

GORDON AND BETTY MOORE FOUNDATION

2011  
YEAR IN REVIEW

# A word of thanks

Thanks in large part to our grantees and other partners, as well as our staff, our work has had tremendous impact in the fields in which we are active since the Foundation was first created a little over a decade ago. Together, we are transforming the way we use our planet's resources, yielding fundamental new knowledge at the frontiers of science, improving patient care, and helping enhance the quality of life—for current and future generations—within the Bay Area and around the world. In the pages that follow you'll find a few stories, from the many that could be told, that help to demonstrate the outcomes of this work in 2011.

# Environment

**GOAL:** Changing the ways in which people use terrestrial, freshwater, and coastal marine ecosystems to conserve critical ecological systems and functions, while allowing sustainable use.

## **The Kayapó Fund: an innovative partnership to protect the Amazon**

The Kayapó people of Brazil live in the largest single protected tract of tropical forest in the world. Their territory spans 27.2 million acres in the southeastern Amazon and is one of the only barriers to deforestation and fires, as more and more surrounding forests are razed for agriculture.

The Gordon and Betty Moore Foundation's grant to Conservation International (CI) for the Global Conservation Fund (GCF) provides long-term financing to protect the critical biodiversity and ecosystems in this forest.

This joint partnership among non-governmental organizations, Brazil's indigenous groups, and the Brazilian National Economic Development Bank (BNES) will also help reduce the impacts of climate change and preserve the Kayapó culture.

The Kayapó Fund is truly a victory for the Kayapó people, the country of Brazil, and CI. While the Kayapó were able to protect their territory for 20 years, without the fund they would not have been able to halt encroaching agriculture and logging business.

## Sustaining California's Fisheries

Off the West Coast of the United States, more than sixty species of groundfish swim slowly through the kelp forests and rocky reefs. Often sold as “Pacific red snapper,” a rockfish can live more than 100 years and may not spawn until it's over thirty. This life history makes them vulnerable to overfishing, which jeopardizes both fish populations and fishing jobs. The Gordon and Betty Moore Foundation's grant to The Nature Conservancy (TNC) aims to avoid this scenario by strengthening existing fishing communities and helping support new networks in California.

In 2011, the Pacific groundfish fishery adopted a “catch share” system that sets a quota for the amount of fish that can be taken from an area, reducing the threat of overfishing. With support from the Foundation, TNC is working with coastal communities in California and Washington to create “risk pools,” a cooperative approach in which fishermen pool their individual fish quotas as an insurance mechanism, in case any one fisherman accidentally goes over his limit. The “risk pools” ensure that more fishermen are able to fish for longer in the season without being shut down for breaking the seasonal fishing limit. The grant also supports electronic monitoring to help these collective fishing arrangements.

This partnership helps keep fisheries in business, protects marine resources, and sustains a future for the fishing industry. It aims to be emulated in other communities across the country.

## Maintaining healthy wild salmon populations

As human activity and land development have increased northward along the Pacific coasts, wild salmon and the dependent ecosystems have declined substantially. Today, many of these watersheds are degraded, and only a small number of wild salmon return every year compared to historical norms.

Two grants from the Gordon and Betty Moore Foundation are working to ensure that these salmon ecosystems remain healthy.

The first grant funded research by the University of Washington's School of Fisheries (UWSF). UWSF's research found that biodiversity allows for more reliable commercial fishery production, maintaining a healthier level of salmon populations that not only protects the environment, but benefits consumers and seafood businesses.

The second project—protecting the function of the Taku Watershed through support for Round River Conservation Society, Tides Canada, and Rivers Without Borders—supported a historic agreement between the Taku River Tlingit First Nation (TRTFN) and the province of British Columbia. The agreement, which provides for habitat protection within a framework for sustainable resource management at the watershed scale, creates a system of protected areas the size of Yellowstone National Park and an array of conservation priority areas within a no commercial logging zone of over seven million acres.

It also established a joint governing process that empowers the TRTFN to play a significant role in future resource development decisions around mining and other potential threats to wild salmon in the region. Anticipating and minimizing future environmental damage will help maintain healthy wild salmon populations.

## Harnessing Satellite Imagery for Conservation

The images of our planet from space contain a wealth of knowledge, ready to be applied to many challenges—such as deforestation, disaster response, and climate change. Unfortunately, many of these images have never been seen, and even fewer have been analyzed.

But now, thanks to a collaboration between the Gordon and Betty Moore Foundation and Google.org, there is an innovative new tool called the Google Earth Engine that can help. Google Earth Engine brings together the world's satellite imagery and makes data, information, and analysis tools available so that scientists from around the globe can build a more sustainable future.

Support from the Gordon and Betty Moore Foundation allows scientists to work online directly with the data available in the Google Earth Engine. These scientists are at the cutting edge of forest monitoring and conservation; they can compare satellite imagery over time to detect new deforestation and map land use trends around the world. Having access to accurate land use data for areas of the world where conservationists can't visit on their own will help scientists better understand and tackle some of our toughest environmental challenges.

