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(SHORT CV MAX 200 WORDS)

William Gerwick's research focuses on the bioactive natural products of marine algae and cyanobacteria, their application in biomedicine especially to parasitic diseases, their biosynthesis using genomic approaches, and the development of new methods in structure analysis including applications of artificial intelligence. He earned a BS in Biochemistry at University of California Davis, a PhD in Marine Chemistry at Scripps/University of California San Diego, and did postdoctoral work in biosynthesis at the University of Connecticut. After a junior faculty position in Chemistry at the University of Puerto Rico, he spent 21 years at Oregon State University in the College of Pharmacy. In 2005 he returned to his PhD institution at Scripps (UC San Diego) where he currently holds the position of Distinguished Professor of Oceanography and Pharmaceutical Sciences. He is an elected Fellow of the American Society of Pharmacognosy and the American Association for the Advancement of Science (AAAS). His research group has published over 450 research papers and holds 28 patents, and he has trained approximately 100 PhD and postdoctoral scholars in his over 40-year career in the natural products sciences.

Title of the Lecture:

The impact of climate change on natural products science

Abstract: Human populations have long looked to nature as sources of medicines, and this has continued in the modern era where a majority of currently approved pharmaceuticals have a natural product origin or inspiration. However, another consequence of societal development has been a significant impact on climate as a result

of rampant burning of fossil fuels and the resulting generation of elevated atmospheric carbon dioxide. The significance of these changes are multiple, including elevated average temperatures, altered patterns of rainfall, and ocean acidification, all of which in turn alter the habitability of localized environments. Both flora, fauna and microorganisms are strongly impacted by these changes and are evolving altered distributions with some disappearing entirely, leading to an accelerated loss in biodiversity. Additionally, the changed composition of species in many habitats is resulting in changes in species interactions, an important driver of adaptive chemical production. These climate induced changes can therefore be predicted to reduce species richness and interactions, leading to a reduced occurrence in natural products. Therefore, new approaches are needed in the natural products sciences in the face of these changes, such as experimental systems for upregulating the expression of natural products and the retention of the DNA blueprints of endangered species so that their metabolic capacities can be potentially harnessed in the future.

Keywords: Climate change; natural products; drug discovery; biosynthesis; genomics