

Meeting of the Green Mountain Section (GMS) of the American Chemical Society

Co-sponsored by:

The New Hampshire Area of the Northeastern Section of the American Chemical Society
(NESACS)

The Central Massachusetts Section (CMS) of the American Chemical Society

The Connecticut Valley Section (CVS) of the American Chemical Society

Thursday, October 22, 2015

Location: Porter Community Room
Montshire Museum
One Montshire Road
Norwich, VT 05055

Agenda:

- 5:00 PM Registration and light refreshments
- 6:00 PM Welcome:
Richard Milius, Chair, GMS, Lecturer, Norwich University
Neil Glagovich, Chair-Elect, CVS, Professor, Central Connecticut State University
Meledath Govindan, Chair, CMS, Professor, Fitchburg State University
- 6:15 PM Introduction of the Collaborative Meeting of four Local Sections of the ACS
Jerry P. Jasinski, Chair-Elect, NESACS, Professor, Keene State College
- 6:30 PM Seminar: Dr. Jimmy Wu, Associate Professor, Department of Chemistry,
Dartmouth College
"Taking Aim at Type 2 Diabetes Mellitus: Identification of GLP-1 Secretagogues
and the TRPA1 Receptor as Their Biological Target"
- 7:15 PM Closing remarks: David Heroux, Chair-Elect, GMLS, Associate Professor, St.
Michael's College
- 7:20 PM Reception



Dr. Jimmy Wu **Associate Professor, Dartmouth College**

Jimmy Wu received his A.B. degree in Chemistry from Princeton University (USA) in 1998. He then spent two years as an associate chemist at Merck Process Research (USA) before moving to Harvard University (USA) in 2001. There, he obtained his PhD in organic chemistry from Prof. David A. Evans in 2005. He continued his studies as a postdoctoral fellow with Prof. Barry M. Trost at Stanford University (USA). He then joined the Department of Chemistry at Dartmouth College (USA) in the summer of 2007 and is now an associate professor. His research is focused on the synthesis of novel compositions of matter and complex natural products for the study of biological systems.

- The public is invited to this event.
- The registration fee is \$15. Register through <http://acssymposium.com/paypal-gms.html> by Friday, October 16, 2015.
- Questions? Contact NESACS Administrative Coordinator Anna Singer at 781-272-1966 or secretary@nesacs.org (email is preferred).

Abstract: Glucagon-like peptide-1 (GLP-1) is an incretin hormone that has been validated as a target for the treatment of type 2 diabetes mellitus (T2DM), a disease that affects nearly 350 million people worldwide with a global cost of over \$600 billion dollars. When bound to its receptor on the β cells of the pancreas, GLP-1 promotes the secretion of insulin, thereby lowering blood glucose. It also slows gastric emptying and suppresses appetite, so is a potential drug for the treatment of morbid obesity. Its activity is highly dependent on the presence of glucose; therefore, T2DM therapeutics based on this pathway are less prone to causing hypoglycemia. Several GLP-1 mimetics have either gained regulatory approval or are in clinical trials (i.e., Byetta, Victoza), but these require inconvenient daily injections. Drugs that slow the breakdown of GLP-1 such as (i.e., Januvia) are also available.

We, and others, have proposed that GLP-1 secretagogues, alone or in combination with drugs that inhibit the breakdown of GLP-1, can be used as effective treatments for T2DM. Despite intense interest from the pharmaceutical and biotech communities, there currently exist no approved drugs based on the up-regulation of GLP-1 release. We expect that orally administered GLP-1 secretagogues would constitute an entirely new class of blood glucose-lowering agents.

This lecture will summarize our discovery of GLP-1 secretagogues and the identification of the TRPA1 receptor as its cellular target. They are easily prepared in a single chemical transformation by means of our novel three-component cycloaddition reaction using commercially-available reagents. Each of these starting materials can be independently varied, thereby facilitating the rapid construction of large libraries for structure-activity relationship studies.

Directions to Montshire Museum: <http://www.montshire.org/visit/directions/>

The Montshire Museum is conveniently located just off Interstate 91 at Exit 13 (look for the "Museum of Science" signs) in Norwich, VT, five miles north of White River Junction. The Museum is directly across the Connecticut River from Hanover, NH, home of Dartmouth College.

Special thanks to the Montshire Museum for providing the venue for this event.