

Immunology & Endocrinology

Research Synopsis

Development of an Assay for Phagocytic Activity in the Immune System of Lobsters

Jan Factor, Division of Natural Sciences, SUNY Purchase

Factor will look at how lobsters defend themselves against infection and disease. He will seek to develop methods that will allow the assessment of cellular defenses against infection and disease after sublethal exposure to environmental stresses and toxic substances. Research may lead to an explanation of the recent mortalities by enabling assessment of impacts on the immune system that may lead to lethal infections.

Administrator: New York Sea Grant

Immunological Health of Lobsters: Assays and Applications

Robert S. Anderson, Chesapeake Biological Laboratory, Center for Environmental Sciences, University of Maryland.

Anderson will use biotechnology tools to measure the blood cell-related defense system of the lobster against disease. This research will lay the groundwork for discerning changes in immune response due to toxicity or other environmental stressors.

Administrator: New York Sea Grant

Stress Indicators in Lobsters: Hormones and Heat Shock Proteins

Ernest S. Chang, Bodega Marine Laboratory, University of California, Davis, California

Chang will investigate the relative impacts of stresses from environmental factors (such as temperature and salinity), biological factors (including bacteria and protozoa), and human-caused stresses (pesticides). Lobsters exposed to these stresses will be examined for changes in stress proteins and steroid molting hormones.

Administrator: Connecticut Sea Grant



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Long Island Sound Lobster Research Initiative is a research collaboration of National Oceanic Atmosphere Administration's (NOAA) National Marine Fisheries Service, Connecticut Department of Environmental Protection, and the Sea Grant Programs in New York and Connecticut.



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Development of assays for the evaluation of immune functions of the American Lobster (*Homarus americanus*) as a tool for health assessment

Sylvain DeGuise, Department of Pathobiology, University of Connecticut, Storrs, Connecticut. Co-investigators: Richard A. French and Salvatore Frasca, Jr. University of Connecticut

The University of Connecticut Pathobiology team will develop new tools to use in evaluating how immune systems work in both sick and healthy lobsters. They will expose lobsters to various chemicals and other stressors and measure the response of the immune system in each case.

Administrator: Connecticut Sea Grant

Effects of Environmental Stressors on Disease Susceptibility in Lobsters: A Controlled Laboratory Story

Richard Robohm, NOAA Fisheries Laboratory, Milford, Connecticut, and Andrew F.J. Draxler, NOAA Fisheries, Howard Laboratory, Sandy Hook, NJ

Robohm and Draxler will investigate the effects of environmental stressors on the susceptibility of lobsters to pathogens. The work will test whether depressed habitat quality may have compromised lobster immune systems and contributed to the die-off. The researchers will expose healthy lobsters to two bacterial pathogens in the presence of varying levels of environmentally relevant biogeochemicals such as sulfide and ammonia as well as environmental conditions such as low oxygen and increased temperatures. Changes in bacterial numbers and five lobster immune-system indices will be measured after the exposures. The method will also test how stressors affect growth of parasitic amoeba in lobsters, which will be useful observations for researchers who are able to successfully culture the amoeba.

Administrator: NOAA National Marine Fisheries Service

For additional information, contact:

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