



Oceans, Climate and Health: *The Cholera Paradigm*

Dr. Rita R. Colwell



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Dr. Rita R. Colwell is the Director of the National Science Foundation in Arlington, Virginia. Since taking office, she has spearheaded the agency's emphases in K-12 science and mathematics education, graduate science and engineering education/training and the increased participation of women and minorities in science and engineering.



Her policy approach has enabled the agency to strengthen its core activities, as well as establish support for major initiatives, including Nanotechnology, Biocomplexity, Information Technology, Social, Behavioral and Economic Sciences and the 21st Century Workforce. In her capacity as NSF Director, she serves as Co-

chair of the Committee on Science of the National Science and Technology Council.

As an aquatic microbiologist, Dr. Colwell has spent over 30 years studying the microbial disease, cholera. In recent years, use of satellite data has led to a greater understanding of how global environmental change influences the spread of this deadly disease. She and her fellow researchers have found, through the use of remotely sensed data, that cholera epidemics can now be related to climate and climate events, including ocean warming events such as El Niño. A key breakthrough in the early seventies came when she and her colleagues discovered that the cholera bacterium lives in the gut of microscopic aquatic animals. This pivotal discovery occurred only through years of fundamental research, both in the laboratory and in the field. Proving the link between plankton and the cholera bacterium allowed Dr. Colwell and her fellow researchers to develop a simple and inexpensive solution to help reduce the presence of cholera bacteria in water obtained from untreated sources.

Dr. Colwell is a nationally respected scientist and educator, and has

authored or co-authored 16 books and more than 600 scientific publications. She produced the award-winning film, *Invisible Seas*, and has served on editorial boards of numerous scientific journals. Dr. Colwell has also been awarded 26 honorary degrees from institutions of higher education, including her Alma Mater, Purdue

University. Dr. Colwell is an honorary member of the microbiological societies of the UK, France, Israel, Bangladesh, and the U.S. and has held several honorary professorships, including the University of Queensland, Australia. A geological site in Antarctica, Colwell Massif, has been named in recognition of her work in the polar regions.

Dr. Colwell has previously served as Chairman of the Board of Governors of the

"Ocean science can no longer be viewed as an esoteric, 'off shore' discipline. It is mainland and mainstream. The health and bounty of our oceans are issues of planetary survival."

American Academy of Microbiology and also as President of the American Association for the Advancement of Science, the Washington Academy of Sciences, the American Society for Microbiology, the Sigma Xi National Science Honorary Society, and the International Union of Microbiological Societies. Dr. Colwell is a member of the National Academy of Sciences. Born in Beverly, Massachusetts, Dr. Colwell holds a B.S. in Bacteriology and an M.S. in Genetics, from Purdue University, and a Ph.D. in Oceanography from the University of Washington.



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with Dr. Rita R. Colwell

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