EVOLUTION OF A MARINE SYMBIOSIS

Background Information

The Molgulidae, a family of sea squirts, are always infected with symbiotic microbes: a protozoan, *Nephromyces*, and bacteria within *Nephromyces*. These microbes live in a peculiar ductless organ called the "renal sac."

We are asking three questions:

- *Is this symbiosis a mutualism, that is, is it beneficial to all three partners?*
- *What are the evolutionary origins of the microbes?*
- *How did this symbiosis originate, and how have these three partners coevolved?*

We are using diverse techniques to answer these questions including dissection of tissue samples, DNA sequencing and analysis, microscopy, chromatography, collection of animals from the field, and aquarium culture of animals raised with and without their symbionts. Aquarium culture is essential to all our projects.

Resources Available for Project:

- 24 hour access to the MBL library including pre-paid copying card for copying reprints etc.
- Access to an MBL computer terminal for literature/web searches.
- Wet-lab space with temperature controlled running seawater and aquaria.
- Availability of MRC general use equipment; scales, water quality test kits, stereomicroscopes, water filtration systems, etc.

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Skills Required:

- Strong interest in marine biology and/or symbiosis and/or aquaculture
- Aptitude for understanding biological concepts (at least one course in college biology)
- Strong sense of responsibility, especially for animal care
- Accurate record keeping skills (written weekly progress report required)
- Ability to work independently with minimal supervision
- Previous experience with aquarium maintenance OR previous laboratory experience is very beneficial; assigned topics and duties are tailored to skill level, academic background, and interests of the student

Estimated Time Commitment: 20 hrs/week.

Project Supervisor: Mary Beth Saffo