

MINNESOTA LOCAL SECTION

JANUARY 17TH: *THE SEA LAMPREY MIGRATORY PHEROMONE STORY: A 400 MILLION YEAR OLD (AND ONGOING) SAGA*

Speaker: Thomas R. Hoye, Professor, Department of Chemistry, University of Minnesota

Location: University of St. Thomas, [Binz Dining Room](http://www.stthomas.edu/media/campusmaps/stpaul2Dalpha.pdf) (<http://www.stthomas.edu/media/campusmaps/stpaul2Dalpha.pdf>). Free parking is available on Goodrich Avenue along the edge of campus and on the south side of Summit along the edge of campus (the north side is permit only). There is also paid parking at \$1/hour in the Anderson parking ramp.

Time: 5 pm - Executive Meeting; 6 pm - Dinner; 7 pm - Presentation

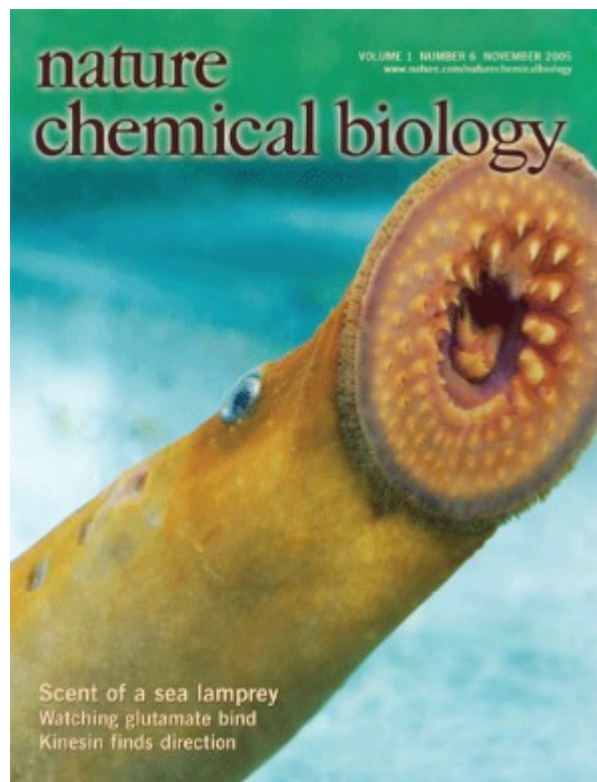
Cost: \$20 member / \$5 student

Menu: Pasta buffet with coffee and light dessert. Gluten free option available upon request.

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Deadline: January 10th, 2017

Abstract: The sea lamprey is an ancient vertebrate - one of the oldest - with a fascinating history. The chapter covering the last century reveals its decimating effect on the fisheries of the Great Lakes, where it thrives as an **invasive pest**. Current sea lamprey control programs there rely heavily on the use of a larvicide (TFM). Various multidisciplinary, collaborative studies between researchers in my laboratory and those of Professors Peter Sorensen¹⁻³ (Department of Fisheries, Wildlife, and Conservation Biology; University of Minnesota) and, more recently, Weiming Li⁴⁻⁵ (Department of Fisheries and Wildlife and the Department of Physiology; Michigan State University) have led to the discovery of various chemical compounds that are emitted by larvae and elicit olfactory responses in adults. Some induce conspecific behavioral activity, marking them as components of lamprey pheromones. It is alluring to consider the possibility of using migratory pheromones for the development of alternative and environmentally benign lamprey control strategies. Aspects of the biology and chemistry that drive these sorts of studies will be presented.



References

1. "Mixture of new sulfated steroids functions as a migratory pheromone in the sea lamprey," Sorensen, P. W.; Fine, J. M.; Dvornikovs, V.; Jeffrey, C. S.; Shao, F.; Wang, J.; Vrieze, L. A.; Anderson, K. R.; Hoye, T. R. *Nature Chemical Biology* **2005**, *1*, 324- 328.
2. "Details of the structure determination of the sulfated steroids PSDS and PADS—new components of the sea lamprey (*Petromyzon marinus*) migratory pheromone," Hoye, T. R.; Dvornikovs, V.; Fine, J. M.; Anderson, K. R.; Jeffrey, C. S.; Muddiman, D. C.; Shao, F.; Sorensen, P. W.; Wang, J. *J. Org. Chem.* **2007**, *72*, 7544-7550.

3. "Discovery and development of a pheromone for use in an integrated pest management scheme for invasive sea lamprey, *Petromyzon marinus*," Sorensen, P. W.; Hoye, T. R. *J. Fish Biol.* **2007**, *71*, 100-114.
4. "(+)- and (-)-Petromyroxols: Antipodal tetrahydrofurandiols from larval sea lamprey (*Petromyzon marinus* L.) that elicit enantioselective olfactory responses. Li, K.; Huertas, M.; Brant, C.; Chung-Davidson, Y-W.; Bussy, U; Hoye, T. R.; Li, W. *Org. Lett.* 2015, *17*, 286-289.
5. "iso-Petromyroxols: Novel dihydroxylated tetrahydrofuran enantiomers from sea lamprey (*Petromyzon marinus*)," Li, K.; Brant, C.; Bussy, U.; Pinnamaneni, H.; Patel, H.; Hoye, T. R.; Li, W. *Molecules* **2015**, *20*, 5215-5222.

Speaker Bio: Thomas R. Hoye attended Bucknell University where research experiences in heterocyclic chemistry in the laboratories of Professor Harold W. Heine convinced him to lay aside study of chemical engineering to concentrate on organic chemistry. He completed the B.S./M.S. degrees in 1972 and proceeded to graduate studies in the laboratory of Professor Robert B. Woodward at Harvard University, earning the Ph.D. degree in 1976. That fall he joined the faculty in the Department of Chemistry at the University of Minnesota, where he has spent his independent career leading a research program in synthetic and mechanistic organic and polymer chemistries.

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