**Drugs from the Sea**

**SIO 87**

1:00 – 1:50 PM Fridays - Fall 2024

**Instructor**: Bill Gerwick (wgerwick@ucsd.edu)

This course will explore some of the more advanced and interesting stories of the search for drugs from the sea.  In some cases, this has resulted in approved pharmaceutical agents, and in others the development process is ongoing.  The interesting biology and chemistry of marine life will be discussed, and the discovery and development process described in broad detail.  The discussions will be multi-faceted and include elements of marine biology, biodiversity conservation, organic chemistry, biochemistry, economics, societal issues and ethics.

1. Sept 27 Introduction to “Drugs from the Sea” Gerwick/Avalon

2. Oct 4 COVID-19 and the search for new antivirals Gerwick

3. Oct 11 Shrimp that weave an algae home Ryu

4. Oct 18 Teaching a toxin to kill cancer Gerwick

5. Oct 25 Clown fish and their anemone hosts –

an underwater Puppet Show? Gerwick

6. Nov 1 Where do fish oils really come from? Gerwick

7. Nov 8 A Cone Snail toxin as a pain therapeutic? Gerwick

8. Nov 15 AI and marine natural products Gerwick

9. Nov 22 A natural sunscreen from marine cyanobacteria Gerwick

 Nov 29 Thanksgiving break – No Class

10. Dec 6 Visit to SIO, Scripps Pier and Gerwick Labs Gerwick

Course Objectives

1. To expose students to some of the more impactful and interesting marine natural products, including their discovery, structure determination, chemical ecology, and pharmacological properties
2. To consider the many challenges encountered in the drug discovery and development process
3. To appreciate the highly multidisciplinary process involved in natural products drug discovery
4. To recognize the interlinked dependencies of habitat and biodiversity preservation with human health
5. To develop increased capacity to read the primary scientific literature

Text

Primary literature to be assigned in class

Grading

**Reading Reflections** – 6 x 10 pts = 60 points total (due on Thursdays at midnight) [note, there are 8 classes for which reflections are possible (lectures 2-9 inclusive) such that you have the option of not turning in up to two reflections]. Papers for reading and writing a roughly ½ page reflection will be available the preceding Sunday/Monday.