

**JAN ROBERT FACTOR, Ph.D.**

**Professor of Biology**

School of Natural and Social Sciences, Purchase College, State University of New York

Tel: 914-251-6659, Fax: 914-251-6635, Email: jan.factor@purchase.edu

**EDUCATION**

Brooklyn College  
Cornell University  
Cornell University

B.S., Biology, 1973  
M.S., Zoology, 1977  
Ph.D., Zoology, 1980

Major: Invertebrate Zoology / Minors: Cytology, Phycology

Dissertation: Studies on the digestive system of the lobster, *Homarus americanus*: Larval development and aspects of adult histology and ultrastructure. (Diss. Abstr., 41B: 95-B)

**POSITIONS**

Smithsonian Institution, Marine Station, Ft. Pierce, Florida:

Smithsonian Postdoctoral Fellow, 1979-81.

Cornell University, Section of Genetics and Development:

Lecturer for Invertebrate Zoology, Invertebrate Development, Genetics, 1981-82.

Shoals Marine Laboratory (Cornell University):

Core Faculty, summers 1981-present; Course Director, Field Marine Science.

Journal of Morphology:

Associate Editor, Member of Editorial Board, 1991-2003.

Purchase College, State University of New York:

Assistant Professor of Biology, 1982-89; Director, Microscopy Laboratory, 1982-present; Associate Professor of Biology, 1989-94; Professor of Biology, 1994-present; Chair of Biology Program, 1991-present; Natural Science Executive Comm., 1991-present; Liberal Arts and Science, Academic Council, 1991-present; Presiding Officer of the Faculty, 1996-99; Convener, SUNY Campus Governance Leaders, 1997-99; Past-Presiding Officer of the Faculty, 1999-present; General Education Committee, 1998-99.

**RESEARCH INTERESTS**

1. Cellular immunity in the American lobster, *Homarus americanus*: phagocytic removal of foreign particles from the blood; and the impact of environmental stress on cellular immunity.
2. Feeding and structure of the mouthparts of *Homarus americanus* and crabs, including suspension feeding by lobster and crab larvae; and the presence and distribution of cyclophoran symbionts.
3. The digestive system of the lobster (*Homarus americanus*) and other crustaceans. Specifically: larval development and metamorphosis, functional morphology, histology, and ultrastructure.

**TEACHING EXPERIENCE**

Graduate Teaching Assistant - Cornell University: Invertebrate Zoology; Electron Microscopy for Biologists; Introductory Biology for Non-Majors; Introduction to Marine Science.

Core Faculty - Shoals Marine Laboratory: Field Marine Science (course director).

Lecturer - Cornell University: Invertebrate Zoology; Invertebrate Development; Genetics.

Visiting Faculty - UNC-Wilmington: Marine Invertebrate Larvae.

Assistant/Associate/Full Professor - Purchase College, SUNY: Transmission Electron Microscopy and Cell Ultrastructure; Scanning Electron Microscopy; Imaging and Analytical Microscopy; General Biology I; Cell Biology; Invertebrate Zoology; Frontiers of Life Science; developed, coordinated, and taught in the Science in the Modern World program for non-science majors.

## **PROFESSIONAL SOCIETIES**

Society of Integrative and Comparative Biology, The Crustacean Society, Sigma Xi, New York Microscopical Society, Microscopical Society of America.

## **MANUSCRIPTS AND PROPOSALS REVIEWED**

Acta Zoologica, Biological Bulletin, Crustaceana, Invertebrate Biology, Invertebrate Reproduction and Development, Journal of Crustacean Biology, Journal of Invertebrate Pathology, Journal of the Marine Biological Association, U.K., Journal of Morphology, Journal of Shellfish Research, Marine Biology, National Oceanic and Atmospheric Administration (Sea Grant Program), National Science Foundation, Transactions of the American Microscopical Society, Zoological Journal of the Linnean Society.

## **RECENT GRANTS AND AWARDS**

National Science Foundation, Instrumentation and Laboratory Improvement Program, PI, Award No. 9251524, "Analytical Microscopy in the Biology Curriculum", curriculum development and equipment grant, 1992-95, \$54,240 awarded.

New York Sea Grant, PI, Grant No. R/FTD-7, "Development of an Assay for Phagocytic Activity in the Immune System of Lobsters", 2001-04, \$156,968 awarded.

National Science Foundation, Division of Biological Infrastructure, Major Research Instrumentation Program, PI, Grant No. 0116457, "Acquisition of a Transmission Electron Microscope and Digital Imaging: Research and Research Training in an Undergraduate College Environment", 9/1/2001 – 8/31/2005, \$246,022 awarded.

National Science Foundation, Division of Undergraduate Education, STEP Program, Co-PI (Joseph Skrivanek, PI), Grant No. 0524965, "Research and Science Visions Preparation Program at Purchase College", \$389,500 awarded, 9/1/05-8/31/10, 8.5% effort.

