



## IN MEMORIAM

William L. Belser  
Professor of Microbiology, Emeritus  
UC Riverside  
1925 – 2002

William L. Belser, born in Hershey, PA on May 28, 1925, died at home in Riverside, CA on November 29, 2002 at age 77. He leaves as his survivor his wife of 53 years, Nao Okuda. William, known to most simply as “Bill,” graduated in 1942 from Wilson High School in Easton, PA, and shortly after beginning his studies at Lafayette College in Easton, PA volunteered for military service in World War II serving as a navigator with the 3rd and 8th Air Forces and flying on 40 missions (1943-1945). At war’s end, he completed a B.A. degree at Lafayette College (1948), and subsequently (and briefly) enrolled as a special student in the biology department at New York University.

In 1950, Bill began his graduate work at Yale University, New Haven, CT in the laboratory of Mary (Polly) Bunting. He was Bunting’s first doctoral candidate with Henry P. Treffers and David M. Bonner serving as members of his dissertation committee. The Ph.D. was awarded in 1955. Bunting, as his major professor and mentor, had a profound influence on Bill’s future as a scholar, teacher, and a lover of the outdoors. At Yale she conducted groundbreaking research in microbial genetics that provided the foundation for Bill’s lifelong research interests. Bunting’s own life was dramatically altered with the death of her research pathologist husband. In keeping with the sexist standards of the times, Yale did not extend a full-time employment offer to the new widow and so she was forced to cast about for another way to support her family: university administration. She became dean of Douglass College, President of Radcliffe College and retired in 1972, followed by a varied career dedicated to integrating women into academe and chided society for its “waste of highly talented, educated womanpower”. Bill held to her cherished belief in equality for all, which was rooted in his egalitarian approach to all who had the opportunity to learn from him, but he personally resisted the path she had taken in administration.

With Bunting, Bill worked on the genetics of the enterobacterium *Serratia marcescens* studying the mechanisms providing for genetic transfer between prokaryotic cells. From Yale Bill moved west to the Scripps Institute of Oceanography (SIO), La Jolla, CA where he served from 1955 to 1962 as a U.S. Public Health Service Fellow of the National Cancer Institute. Later, Bill became an assistant research biologist and acting chairman of marine genetics, carrying out research on the DNA composition of marine bacteria and developing bioassays for organic micronutrients in the sea. It delighted Bill when in 1960 David H. Bonner, a member of his dissertation committee, came to the fledging campus of the University of California, San Diego (UCSD), as a professor of biology and head of the Department of Biology; Stanley Mills (a fellow graduate student at Yale) also came to UCSD as an assistant professor. Bonner was exploiting the newly emerging techniques of molecular biology for a better understanding of the intermediary steps in biosynthetic pathways in the mold *Neurospora*. As a founding member of UCSD, Bonner fostered a forward-looking community of scholars, teachers and students in biology unhindered by the dead hand of the past. He believed a department of biology should be an integrated entity, not fragmented into a cluster of non-communicating sub-disciplines. This progressive, interdisciplinary approach profoundly impacted how Bill viewed research science for the remainder of his career. Above all Bonner was a person full of joy who reveled in trying to understand the nature of life. In 1962, Bill left SIO to take up a position in the Division of Life Sciences (later

Biology) at UC Riverside and here he concentrated on the biochemistry, genetics and evolution of the elements of L- tryptophan biosynthesis and pyrimidine biosynthesis. This work was carried out mainly with his favorite organism, the bacterium *Serratia marcescens*, and in a sense was complementary to the work in the laboratories of Bonner and Mills at UCSD. At UC Riverside, he and his students worked the effects of air pollutants on DNA, anthranilate synthesis, regulation of aspartate transcarbamylase, the cloning of the pectate lyase gene from *Erwinia*, a plant pathogenic microbe, and studied DNA base composition as an index to the evolutionary affinities among marine bacteria.

Bill was a big man — bluff, hearty, expansive — who personified the open- armed, warm Western outdoors Marlboro man with whom he identified, including his flannel shirts and open, rugged vests. His legion of friends were from all parts of the world, from Japan to New Zealand to Europe, where helping hands were, reciprocally, open to him. He and Nao always had an open house to all, with limits in time and space at the discretion of the visitor: unending hospitality proffered.

Bill was one of those rare individuals who have an influence on you right from the beginning; indeed, a first encounter remains indelible in your mind. For some it was his sweeping grand stature, others were struck by his native intellect and clarity of thought as he engaged in a dissection of a particular scientific problem. Bill probed only for your positive qualities; his style was to respect you first, and one had to work very hard to lose his loyalty. All organisms in the Biosphere were his companions and friends from the microbes multiplying in his Petri dishes to the orchids flowering in his greenhouses and home, to the big dogs romping inside and outside the house, to those four- legged farm animals roaming free out in the back pasture, to the duck that took up residence in the swimming pool; all were respected, coddled and treated as family. Bill and Nao had no children of their own but they had the strongest of parental instincts and unabashedly showered their affection on the children of many of their colleagues, including those of both Dave Bonner and Polly Bunting.

