

Plenary talks (PV)

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**Plenary Talk** PV VI Wed 8:30 HSZ 01  
**Developing Physical Tools for Biology: From the Quantitative Understanding of Life Processes to Applications in Medicine** — ●X. SUNNEY XIE — Harvard University, Cambridge, MA U.S.A.

Advances in biology in the last half-century, from the discovery of the structure of DNA, to unraveling the human genome, to structures of macromolecular machines, were facilitated by developments of physi-

cal tools, such as X-ray crystallography and DNA sequencers. In recent years, single-molecule spectroscopy and nonlinear optical imaging have changed the way many biological problems are addressed. New knowledge from these experiments continues to emerge, revealing how biomolecules work in real time, individually, together, and ultimately, how they work inside living cells. These studies in biochemistry and molecular biology yield not only deeper understanding of the physical underpinnings of life processes, but potential applications to medicine as well.