# Science

**GOAL:** To make a significant impact on the development of provocative, transformative scientific research, and increase knowledge in emerging fields.

## Exploring the Black Box of Marine Microbial Eukaryotes

Marine microbial eukaryotes are microscopic organisms that inhabit virtually all ocean ecosystems. While they play critical roles in marine food webs and elemental cycles through photosynthesis, predation, serving as prey, and in some cases parasitizing other organisms, little is known about their genes because their genomes can be very large and structurally complex. Some genomes from this incredibly diverse group of microorganisms are in fact much larger than a human's, even though they are single-celled creatures.

There are only about a dozen completed genome sequences of marine microbial eukaryotes, and transcriptome studies—sequencing the molecules that reflect what genes are being used by an organism at any given time—have been restricted to a small number of species. Attempting to sequence large eukaryotic genomes can be time-consuming, costly, and not guaranteed to succeed, while transcriptome sequencing can provide an alternate method for obtaining gene content information.

The Marine Microbial Eukaryote Transcriptome Sequencing Project, supported through a Foundation grant to the National Center for Genome Resources, is helping the research community better understand the ecology and evolutionary relationships among these important organisms by looking at their gene expression patterns. A collaboration with nearly 80 scientists from the international community will sequence 750 transcriptomes from hundreds of diverse marine microeukaryotes.

The sheer magnitude of the effort portends unexpected discoveries regarding how these organisms support the base of the ocean food web and removal of carbon dioxide from the atmosphere.

## Research on Photosynthesizing Bacteria Drives New Understanding of Infection

For seven years, the Foundation has funded MIT professor Dr. Penny Chisholm, who has earned honors and awards for her research on *Prochlorococcus*, a photosynthesizing ocean bacterium that may be the most numerous organism on Earth.

*Prochlorococcus* is critical in the process that removes vast quantities of carbon dioxide from the atmosphere, maintaining healthy levels of oxygen and providing energy sources for nearly all life on Earth. Studying *Prochlorococcus* also helps scientists better understand how the ocean environment and an organism's evolution influence each other.

Dr. Chisholm's research has led to breakthrough discoveries, including the surprise finding that *Prochlorococcus* genes are embedded within the genomes of the viruses that infect them. In conjunction with studies of gene expression during infection, Dr. Chisholm's finding led to new understandings of how viruses and hosts interact during the infection process.

Last year, Dr. Chisholm's research even caught the eye of rapper GZA, founding member of the hip-hop group Wu-Tang Clan, who wanted to learn about *Prochlorococcus* during a visit to Dr. Chisholm's lab at MIT.

## Bringing Scientists Together Across Fields to Push the Boundaries of Quantum Information

Physicists traditionally work in isolation, rarely discussing their research with colleagues in other scientific fields who could benefit from their findings. That's changing at Caltech, where a diverse set of faculty, postdoctoral scholars and graduate students from across the fields of physics, applied physics, materials science, computer science, math, engineering and applied sciences are working together to break the boundaries of what we know about quantum information.

Scientists at Caltech have received a highly-competitive \$12.6 million grant from the National Science Foundation (NSF) to continue the cutting-edge, interdisciplinary research they started with \$5 million in seed funding from the Gordon and Betty Moore Foundation to create the Institute of Quantum Information. Over the next five years, Caltech will use the NSF funding to create a new Physics Frontiers Center.

Caltech was the single institution selected from more than 50 proposals to NSF. NSF was impressed by the vibrant, collaborative community formed under the Gordon and Betty Moore Foundation's grant, and the Institute of Quantum Information will be merged with the new center into a single Institute for Quantum Information and Matter. NSF doesn't generally fund cross-disciplinary research, but after seeing the advances made under the startup grant they recognized how working across multiple disciplines could drive breakthrough research and engage young scientists.

Inter-disciplinary research on quantum information has the potential to advance our understanding of basic physics and may even help create a quantum computer that could solve problems that our digital computers can't handle. In addition, when postdoctoral scholars at the Institute move on to their next positions at the top academic institutions around the world, they'll be bringing their unique training and collegiate work approach with them, opening the door for new scientific breakthroughs that might only be possible through interdisciplinary thinking.

# San Francisco Bay Area

**GOAL:** To improve the quality of life by sustaining healthy Bay Area ecosystems and conserving critical landscapes; enhancing science education and learning especially for children, and improving the quality of care provided to adults during and following hospitalization

## Reducing Deadly Sepsis

Sepsis is the leading cause of mortality in non-coronary intensive care hospital units—but the Kaiser Sepsis Reduction Initiative is proving that something can be done to prevent these deaths.

Sepsis is the body's reaction to systemic bacterial infection. Approximately 750,000 cases of severe sepsis occur annually in North America, and almost 40 percent of severe sepsis deaths are estimated to be preventable if sepsis is identified and treated early with specific evidence-based clinical practices. Despite the high death rate from sepsis, these clinical practices are not consistently implemented by hospitals and patients have not been routinely screened for sepsis when they come to emergency rooms.

