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C. Robert Matthews, PhD

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Robert Matthews is Professor and Chair of Biochemistry and Molecular Pharmacology at the University of Massachusetts Medical School. He received his Ph.D. at Stanford University in 1974, where he also did postdoctoral research from 1974 - 1975. He became an Assistant Professor of Chemistry at Pennsylvania State University in 1975. He spent 25 years at Penn State, leaving in 2000 as Professor of Chemistry and the Eberly Family Professor of Biotechnology.

Dr. Matthews has spent his entire career building a broad-based program designed to understand the mechanism(s) by which the amino acid sequence of a protein directs its rapid and efficient folding to its native, functional conformation. Those efforts have involved studies of a variety of monomeric proteins, including several members of the TIM barrel family, several candidates from the Rossmann-fold family and, more recently, homologs of the CheY family. He began his studies on the folding of dimeric proteins and peptides over 20 years ago with the *E. coli* Trp repressor and, later, the yeast GCN4 coiled-coil peptide. His move to the University of Massachusetts Medical School in 2001 motivated a transition to medically-relevant dimeric proteins, human superoxide dismutase and the HIV-1 protease.

Dr. Matthews and his group have been active in the development of technology and general concepts in their pursuit of a solution to the protein folding problem. He was among the first to recognize the power of mutational analysis to identify the residues that play critical roles in folding. As a part of his effort in this arena, he developed the chevron analysis for quantifying the effects of mutations on transition states. More recently, he proposed the BASiC Hypothesis, which posits a crucial role for large clusters of branched aliphatic side chains, isoleucine, leucine and valine, in cores of stability in globular proteins.





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As part of his recognition of the impact of collaborative efforts, his group has been a leading proponent of sharing their resources of instrumentation, software and advice with other groups. The frequent visits to his lab by collaborators have always yielded benefits on both scientific and personal fronts to all.

Dr. Matthews served as an Associate Editor for the Journal of Molecular Biology from 2000-2012; he was President of the Protein Society, 2003-2005, was elected as an American Association for the Advancement of Science Fellow in 1999, received the Carl Branden Award from the Protein Society in 2015 and is the past Chair of the Public Affairs Committee for the American Society of Biochemistry and Molecular Biology.

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