

# Understanding Viruses to Improve Ecosystem and Human Health



Forest Rohwer  
Professor, Biology

## CURRENT RESEARCH

### Using innovative tools to identify viruses and develop novel therapeutics

The most abundant and diverse life form on earth are viruses that infect bacteria, also known as phage. They are important in every ecosystem, from our lungs, gut, mouth, and skin to coral reefs. Building on this observation, Dr. Forest Rohwer, Professor of Biology is pioneering the exploration of viruses all over the world. His novel research has identified a new, phage-based immune system that has the potential to dramatically improve human and non-human health.

Dr. Rohwer directs a large interdisciplinary team of students, postdoctoral fellows, technicians and researchers that collaborate with groups of engineers, mathematicians and doctors. The Rohwer lab has developed some of the world's more sophisticated expeditionary science practices to study the most remote coral reefs on the planet. To do this, they developed near real-time protocols for sequencing viruses and other microbes at sea. Using the same approaches, the Rohwer is developing personalized medicine approaches.

Current research includes:

- Cystic Fibrosis Characterization - Patients suffering from cystic fibrosis go through repeated disease flares. The causes of these disease flares are highly diverse and often fatal. Using massive sequencing and novel bioinformatics, Dr. Rohwer and his team are diagnosing these disease flares and helping determine the best treatments. They are currently reducing the total time for this process to 24 hours. When completed this will be the first personalized medicine approach for cystic fibrosis and applicable to other diseases.
- Conserving Coral Reefs - Coral reef are declining around the world. Dr. Rohwer and his team study how viruses impact the health...

## AFFILIATION

 San Diego State University

## EDUCATION

- Molecular Immunology, 1997, University of California, San Diego and San Diego State University

## AWARDS

- Listed in The World's Most Influential Scientific Minds, 2014
- American Academy of Microbiology Fellow, 2013
- American Academy of Sciences Fellow, 2006

## RESEARCH AREAS

Environment, Oceanic, Ecology, Health IT

## FUNDING REQUEST

Your contributions help fund Dr. Rohwer's continued research to discover and understand viruses, which are critical to our ecosystem and health. Costs for each project varies; \$50K supports a limited study, and \$5-6M is required to perform extremely large projects. Your donation also helps support the \$1.5-\$2M/year for lab costs, which includes personnel, travel expenses (\$500K for a 4 week research cruise), and \$30K/mo for sample analysis. Help accelerate this innovative research; fund Dr. Rohwer.

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