

Taiwan Biomedical J Term

Program schedule

Week 1 – acclimatizing and preparation

We will use the first few days to recover from the long hours of travel and to adjust the jetlag. We will tour the Academia Sinica campus and perform a simple chemical treatment experiment. In the meantime, students will learn how to use the public transportation.

Week 2 – culture experience and scientific seminars

Students will begin to explore the cities, visiting the world 2nd tallest building Taipei 101 and celebrating the New Year's Eve with one of the most beautiful firework displays at Taipei 101. Students will also visit several historical sites and the two downtown districts that tell the stories of the city. Visit to several universities are also scheduled for Dr. Huang to discuss biomedical research with researchers and the students to share their education experience in US and Taiwan. Other tours will explore

1. the cultural richness at the National Palace Museum, which has a large collection of the most precious Chinese artworks and treasures,
2. the geological and ecological wonders at the Youngmingshan National Park and the north seashore conservatory.

Week 3 – Chinese herbal extracts on heart failure.

We will visit the unique Chinese herb garden maintained by the China Medicine University, the National Science Museum, and local Chinese medicine stores. We will obtain Chinese herbal extracts from Dr. Chen at China Medicine University and test them on Dr. Huang's heart failure model. This experiment will be conducted in the zebrafish lab of Dr. Liu at Tunghai University. Dr. Liu is a long-time friend of Dr. Huang and has already promised to provide the experiment supplies. In Dr. Yu's lab at Chuangshan Medical School, students will learn the ELISA experiment to gain an understanding of the biological and chemical properties of the antibody for aristolochic acid (AA) which has been used in Dr. Huang's heart failure project. After that, we will use the antibody on zebrafish embryos with and without the AA treatment. Our goal is that the polyclonal antibody will detect AA with high specificity in the treated zebrafish embryo and allow us to learn not only where it is inducing heart failure, but also to observe any possible interactions with other chemicals.

Week 4 – separation of natural compounds from marine species

We will learn from Dr. Song at National Museum of Marine Biology and Aquarium the process of natural product extraction and purification from marine species, such as algae and coral. Column chromatography will be performed to fractionate natural products for further analysis. Students also get a chance to analyze chemical structures of compounds using NMR. A sleepover program at the aquarium is a special experience for the students to remember. There will be a one-day tour to the Kenting National Park with stunning geological formations and conserve ecosystems. This trip will also include water activities and scuba diving for sample collection.

Week 5 – Cancer biology and testing of marine natural products on heart failure

In the final half of week, students will meet Dr. Wu at Academia Sinica to learn how to use the phage display methodology for cancer drug discovery. Students will have the opportunity to learn the cell culture technique in a world class facility. Students will also perform the standard chemical treatment experiment to test the marine natural products with zebrafish embryos at Academia Sinica. In the mean time, students will work on their final report and presentation.