The Final Oral Examination
for the Degree of

DOCTOR OF PHILOSOPHY
(Department of Chemistry)

Jason Davy
2008 University of Guelph MSc.
2005 University of Guelph BSc.

“Synthesis of the spiroketal moiety of
didemnaketal A”

Tuesday, November 18, 2014
10:30 AM
Maclaurin Building, Room A326

Supervisory Committee:
Dr. Jeremy Wulff, Department of Chemistry, UVic (Supervisor)
Dr. Robin Hicks, Department of Chemistry, UVic (Member)
Dr. Peter Wan, Department of Chemistry, UVic (Member)
Dr. Martin Boulanger, Department of Biochemistry and Microbiology, UVic (Outside Member)

External Examiner:
Dr. Peter Wilson, Faculty of Chemistry, Simon Fraser University

Chair of Oral Examination:
Dr. John Walsh
Department of Educational Psychology and Leadership Studies, UVic
Abstract

The ascidian isolation artifact didemnaketal A is a highly oxygenated polyisoprenoid capable of inhibiting HIV-1 protease through an unusual dissociative mechanism. However, recent synthetic efforts have cast doubt on stereochemical assignments in the originally published structure. In the interest of elucidating the true structure of didemnaketal A through total synthesis, we present a strategy for rapidly accessing the putative spiroketal fragment by exploiting its latent symmetry. In a single step, double Sharpless asymmetric dihydroxylations (SAD) allowed us to simultaneously set all seven stereocenters and assemble this complex fragment from non-chiral material. The precursor was obtainable through a racemic synthesis in which the geometric isomers of a nine-membered cyclic enone converged in a ring-opening cross metathesis (ROCM).

Awards, Scholarships, Fellowships

2013 – Gerry Poulton Graduate Scholarship in Chemistry
2012 – Dr. Julius F. Schleicher Graduate Scholarship
2010 to 13 – Boehringer Ingelheim Cooperative Research Scholarship
2010 – The Dr. E. and Mrs. M. von Rudolff Award
2008 to 10 – University of Victoria Graduate Award
2008 to 09 – Pacific Century Graduate Scholarship
2007 – University of Guelph Graduate Scholarship
2001 – University of Guelph Registrar’s Entrance Scholarship
2001 – University of Guelph Entrance Scholarship
Presentations


Publications


