

# In Memoriam: Robert A. Ludwig (1948-2015)

**To:** UC Santa Cruz Community

**From:** Harry Noller, Robert L. Sinsheimer Professor of Molecular Biology  
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Robert Ludwig joined the UCSC faculty in 1979 and spent his career as Professor of Molecular, Cell and Developmental Biology. Bob received his education and training at some of the top research institutions in this country and in Europe. Following his undergraduate education in chemistry at the University of Michigan, he did his graduate studies in the Department of Molecular Biophysics and Biochemistry at Yale, where he pursued his doctoral research with Bill Summers on regulation of transcription in bacteriophage T7. He then did his postdoctoral research first with Luigi Gorini at Harvard Medical School and then with Ethan Signer at MIT, where he began studying the mechanisms of nitrogen fixation. After a subsequent stay in the laboratory of plant molecular biologist Geoff Schell in Ghent, Belgium, he came to Santa Cruz to start his own laboratory.

Bob Ludwig's research was driven as much by his passionate sense of social responsibility as by his fascination with basic science. His main concerns were two of the most pressing problems facing humanity: feeding a burgeoning world population, and providing a source of clean energy. The main body of his work focused on the mechanism of nitrogen fixation, the process by which the inert nitrogen gas that makes up 80 percent of the air in our atmosphere is captured in a form that can be used by the living organisms that create our food. His approaches were ingenious and subtle, employing the powerful methods of molecular genetics in novel contexts to understand and manipulate the genes responsible for fixing nitrogen by the bacteria that inhabit the root nodules of leguminous plants. The design of his experiments was often characterized by an intricate logic that would credit a chess master.

The final phase of Bob's research focused on another fundamental global problem: creating a means for the production of clean energy. His studies on nitrogen fixation led him to ask whether the enzymes associated with the bacteria living in root nodules might be used to generate hydrogen gas. Bob's last published papers provide encouragement for this exciting possibility.

Bob was a gifted and dedicated teacher, whose biochemistry and genetics lectures inspired a generation of budding science students. This was recognized by the Favorite Professor Award,

which Bob received in 1992 from the UCSC Student Alumni Council.

He attracted many talented students to his laboratory, whom he trained in the methods, experimental strategies and philosophy of molecular genetics.

In his private life, Bob enjoyed the pursuit of diverse interests that reflected his sophisticated tastes. These included an appreciation of fine food and wine, which extended to a considerable talent for both winemaking and cooking. His eclectic enthusiasms ranged from international soccer to modern jazz and progressive political causes. Bob is survived by his wife Pamela Swift, his son Max, and his daughter Chloë. His presence and unique, idealistic spirit will be deeply missed by his students and colleagues.