Bill, in the tradition of Bonner, was a builder of social and intellectual bridges. He organized a noontime lunch bunch that brought together for brainstorming sessions the few molecular geneticists on the UCR campus at that time. He used these settings to introduce the newest members of the faculty to one another and to the 'old- timers.' These efforts to unite scientists across the College of Natural and Agricultural Sciences remain in evidence today in the popular and highly visible noontime interdepartmental seminars now sponsored by interdisciplinary graduate programs including the Genetics of the Cell, Molecular and Developmental Biology, and the Ecology, Evolution and Organismal Biology speaker series. Bill never ceased to amaze us in seminars. He would lumber in, plop himself down in the front row, and for all the world you thought he was exploiting the opportunity to refresh himself with a little nap, but at the end of the seminar, just when one expected him to be embarrassed, Bill would raise his head, slowly gaze from side to side and proceed to ask the most insightful question imaginable. The questions that seemed to come out of nowhere were actually the result of Bill's remarkable curiosity about science and his uncanny ability to separate the pieces of a scientific puzzle and then put them together in an integrated form. These qualities contributed to his reputation as a respected and talented teacher as well as a skilled examiner with whom one had to contend.

Bill's clarity of thought and organization in experimentation was not reflected in the appearance of his office or himself. Entering the office one would be faced with Bill sitting at his desk covered with a mess of papers, puffing away on a cigarette, and inviting you in to sit at a place he cleared of papers, surrounded by piles and piles of out of date *Journal of Bacteriology*, *Science*, *Nature*, *Proceedings of the National Academy of Sciences* journal editions that formed pillars on top of filing cabinets, tables and almost any surface; this ambiance resembled the newspaper- filled apartment of the Collier brothers in New York City. Yet, if asked to find an article, he could quickly find the proper pile within which the reference would be found. He cared not one whit for formality. His unassuming manner was clear not only in his demeanor but in his appearance: no tie, no jacket, shirt open to the navel, trousers covered with mud from his feeding of the animals at home, and cigarette ash liberally sprinkled on fingers, shirt and sleeves.

Bill, during the time when molecular biology was in its scientific infancy, brought together undergraduate students and taught them the lore of recombinant DNA. His eyes sparkled when a student generated a band of DNA on an electrophoretic gel or a colony on a Petri plate, signaling a successful cloning experiment. In the microbiology laboratory he delighted all when he pulled out an enormous cake pan containing a layer of agar and a confluent lawn of *Escherichia coli*. He then used a spatula to scrape off hundreds of grams of *E. coli*, treated this with lysozyme to break the cells, followed by extraction of the DNA by spooling off precipitated strands from the interface of an aqueous phase of a phenol extraction and 95 percent ethanol. Bill's greatest

thrill was when he held the students to the high standard of interpreting their own results. When the light bulb went on in the student's head, it was Bill who became illuminated.

Bill loved to travel to scientific meetings or, after his retirement in 1991, to meet with orchid fanciers interested in breeding exotic species. He fantasized about using the emergent recombinant DNA technology to engineer orchids with colors and hues not known on Earth. He was very proud of the laboratory he built by himself on the grounds of his home to accomplish this dream; his hope was to create transgenic orchids using indigo genes from other organisms. On a trip to New Zealand he fell ill with a systemic infection and was near death for many weeks. Remarkably, he recovered enough to be flown home, but he never regained full strength. Gone was the big, bold, sometimes brash, immutable man we came to love. His smoking habit had caught up with him. He was frail and thin, and was accompanied by new companions: a wheelchair and an oxygen tank. Those of us who knew Bill were lucky to have had him in our midst especially in those dark days after the episode in New Zealand. Bill soldiered on because his survival instinct was fueled by his love of science, his love of Nao, and his love of friendships. There was a unique purity and genuineness in his relationships--- unclouded by an unkempt appearance or politics. His desire for our own continued success in all that we do never faltered even as his body did. The "sparkle" of Bill Belser's spirit will endure because we will continue to remember him as a gifted teacher, scholar, scientist and above all a good friend. In addition, as was also said of his mentor David Bonner "Everything he did was done with enthusiasm... it is hard to think of him as anything but vibrantly alive."

Irwin W. Sherman  
Bradley Hyman  
Stanley Mills  
Oliver Ryder