

Matthew Ren Silver

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SUMMARY

Molecular endocrinologist with a highly adaptable skill set in the final stages of PhD studies in team-oriented, interdisciplinary laboratory. Areas of expertise include receptor biology and cell culture with training in protein biochemistry. Strong communication skills have been developed through presentations at regional, national and international conferences.

EDUCATION

PhD Biochemistry and Molecular Biology
University of New Hampshire, Durham, NH

2000-Present

Focus

Neuroendocrine regulation of reproduction

Research Projects

Functional analysis of the lamprey gonadotropin-releasing hormone (GnRH) receptor: Analysis of second messenger systems (IP and cAMP) activated by the lamprey GnRH receptor in transiently transfected COS7 cells

Functional and pharmacological characterization of the lamprey GnRH receptor with specific focus on the function of the intracellular C-terminal tail: Description of binding affinity and internalization kinetics and analysis of the C-terminal tail's role in second messenger activation, cell surface expression and ligand dependant internalization.

Cloning and analysis of the lamprey GnRH-III cDNA from representative species of lamprey: Molecular evolutionary analysis of the GnRH family in vertebrates.

Other Responsibilities

Laboratory supervisor 2002-2004: Training and management of undergraduate research assistants, upkeep of regulatory permits, ordering of supplies and general laboratory maintenance.

BS Molecular and Cellular Biology with a minor in **Chemistry**
University of Connecticut, Storrs CT

1996-2000

Undergraduate Research Experience

A broad and diverse perspective of problem solving and scientific investigation was developed through research experiences in the departments of Molecular and Cell Biology, Pharmacology, Chemistry and Environmental Engineering.

Technical Training

Receptor Biology and Cell Culture

COS7 cells, CHO cells, S2 Cells, transfection (Lipofection and dendrimer), 2nd messenger (IP/cAMP) assays and receptor (7-transmembrane G-protein coupled (7TM-GPCR)) binding and internalization assays.

Molecular Biology

DNA/RNA extraction, cDNA synthesis and cloning, polymerase chain reaction (PCR), rapid amplification of cDNA ends (RACE), cDNA library construction and screening (Ab and oligo), sequence analysis, reverse transcriptase-PCR, Northern blot analysis, agarose gel electrophoresis, plasmid preparation, phylogenetic analysis.

Biochemistry

SDS PAGE, 2D PAGE, enzymeimmunoassay, radioimmunoassay, HPLC, ion exchange chromatography.

Other

Radiation user training, basic techniques in microbiology, differential scanning calorimetry, biofilm reactor maintenance, field collection, aquatic animal handling and care, competent with PC and Mac, Office, DNA Star, GraphPad and other analysis software.

PUBLICATIONS

- Silver, M. R.**, Nucci, N. V., Root, A.R., Reed, K.L., and Sower, S.A. Cloning and characterization of a functional type II GnRH receptor with a lengthy carboxy-terminal tail from an ancestral vertebrate, the sea lamprey. Submitted to *Endocrinology*.
- Silver, M.R.**, Kawauchi, H., Nozaki, M, Sower, S.A. 2004. Cloning and analysis of the lamprey GnRH-III cDNA from eight species of lamprey representing the three families of Petromyzoniformes. *General and Comparative Endocrinology*, 139(1), 85-94.
- Sower, S.A. and **Silver, M. R.** "Petromyzoniformes" IN: Grzimek's Animal Life Encyclopedia, 2nd Edition. Volumes 4-5, Fishes I-II, edited by Michael Hutchins, Dennis A. Thoney, Paul V. Loiselle, and Neil Schlager. Farmington Hills, MI: Gale Group, 2003. Vol. 1 pg 83-90.
- Sower SA, Nucci NV, and **Silver MR**. 2004. Gonadotropin-releasing hormone, family of. Martini, L. (Eds), Encyclopedia of endocrine diseases. Elsevier Inc., Amsterdam; Boston. Vol 2 pg 306-316.

PATENT

- Sower S.A. and **Silver M.R.** Novel polynucleotide encoding lamprey GnRH-III. (#10/170,096)

ACCESSION NUMBERS

lamprey GnRH-III cDNAs for representative species of lamprey

AY052628	AY307172	AY307173	AY307174
AY307175	AY307176	AY307177	AY307178

HIGHLIGHTED PRESENTATIONS

Silver MR, Nucci, NV, Root, AR, Reed KL and Sower SA. Cloning and characterization of a type II GnRH receptor cDNA from the sea lamprey. 34th Annual Neuroscience meeting, San Diego, CA (2004). **Poster**

Silver MR, Sower SA. A phylogenetic analysis of the lamprey gonadotropin-releasing hormone-III. 30th Annual New England Endocrinology Conference, Dartmouth Medical School, Lebanon, NH (2003). **Oral**

Silver MR, Sower SA. The lamprey lineage, a phylogenetic perspective. Society of Integrative and Comparative Biology, Toronto, Canada (2003). **Oral**

AWARDS AND HONORS

- 2005 University of New Hampshire Graduate School's Competitive Dissertation Fellowship -\$16,000
- 2002 Genentech travel assistance to attend the Neuroendocrine workshop -\$750
- 2001 University of New Hampshire graduate summer teaching assistant research fellowship-\$2000

GRADUATE COURSEWORK- GPA 3.96

Advanced topics in signal transduction
Principals of biochemistry I and II
Physical biochemistry
Endocrinology
Advanced topics in endocrine disrupting compounds
Neurology
Neurology lab
Topics in structural determination instrumentation / mass spectrometry
Biochemistry Seminar (8 Semesters)