A grant from the Gordon and Betty Moore Foundation has enabled Kaiser Foundation Hospitals to put these recommended practices in place and to dramatically reduce the number of patients dying from sepsis in their hospitals. The program ensures timely identification of septic patients in the emergency room and administration of the recommended clinical treatments for patients with severe sepsis. Since the program began five years ago, there has been a 50 percent reduction in sepsis mortality rates in 12 northern California Kaiser Hospitals and Kaiser has been recognized as a national leader in addressing this important patient care issue.

## Innovative Partnership Conserves Large Expanse of Coastal Redwoods

When the five partners of the Living Landscape Initiative learned that thousands of acres of the Santa Cruz Mountains would soon be sold, they mobilized to purchase the largest expanse of unprotected redwoods and wildlife habitat in Santa Cruz County.

The \$30 million, 8,532-acre acquisition is one of the largest land conservation deals in a decade in the Bay Area. An acquisition of this size and scope was possible only because the organizations worked together, capitalized on their individual strengths, and leveraged funds. The Gordon and Betty Moore Foundation collaborated closely with the David and Lucile Packard Foundation and Resources Legacy Fund to provide a cornerstone investment of over \$8 million.

Immediate and long-term benefits range from preventing land development and protecting local water quality to conserving habitat for wildlife that includes mountain lions, peregrine falcons, and endangered Coho salmon. The project also envisions helping to sustain the local economy and providing outdoor enthusiasts with public access to what many consider to be one of the most scenic coastal areas in the country.

And the best part is that this CEMEX Redwoods acquisition is just the beginning. The Living Landscape Initiative has set a goal of preserving 80,000 acres over the next 20 years in priority landscapes extending through San Mateo, Santa Cruz, Santa Clara, and Alameda counties.

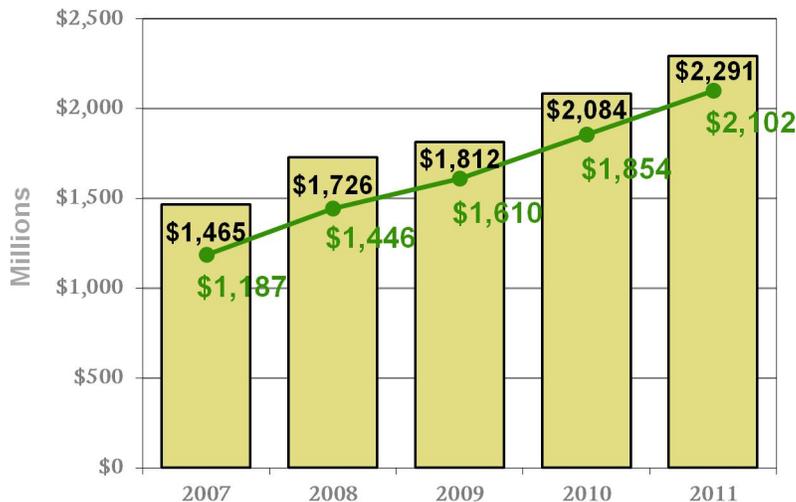
# Financial Highlights

The Foundation's financial statements are audited annually by Ernst & Young, LLP and published on our website at [www.moore.org](http://www.moore.org). Additional information is also available on the website in our annual information return called the Form 990-PF, Return of Private Foundation.

The Foundation has grown rapidly from its establishment in 2000 and currently employs approximately 80 people, manages over \$5 billion of assets, and has an annual operating budget of approximately \$26 million. The Foundation intends to pay out approximately five percent of its endowment annually, which equates to an annual grant budget of roughly \$240 million.

## Grantmaking Activity

Cumulative to December 31, 2011



	<u>Cumulative Total</u>
Board Authorized Activities	\$2.9 Billion
Grants Awarded to Date	\$2.3 Billion
Grants Paid to Date	\$2.1 Billion

# Foundation Leadership



## OUR FOUNDERS

### **Gordon and Betty Moore**

A rule-of-thumb prediction made by Gordon Moore in 1965, later dubbed “Moore’s Law,” became a guiding principle for the delivery of ever more powerful semiconductor chips at proportionally lower costs. Today, this standard continues to set the pace of technology development and progress. Gordon has been committed to technological progress throughout his career as a leader in the new

semiconductor industry, first as cofounder of Fairchild Semiconductor in 1957 and then as co-founder of Intel Corporation, creator of the world’s first microprocessor, in 1968.

Betty met Gordon at San Jose State College where she received her bachelor’s degree in Journalism in 1949. Gordon and Betty were married the following year. While Gordon attended graduate school at the California Institute of Technology in Pasadena, Betty worked for Consolidated Engineering Corporation in advertising and public relations before joining the Ford Foundation.

By establishing the Gordon and Betty Moore Foundation together in 2000, the Moores’ philanthropic contributions build on the work they have dedicated to science and the environment for decades, both at home and abroad. Today, Gordon and Betty are active on several philanthropic and corporate boards. They reside in the Bay Area and in Hawaii, and have two sons and four grandchildren.

# Board of Trustees

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## FOUNDATION STAFF

For a list of Foundation staff, please go to [www.moore.org/staff](http://www.moore.org/staff).