int’l conferences*)

7. Resource development & action campaign: *develop bi-lingual educational materials for community, media,*

 outreach *to other schools locally, nationally and internationally like Earth Day events, aquaria activities*

8. **Web site** construction, development & maintenance. Club education, outreach,*Upload team data, resources, experiments*

9.  **International and national collaboration**: Japan, Chile, Singapore, Thailand…Delaware, Michigan, NY, PA…

 **Excellent video:** <https://orbmedia.org/stories/Invisibles_plastics>

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