

From the Executive Director



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we learned how you can tell a fossil fish from a fossil marine mammal and why, how form and function in biology has a discernable mathematical foundation, how biological molecules dance about once made and finally settle into their final ensemble of structures, and when and where earthquakes are so deadly, and where they are not.

As befits an individual or organization entering its seventh decade, it is time to take stock and see if we have been true to the original vision of the institute and whether any corrections might be needed. I wish Mary and Adolph Sprague Miller were alive to witness into what their contribution has blossomed. From an endowment back in the early 1940s that would have kept one modern research lab in business only long enough to produce a few Ph.D.s, we now have one of the most significant institutions in the nation in terms of producing world-class scholars across all scientific disciplines. The institute provides generous support for 30 postdoctoral fellows at any given time, each a leader in his/her field. The institute also supports multiple Visiting Miller Professors and domestic Miller Professors through a new, more flexible structure that matches the differences between the cultures of different fields. Each contributes to the richness of the scientific enterprise of Berkeley.

The pace of scientific advances continues to accelerate, and the fall and spring Miller Institute dinners provide unique windows into exciting developments. Last fall, Rasmus Nielsen taught us about how exploration of human genomes has revealed aspects of our collective past, showing that those with European and Asian Ancestry have bits of the Neanderthal genome left as molecular fossils of past interbreeding with our hominid ancestors. At the spring dinner we saw into the future as Jennifer Doudna described her amazing work with the Cas9 nuclease and its power for editing genomes. Her work enables genes in essentially any organism to be changed in any way to test specific ideas about biology. Cas9 has obvious importance in treating human disease. Of course, it also raises important issues regarding bioethics that we will continue to grapple with in the coming years.

The Spring Symposium, a 20 year tradition started and sustained by the Miller Institute's own Senior Fellow, Raymond Jeanloz, brought in 7 world leaders to the Marconi Center on Tomales Bay to give us all a close-up look at different facets of science, as described by leading practitioners of their discipline. Work has already begun on assembling the program for next spring's symposium. It's too early to tell what the topics will be, but we have everything from LIGO's detection of gravity waves, to quantum weirdness, to yeast that produce opioids, to a new species in the human lineage, and more, to choose from.

Michael Manga has taken over as the faculty leader of the Spring Symposium Selection Committee, as his term on the Executive Committee came to an end. We thank Raymond for the magnificent job he did over the past two decades, and will continue to rely upon his advice in the coming years. Roland Burgmann from Earth and Planetary Science is a new member of the Executive Committee, replacing Michael. We welcome the return of Craig Evans to the Executive Committee following his service as interim chair of the Math Department.

There have been a few changes in our Advisory Board over the last year. A few months ago, we learned the sad news that our former Advisor, Sir Harry Kroto, passed away. We will miss his sharp insights and passion for science and science education. Our colleague Vaughan Jones, currently from Vanderbilt University, has concluded his service with the Institute. We have valued his contributions to our decision making processes over the years. We are fortunate to have Yun Song from the University of Pennsylvania join our Advisory Board for the coming year. The staff support for the Institute is second to none. At many institutions, the position of postdoctoral fellows can be rather isolating, with no formal way of making connections beyond a sponsor's laboratory. The rapport between Kathy Day and her staff and the fellows and faculty let the scientists affiliated with the institute be part of a bigger community that transcends typical departmental boundaries.

These are challenging years for all academic institutions, Berkeley included, as the strain on the traditional business model or research institutions reaches new heights. The Miller Institute remains true to its original mission. We have one core mission: to enable the best and the brightest of all fields of science to achieve their potential while contributing to the rich scientific environment of Berkeley. Our alumni make up a substantial fraction of the faculty of the world's leading research universities.

