Tomorrow's Medicine Hidden in Marine Environments

Jaclyn Winter
Assistant Professor, Medicinal Chemistry

CURRENT RESEARCH

Finding natural enzymes in remote areas that can be engineered for the synthesis or semisynthesis of pharmaceutically important compounds

At a time when antibiotic resistant bacterial infections and cancer rates are reaching epidemic proportions, there is an urgent need to discover new therapeutic agents. It has been shown that biological pressures influence the structural diversity of compounds produced in nature and marine-derived microorganisms often contain specialized enzymes not found in their terrestrial counterparts. Thus, these specialized microorganisms serve as an ideal resource for drug discovery efforts and for the characterization of novel biosynthetic enzymes. Dr. Jaclyn Winter, Assistant Professor of Medicinal Chemistry at the University of Utah, uses natural processes to advance medicine. She and her group identify specialized enzymes that are found in some of the most remote areas of the Earth, including the Great Salt Lake, oceans, tropical forests and other areas of extreme temperatures. Thus, they are able to find enzymes that already exist in nature and can develop these enzymes for medicinal purposes where they can be engineered to enhance the efficacy of existing therapeutics or be used in the synthesis or semisynthesis of pharmaceutically important compounds. Therefore, Dr. Winter's explorative chemistry is on the cusp of inspiring new therapeutic agents for cancer, and other diseases in a sustainable, environmentally friendly way.

Established in January 2015 and currently in its infancy, Dr. Winter's lab has the potential to explore molecules that could shift the ways in which we treat patients. With a strong focus on natural products, or the specialized small molecules produced in nature, she and her developing team are confident that they will uncover hopeful inspiration for new therapeutic agents. These...

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AFFILIATION

University of Utah

EDUCATION

- B.S., in Chemistry and Molecular Genetics, 2004 , State University of New York College at Fredonia
- Ph.D., 2010 , Center for Marine Biotechnology and Biomedicine , Scripps Institution of Oceanography , University of California, San Diego
- Postdoc, Leibniz Institute for Natural Product Research and Infection Biology, 2011 , Hans Knöll Institute, Germany
- Postdoc, Chemical and Biomolecular Engineering, 2014 , University of California, Los Angeles

AWARDS

- L'Oréal USA Postdoc Fellowship for Women in Science, 2012
- NIH Marine Biotechnology Predoctoral Rugh L. Kirschstein National Research Service Award, 2006-2008
- Claude ZoBell Fellowship Award, Scripps Institution of Oceanography, 2007
- Roy Keller Research Award for Undergraduate Researcher of the Year, S.U.N.Y. Fredonia, 2004
- Merck/AAAS Undergraduate Research Fellowship, S.U.N.Y. Fredonia, 2002-2004

RESEARCH AREAS

Environment, Chemical, Ecology, Oceanic

FUNDING REQUEST

Your contributions will support the continued research of Dr. Jaclyn Winter, of the University of Utah, as she uses natural processes to advance medicine. Donations will fund the necessary $120K required for personnel, $25K/year required for chemicals and consumables, and $5K for every ten strains her group sequences. Join in discovering new therapeutic agents found in organisms collected from remote locations all over the world.