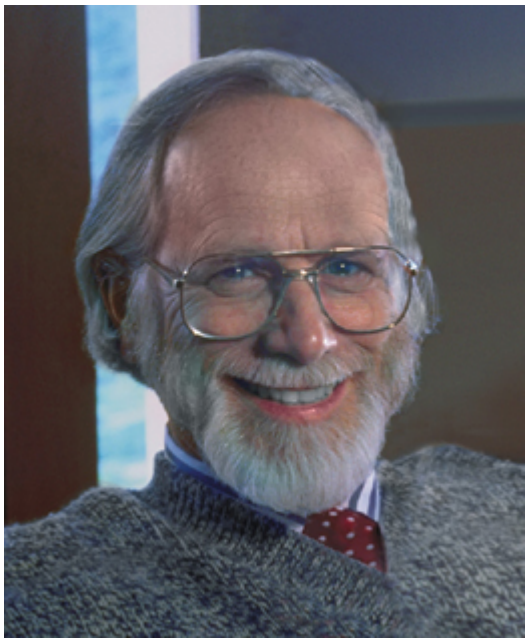
Bishop Lab



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UCSF Profile [1]

J. Michael Bishop, M.D.

Genes and Tumorigenesis

Our research concerns the genetic underpinnings of cancer, in particular the large group of cellular genes known as proto-oncogenes. Harold Varmus and I supervised the research that discovered these genes more than 30 years ago, and the function of these genes in normal cells and in tumorigenesis has occupied me ever since. Approximately 15 years ago, my research group began to develop mouse models for cancer, based on anomalies of proto-oncogenes found in human cancer. By now, we have in hand models that faithfully replicate neuroblastoma, acute promyelocytic leukemia, acute myelocytic leukemia, T- and B-cell leukemias, Burkitt and other B-cell lymphomas, hepatocellular carcinoma, hepatoblastoma, hepatic adenomas, and non-small cell carcinoma of the lung. Virtually all of these models remain in use in my laboratory for one purpose or another. Our objectives include: elucidation of the genetic changes and their mechanisms that propel tumor progression, particularly in the context of cancer stem cells; identification of biomarkers for detection of disease, selection of therapeutics, and prediction of outcome; and preclinical testing of new therapeutic strategies. Among our recent findings are a biomarker that greatly strengthens the genomic prediction of outcome for a subset of carcinoma of the breast; a distinct subset of hepatocellular carcinomas that arise from a common genetic pathway, components of which are vulnerable to combination therapy by existing small molecule therapeutics; three distinctive therapeutic

strategies that exploit synthetic lethality to preferentially kill tumor cells that over-express the proto-oncogene MYC, one of the most widespread and common genetic anomalies in human cancer; evidence that the metabolism of tumor cells varies as a function of both the genetic drivers of the disease and the tissue of origin; and a nucleolar protein that is required for the maintenance of embryonic stem cells and can be used in the programming of somatic cells to embryonic pluripotency ? we suspect that this same protein may figure in the maintenance of cancer stem cells

Current members of the lab:

Thaddeaus Allen, PhD [2]

Jian Qu, PhD [3]

Dun Yang, PhD [4]

UCSF Main Site

Links
[1] http://profiles.ucsf.edu/j.michael.bishop
[2] https://hooper.ucsf.edu/bishop-lab-projects
[3] https://hooper.ucsf.edu/bishop-lab-projects#qu
[4] https://hooper.ucsf.edu/bishop-lab-projects#yang