

### Norton B. Gilula (1944–2000): Setting the Standard

Norton B. (Bernie) Gilula lost his year-long and heroic battle with lymphoma on September 27, 2000. We all lost that day. At his funeral, among many well-deserved tributes, the rabbi told us that “Bernie was a mensch.” The dictionary defines “mensch” as a man of integrity and honor; my Jewish friends tell me it means a good man, a nice guy. The cynics among us might believe that in today’s dog-eat-dog world of science “nice guys finish last,” but one of the greatest (of many) lessons that Bernie taught me, by his example, is that nice guys can finish out in front.

Bernie was a competitor. He played team sports in high school and entered university on a football scholarship. He maintained his passion for sport, but developed an even stronger passion for science. His own work, begun as a graduate student with Peter Satir at University of California, Berkeley, focussed on the mechanisms of intercellular communication. Using Daniel Branton’s newly developed technique of freeze-fracture electron microscopy Bernie was among the first to image the junctional structures responsible for direct communication between cells (Gilula et al., 1970; Pinto da Silva and Gilula, 1972). He went on during his career, at The Rockefeller University, at Baylor College of Medicine, and finally at The Scripps Research Institute (TSRI), to make many profound contributions to this field. These he presented last year as he delivered the S. Jon Singer Plenary Address at the San Diego Cell Biology meeting. During his three decade career, he had gone from EM analysis of cellular gap junctions, to defining their conductance properties (Gilula et al., 1972; Epstein and Gilula, 1977) and their role in hormonal signaling (Lawrence et al., 1978), to isolating and biochemically characterizing the proteins (Hertzberg et al., 1982; Stauffer et al., 1991), to establishing their roles in embryonic and tissue development (Lo and Gilula, 1979a,b; Warner et al., 1984), to cloning and identifying the multigene fam-

ily of connexins (Kumar and Gilula, 1986), to characterizing their biosynthesis and intracellular transport (Falk et al., 1994; Kumar et al., 1995), to the development of knock-out mice that provide a model for cataract development (Gong et al., 1997), to the discovery of a new class of chemical signaling molecules that inhibit gap junction communication (Cravatt et al., 1995; Guan et al., 1997), and culminating in the solution of the gap junction structure by cryo-EM to 7-Å resolution (Unger et al., 1999). As I listened to his talk I was overwhelmed by the breadth and depth of his scientific contributions, from electron microscopy, to physiology, molecular biology, biochemistry, developmental biology, chemistry, and structural biology. I also noted the humility with which he presented these results and his generous acknowledgment of his younger collaborators.

His scientific contributions are in themselves great accomplishments, but represent only a small part of Bernie’s impact on cell biology. Like a competitor, Bernie reveled in being first. But like the sportsman he was, Bernie also applauded the success and prowess of his competitors and worked tirelessly to promote his field of study. He served as Chair of the Molecular Biology Study Section and on the GM Council, promoting cell biology, ensuring fairness, and supporting young scientists. One of his closest friends, Dan Goodenough, is also one of his toughest competitors. By his example, Bernie showed us that intense competition and collegiality can and should co-exist.

Bernie’s appreciation and mastery of the interdisciplinary nature of cell biology became a benefit to us all when he was appointed the first Editor-in-Chief of *The Journal of Cell Biology* in 1983. Many of us will have experienced first hand his depth of knowledge, his astute and critical eye, his scientific good taste, and, above all, his fair and consistent judgement. He rebelled against the “for-profit” journals; he wanted a journal run by



working scientists. His efforts established a fair and open process for appointing the Editorial Board that involved the American Society of Cell Biologists as well as The Rockefeller University Press and insured *The JCB*’s scientific independence (Gilula, 1999). He worked tirelessly to establish and maintain the Journal’s excellence while the field of cell biology matured. Many of us, including a young Ira Mellman, were honored by our inclusion on the Editorial Board at relatively early stages in our careers. He nurtured young scientists, valued their input, and worked to give them the confidence needed to succeed. He backed us up when needed or gracefully overruled us when called for. His intense oversight set editorial standards and established the consistent high quality and matching reputation that *The JCB* enjoys today.

In 1986 Bernie was recruited by Richard Lerner to TSRI to initiate and lead a Program in Cell Biology. Over the next several years, Bernie assembled a talented and interactive faculty, a mixture of veterans and newly independent scientists with complementary expertise. The Cell Biology Department is a reflection of Bernie’s broad scientific interest, his appreciation for the multidisciplinary nature of

cell biology, and his foresight. Bernie's enthusiasm and energy inspired us all. He was our leader, our mentor, our friend. Many of us were surprised to learn that Bernie was just 55 when he died. Looking back twelve years ago to when Bernie recruited us, he was already a prominent and respected statesman for cell biology. During the next years, as we established our own careers under his mentorship, he exuded wisdom and maturity, fatherly patience, encouragement, and gave us the occasional gentle nudge we needed. At that time, many of us had assumed he was fit and youthful for his age. Indeed, at just over 40, he was simply fit and youthful!

Bernie set other standards for excellence. He married Bessie Huang (they met while at UC Berkeley), and together they raised two tall, handsome, and successful sons. Jonathan, a competitive tennis player, graduated from Princeton University and now works with the San Diego Padres Baseball Organization. Daniel graduated last May from University of Southern California and is in Los Angeles working in the music industry. Bessie was also a member of the Cell Biology Department and together they seemed to take on the role of parents to us all. I loved the annual cell biology Christmas parties. We all brought our families and danced to 50's rock. Santa Claus would hand out dreidels and candy canes. Bernie would pat heads or shake hands with the older kids while Bessie held each of the year's crop of new departmental babies, beaming like a grandparent.

Bernie's scientific leadership extended beyond his department. Cell biology in San Diego has grown exponentially in the past decade; he was central to that growth. Working with Larry Goldstein and myself, he started the annual San Diego Cell Biology meetings that went from 70 attendees to over 300 in only four years. Together with Bill Beers, he started an innovative graduate program that

grew within ten years to be ranked in the nation's top ten in biology and chemistry. He cared deeply for the graduate program and though his days were busy, as the Dean of Graduate Studies, he made time for each and every student. Ordained for a weekend (only in California!), he once donned blue robes to perform the marriage ceremony for two of them! The extent of Dean Gilula's commitment to the Graduate Program and his concern for the success of each of its students earned him their deepest respect and affection. In recognition of this unique relationship, TSRI has named its graduate offices the Norton B. Gilula Center for Graduate Studies and has established two perpetual graduate student fellowships in his honor. Thus, Bernie's contributions and commitment to this program will live on.

They say you can measure a man by how he faces adversity. Bernie fought hard during his illness and never let it take over. Instead, in March of this year, he took the reins as TSRI Vice President of Scientific Affairs. He worked tirelessly with Richard Lerner to apply his vision and ensure our strong future. As I assumed the Chairmanship of his department, he was there to support and to advise. He continued until the last to give to others. Late one Friday, on what turned out to be his last day at work, Bernie called to talk about the future of cell biology. He was communicating his excitement; giving me his vision. Bernie Gilula gave us much more. He set standards for science, for personal integrity, and for kindness that we should all aspire to. His eyes twinkled, his smile was open-mouthed and broad, his interest and concern were always genuine. I will miss this *mensch*: my mentor, my friend. Whether you had the pleasure of meeting Bernie or not, through his work with *The JCB*, as a member of the NIH Council, as a leader in our community of Cell Biologists, and for his grace, we are all better for his having lived.

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