New York Sea Grant, PI, Grant No. R/FBM-31, "Effect of LIS Environmental Stressors on Defense Against Disease in the American Lobster, *Homarus americanus*," 2/1/06-8/31/07, \$69,593 awarded, 33% effort.

Updated 4/15/08

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### **Biographical Sketch**

Dr. Jan Robert Factor earned his Doctorate in Zoology from Cornell University in 1979 under Dr. John M. Anderson. Graduate studies were followed by a Smithsonian Postdoctoral Fellowship under Drs. Mary Rice and Robert Gore at the Smithsonian's Marine Station in Ft. Pierce, Florida (a field station of the National Museum of Natural History), and a Lectureship in Genetics and Development at Cornell. A member of the faculty of Purchase College, State University of New York, since 1982, Dr. Factor is now Professor of Biology, Chair of the Biology Program, Director of the Laboratory of Electron Microscopy. He served as Presiding Officer of the Faculty for three terms (1996-99) and Convener of the SUNY Campus Governance Leaders (1997-99). He has been an Associate Editor and member of the Editorial Board of the Journal of Morphology from 1991 to 2003. He is a member of the Society for Integrative and Comparative Biology, The Crustacean Society, Sigma Xi, the New York Microscopical Society, and the Microscopical Society of America.

Dr. Factor is editor of the standard reference text on the American lobster, *Biology of the Lobster Homarus americanus* (Academic Press, 1995).

His long-standing relationship with the Shoals Marine Laboratory (Cornell University, Appledore Island, Maine) includes being a Core Faculty member of during summers since 1981; he is course director for the Field Marine Science and Biology of the Lobster courses.

He has taught generations of Purchase students to use sophisticated microscopes through courses in transmission and scanning electron microscopy for undergraduates, and mentored their use in research projects. He developed, coordinates, and teaches in the Science in Modern World, the freshman program for non-science majors at Purchase College.

Dr. Factor's research interests include:

- ⌘ the development, functional morphology, histology, and ultrastructure of the digestive system of the American lobster, *Homarus americanus*;
- ⌘ the mouthparts of *Homarus americanus* (and other crustaceans), including feeding and functional morphology, larval feeding, and the presence and distribution of cycliophoran symbionts;
- ⌘ cellular immunity in *Homarus americanus*, specifically the removal of foreign particles from the blood; and
- ⌘ the systematic implications of complex basement membrane ultrastructure in arthropods.

His research is published in a variety of scientific journals, including the Journal of Morphology, Journal of Crustacean Biology, Biological Bulletin, Anatomical Record, Journal of the Marine Biological Association, U.K., Bulletin of the Biological Society of Washington, Journal of Shellfish Research, American Naturalist, Drosophila Information Service, and Chromatin.

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### **Faculty Profile**

The American lobster, known to many as the Maine lobster but called *Homarus americanus* by biologists, is probably the most economically important invertebrate in the eastern coastal waters of the New England, the mid-Atlantic, and Canada.

My interest in lobsters began with summertime “shore dinners” with my family as a child. Very few animals are served whole, but the lobster on the dinner plate sparked my interest in how this animal was put together and how it worked. And eating the lobster was like doing an anatomical dissection.

Beginning in graduate school at Cornell, I carried out studies on the larval development and metamorphosis of the lobster, the appendages and mouthparts they use to capture and ingest food, and the structure and function of the digestive system. Interestingly, lobsters “chew” their food before swallowing, and again in the stomach.

I have continued these studies working with generations of Purchase students who learn to use sophisticated microscopes in my lab. Using the scanning electron microscope, we have investigated sensory and feeding structures on the mouthparts, as well as unique, symbiotic, microscopic animals that live attached to the mouthparts in 90% of the lobsters we’ve examined.

Using the very high-powered transmission electron microscope, we have been working on specialized cells of the immune system and how they remove particles such as bacteria and viruses from the blood, thereby protecting against disease. When the lobster population and fishery of Long Island Sound crashed in 1999, with a 90% decrease in one year, we applied our interest in the immune system and lobster disease to develop new tools to assess immune function. We are now applying those tools to determine if environmental stress can compromise the immune system, leading to large-scale disease and ecological and economic catastrophe.

Professor Factor is chair of the Purchase Biology Program, is on the summer faculty of the Shoals Marine Laboratory, and is editor of the standard reference text on the American lobster, *Biology of the Lobster Homarus americanus* (Academic Press, 1995). His research is published in a variety of scientific journals, including the Journal of Morphology, Journal of Crustacean Biology, Biological Bulletin, and Journal of the Marine Biological Association, U.K. His most recent research grant from New York Sea Grant is “Effect of LIS Environmental Stressors on Defense Against Disease in the American Lobster, *Homarus americanus*.”

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