SERIE DE CONFERENCES DE PRESTIGE

Paraza Pharma, Inc.

PRESTIGIOUS LECTURE SERIES

2015-2016 STEPHEN L. BUCHWALD
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Inaugurées en 2016, les conférences de prestige Paraza Pharma en chimie ont été créées grâce à la générosité de la société de biotechnologie Paraza Pharma, Inc., basée à Montréal, Québec. Elles permettent au Département de chimie de l'Université de Montréal d'inviter des scientifiques de renom qui ont contribué à l'avancement de la chimie organique ou médicinale. Paraza Pharma a pour mission d'améliorer considérablement la productivité du processus de découverte des médicaments, depuis la sélection de têtes de série vers leur optimisation, jusqu'à la mise au point de candidats-médicaments. Pour de plus amples détails au sujet du commanditaire, veuillez consulter www.parazapharma.com.

Inaugurated in 2016, the Paraza Pharma Prestigious Lectures in Chemistry were established through the generosity of the biotech company, Paraza Pharma, Inc., headquartered in Montréal, Québec. The endowment allows the Department of Chemistry of Université de Montréal to invite distinguished scientists who have made pioneering contributions to organic or medicinal chemistry. Paraza Pharma aims to significantly improve the efficiency of the drug discovery process from lead identification through lead optimization to development candidates. For more information about this sponsor, please visit www.parazapharma.com

U de M

Faculté des arts et des sciences
Département de chimie

Conférence de prestige 2017

Paraza Pharma, Inc.

"Making the Switch to Organic Chemistry in Water. Faster, Better, Cheaper, and Environmentally Responsible"

Professor Bruce Lipshutz
University of California

Université de Montréal

Bienvenue à tous!

- Mercredi 13 septembre 2017
- 11:00
- Salle M-415, Pavillon Roger-Gaudry

> **POUR EN SAVOIR PLUS :** chimie.umontreal.ca

Le Département de chimie a le plaisir et l'honneur d'accueillir le Professeur Bruce Lipshutz à titre de conférencier Paraza Pharma 2017-2018.

Bruce Lipshutz a obtenu son Ph.D. de Yale University (1973-1977) sous la supervision du professeur Harry Wasserman. Durant un stage post-doctoral de deux ans en tant que « American Cancer Society Fellow » avec le professeur E. J. Corey à Harvard, il a été impliqué dans l'équipe de synthèse totale de l'agent antitumoral maytansine. Le Professeur Lipshutz a commencé sa carrière académique à l'université de la Californie à Santa Barbara en 1979, où il est maintenant professeur titulaire. Son programme en synthèse se concentre sur le développement de nouveaux réactifs et méthodologies, principalement dans le secteur de la chimie organométallique. Tandis que ses contributions passées tendaient à faire partie du domaine de la synthèse organique « traditionnelle », plus récemment son groupe a effectué une percée importante dans le développement de nouvelles technologies en chimie verte, avec le but spécifique de développer des réactions sans solvants organiques. Pour accomplir ceci, le groupe de Lipshutz utilise le concept de design et application d'agents tensioactifs qui permettent les couplages croisés catalysés par des métaux de transition et beaucoup d'autres réactions dans l'eau à température ambiante. Plus récemment, son groupe s'est concentré sur le développement de nouveaux catalyseurs de palladium et d'or dans des réactions qui permettent la formation de liaisons carbone-carbone avec des concentrations infimes (ppm) de métal, qui utilisent l'eau comme solvant ainsi que des conditions très douces. Le potentiel de ses travaux dans ce domaine pour influencer et transformer la façon de faire des chimistes organiciens lui a valu le prix « Presidential Green Chemistry Challenge Award » en 2011.

Our Department of Chemistry is pleased and honored to host Professor Bruce Lipshutz as our 2017-2018 Prestigious Paraza Pharma Lecturer.

Bruce Lipshutz spent four years at Yale (1973-1977) as a graduate student with Harry Wasserman. After a two-year postdoctoral stint as an American Cancer Society Fellow with E. J. Corey at Harvard as part of the team involved with the total synthesis of the antitumor agent maytansine, he began his academic career at the University of California, Santa Barbara, in 1979, where today he continues as Professor of Chemistry. His program in synthesis focuses on new reagents and methodologies, mainly in the area of organometallic chemistry. While these contributions tended to fall within the area of "traditional" organic synthesis, more recently his group has shifted in large measure towards the development of new technologies in green chemistry, with the specific goal being to get organic solvents out of organic reactions. To accomplish this, the Lipshutz group has introduced the concept of "designer" surfactants that enable key transition metal-catalyzed cross-couplings, and many other reactions, to be carried out in water at room temperature. Most recently, his group has turned its attention to developing new catalysts for key Pd- and Au-catalyzed reactions that enable C-C bond formation at the parts per million level of the metal, each catalyst being utilized in water under very mild conditions. The potential for his group's work in this field to significantly influence, and possibly transform the way in which organic chemistry is performed in the future, led to a Presidential Green Chemistry Challenge Award in 2011.

À L'ORDRE DU JOUR / ON THE AGENDA

11:00

Mot de bienvenue/Introduction
Opening Remarks/Introduction
Professeur Shawn Collins,
Université de Montréal

11:10

Conference PARAZA PHARMA Lecture
Professeur Bruce Lipshutz
Department of Chemistry
University of California at Santa Barbara

12:00

Modération/Mot de la fin
Moderation/Closing Remarks
Professeur Shawn Collins,
Université de Montréal

Paraza Pharma, Inc.

Université de Montréal

RÉSUMÉ/ABSTRACT

Three key reaction variables important to synthetic chemists in traditional organic synthesis include the reaction solvent, reaction temperature, and the choice of catalyst. The medium in which organic synthesis is performed is usually organic, while most reactions tend to require either heating or cooling, both of which generate HUGE amounts of organic waste and/or consume considerable amounts of energy. The catalyst typically involves a metal, and more often than not, is a precious metal such as palladium or gold used at the 1-5 mol % level. None of these parameters overlap with how Nature has been doing chemistry for millions of years, and suggests that chemistry as practiced today is not sustainable. This presentation will offer a win-win-win situation, addressing all of these issues from the standpoint of both economics and the environment. Several valued reactions in organic synthesis will be discussed that can be run in water, with most taking place at room temperature. Equally importantly, given that precious metals such as Pd and Au are costly and the former is endangered, these can now be employed in ligated form at the ppm level of catalysis enabled by their use in aqueous nanomicelles composed of a "designer" surfactant. Several unpublished studies will focus on new technologies, with metals and otherwise, that illustrate the potential for organic synthesis to make the switch to an environmentally responsible discipline.