

## In memoriam: Robert J. Kadner

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We experienced a great loss on August 7, 2005, when Robert J. Kadner died unexpectedly. Bob was the Norman J. Knorr Professor of Basic Medical Sciences and Vice Chair of the Department of Microbiology at the University of Virginia, but he was better known to us as a friend, colleague, outstanding scientist, and intellectual sparring partner.

Through more than three decades of work on vitamin B<sub>12</sub> uptake in *E. coli*, Bob immensely broadened our understanding of TonB-dependent transport. Among his earliest contributions was the analysis of mutations in the conserved TonB box region of the vitamin B<sub>12</sub> receptor BtuB that prevented transport but not binding of the substrate, and the subsequent isolation of specific suppressor mutations in TonB. The model of direct contact between TonB and the TonB box of the receptor that emerged from these observations has been debated over the years, but Bob was ultimately able to demonstrate the close physical proximity of TonB and the TonB box by site-directed disulfide bonding experiments. Another early Kadner prediction was that the TonB box was far more likely to be exposed to the periplasm than buried in the membrane. This has since been verified through structural analyses of several TonB-dependent receptors. More recently, Bob and his collaborators showed that substrate

binding to BtuB results in a shift in the state of the TonB box from a relatively rigid and docked conformation to a highly dynamic and undocked conformation ideally positioned for interactions with TonB. Because of Bob Kadner and his elegant, innovative and comprehensive work on vitamin B<sub>12</sub> uptake, we in the iron world have a more complete understanding of, and better tools for exploring, the unique process of TonB-dependent transport.

Bob will also be remembered as an outstanding teacher and mentor. He trained more than 30 students and fellows and received a number of awards for his teaching, including the American Society for Microbiology Graduate Microbiology Teaching Award. Bob had served as Chair of the ASM Graduate Education Committee and was instrumental in the design and implementation of the ASM Summer Institute for Graduate Students and Postdoctoral Fellows. Immediately prior to his death, Bob had spent the week working with students at the Institute.

Earlier in the summer, Bob participated in the International Symposium on Microbial Iron Transport Storage and Metabolism in Paris, which is the topic of this issue of BioMetals. We will remember him enjoying the science and the city and will greatly miss his presence at future meetings.