

LESS OBVIOUS LINKAGES BETWEEN HUMAN HEALTH AND THE ENVIRONMENT:

- Source of pharmaceuticals and bioactive agents.
- Source of animal models for medical research.
- Major role in climate change and weather patterns.
- Conduit for infectious diseases.
- Major source of biodiversity.





NIEHS MARINE AND FRESHWATER BIOMEDICAL RESEARCH CENTERS

- Mount Desert Island Biological Laboratory
- Oregon State University
- University of Wisconsin – Milwaukee
- University of Miami



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OBVIOUS LINKAGES BETWEEN OCEANS AND HUMAN HEALTH

- Food
- Transportation
- Recreation
- Economy
(Fishing Industry)



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OCEANS AND HUMAN HEALTH

- >80% living organisms exist in aquatic environment
- Simple natural intensive exposure system
 - skin & fins: lack keratinization
 - gut: “they drink like fish”
 - gills: massive surface area
- Extremely fecund, external fertilization (allows transgenic approaches)
- Variable body temperature (ectotherms)
- Genetically tractable (eg, medaka, zebrafish)
- More cost effective

Courtesy of P Walsh





EDUCATIONAL ACTIVITIES SPONSORED/CO- SPONSORED BY NIEHS

- "Unique Marine/Freshwater Models for Environmental Health Research," NIEHS, 1998.
- "President's Oceans Conference," Monterey, CA, 1998.
- "From Monsoons to Microbes," National Research Council Panel Report, 1999.
- "Indicators of Ocean & Human Health," Bermuda Biological Station for Research, November 1999.
- "Oceans and Human Health," Roundtable, NIEHS, December 17-18, 2001.



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OCEANS AND HUMAN HEALTH

- 60% of world population: coastal regions
- Conduits for a number of environmental threats to human health
 - Natural disasters, infectious diseases, toxic algal blooms
- Harbor diverse organisms that show great promise for
 - Providing new drugs & models for research



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New Efforts Needed to Gain A Better Understanding of the Relationship Between Human Health and the Ocean

- Enhanced research and training programs.
- Develop better systems to monitor changes in ocean eco-system.
- Develop a better drug discovery system that screens for agents that are efficacious for the treatment of the various diseases.
- Identify and elucidate the mechanism of toxicity for the universe of marine toxins.

