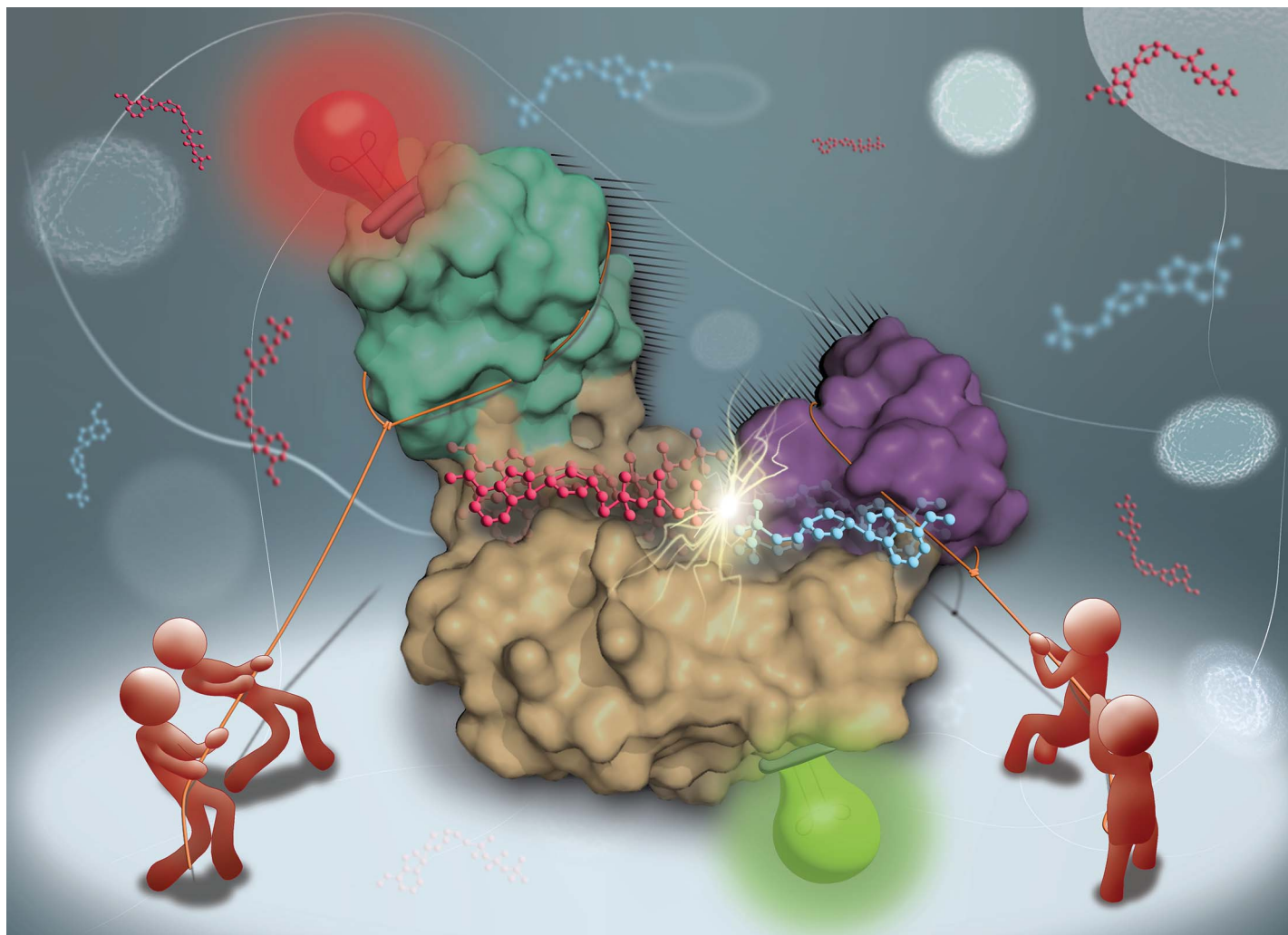




**Showcasing research from Professor Gilad Haran's laboratory,
Department of Chemical and Biological Physics, Weizmann
Institute of Science, Israel.**

Interplay between conformational dynamics and substrate binding regulates enzymatic activity: a single-molecule FRET study

Multiple enzymes rely on conformational dynamics, but how do their motions contribute to catalysis? Single-molecule FRET spectroscopy provides new insights. We analyse the surprising activity enhancement of the enzyme adenylate kinase by the denaturant urea and find that urea stabilizes the enzyme's open conformation, aiding the proper positioning of the substrates. Further, urea decreases the affinity for one of the substrates, paradoxically facilitating a more efficient progression towards the catalytically active complex. Our results show the important interplay between conformational dynamics and chemical steps, fundamental for life's molecular machinery.

As featured in:



See David Scheerer, Gilad Haran *et al.*,
Chem. Sci., 2025, **16**, 3066.