



Camille & Henry Dreyfus Lectureship

In memory of the Dreyfus brothers, the Camille and Henry Dreyfus Foundation Inc. has established the Dreyfus Lectureship at the University of Basel. The annual Lectureship will bring a leading chemist from the United States to the Basel campus to deliver a series of talks and to meet with faculty, students and industry representatives in order to enhance the relationship between Swiss and U.S. science.

Camille & Henry Dreyfus Lectureship



19 - 20 November 2026

Department of Chemistry
University of Basel
St. Johannis-Ring 19
4056 Basel
Large Lecture Hall

Prof. Dr. Kevan Shokat

University of California, San Francisco
San Francisco, California, USA
and Howard Hughes Medical Institute



University
of Basel



THE CAMILLE AND HENRY
Dreyfus
Foundation

Kevan Shokat



Kevan Shokat is professor at the Department of Cellular and Molecular Pharmacology at the University of California, San Francisco, and a professor of chemistry at the University of California, Berkeley. He has been awarded the Camille & Henry Dreyfus Lectureship for his outstanding achievements in the field of chemical biology. Research in his group is dedicated to the use of chemical genetics to study and target signaling proteins, with the aim of finding new ways to treat human diseases.

Kevan Shokat (born in 1964) received his B.A. from Reed College in 1986, his PhD at UC Berkeley in 1991, and did then a post-doctoral training at Stanford University. In 1994, he began his independent career at Princeton University. He moved to the University of California, San Francisco, in 1999 where he remains today as Professor of Cellular and Molecular Pharmacology.

In recognition of his achievements Kevan Shokat has received numerous honors and awards, including the Stephenson Global Prize for research in pancreatic cancer, the annual Award for Scientific Discovery from the National Academy of Sciences, the Sjöberg Prize from the Swedish Academy of Sciences, and elections to the National Academy of Sciences and the National Academy of Medicine.

19.11.2026

17:00 h

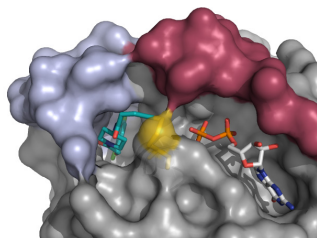
Introduction

Prof. Dr. Primo Schär (Vice President for Research)

Prof. Dr. Stefan Willitsch (Head Department of Chemistry)

Overcoming the Undruggable Nature of the Most Common Human Oncogene, K-Ras

Since the discovery of the first human oncogene, KRAS, in the early 1980s there has been an explosion in our understanding of cancer. Drugs targeting other oncogenes such as the protein kinase BCR-ABL which causes a type of blood cancer have profoundly affected the lives of cancer patients since the approval of imatinib in 1999. While the pace of discovery of drugs which target certain classes of oncoproteins (protein kinases in EGFR driven lung cancer and nuclear hormone receptors in breast and prostate cancer) have been remarkable, the cancers driven by the GTPase, KRAS, have been slower to develop because the K-Ras protein lacked obvious drug binding pockets. I will discuss the challenges faced by academic and industry scientists which led to the notion that K-Ras was “undruggable”.



In 2013 our laboratory reported the first drug binding pocket on K-Ras (G12C) which was followed eight years later by the FDA approval of sotorasib and adagrasib. The current challenge of developing drugs for other even more common K-Ras mutants such as K-Ras (G12D) will be discussed including current agents in clinical trials as well as how to leverage the immune system to further attack K-Ras mutant driven lung, colon and pancreatic cancer.

20.11.2026

17:00 h

Development of Next-Generation Chemical Strategies in Drug Discovery

Somatic mutations in the small GTPase K-Ras drive roughly 30% of human cancers, yet the protein was long considered „undruggable“ until a covalent strategy targeting the G12C mutant revealed a binding pocket in the switch-II region, leading to the approval of sotorasib and adagrasib. These successes have shifted the central challenges in the field: extending covalent and non-covalent strategies to the more prevalent G12D and G12V mutants found in pancreatic and colorectal cancer, deepening single-agent responses, and overcoming the drug resistance that inevitably emerges with any targeted therapy. In this lecture I will describe our efforts on each front. First, I will show that combining the pan-Ras tri-complex inhibitor daraxonrasib—whose GAP-mimetic activity accelerates GTP hydrolysis—with switch-II pocket inhibitors selective for K-Ras(G12C) or K-Ras(G12D) produces synergistic inhibition, providing a mechanistic rationale for combination regimens. Second, I will present a new covalent chemistry that installs a warhead reactive toward the aspartate of K-Ras(G12D), extending covalent targeting beyond cysteine residues and inhibiting oncogenic signaling in cancer cells. Finally, I will place this work in the context of two broader chemical biology themes from our lab that inform how such inhibitors are designed and delivered: the discovery that IFITM proteins govern cellular uptake of chemically linked, bivalent compounds, and a binary pharmacology strategy that restricts mTOR inhibition to brain tissue. Together these findings illustrate how mechanistic combination logic, new covalent chemistries, and uptake- and tissue-informed drug design are converging to widen the therapeutic reach for new medicines.

Expanding Covalent K-Ras Inhibitors Beyond K-Ras (G12C)
Requires New Electrophiles

