

## **SCIENTIFIC BIOGRAPHY OF DOUGLAS HANAHAN**

**Douglas Hanahan**, PhD, is a Distinguished Scholar in the Lausanne branch of the Ludwig Institute for Cancer Research (Zurich/New York). He is an Emeritus Professor of Molecular Oncology and former Director of the Swiss Institute for Experimental Cancer Research (ISREC) within the Swiss Federal Institute of Technology Lausanne (EPFL). In addition, he served as a founding co-Director of the Swiss Cancer Center Lemman (SCCL), a multi-institutional partnership that is the first 'comprehensive/integrated' cancer center in Switzerland. Moreover, Hanahan incentivized the conceptual design and subsequently shepherded the programmatic planning for the new Agora Translational Cancer Research Center, which is the flagship of the SCCL.

Hanahan is a Fellow of the American Academy of Arts & Sciences and a member of the US National Academies of Science and of Medicine, and a member of the European Molecular Biology Organization. He received an honorary degree from the University of Dundee (Scotland). Hanahan is also a Fellow of the Academy of the American Association for Cancer Research and was honored with its Lifetime Achievement award.

Hanahan received a bachelor's degree in physics from the Massachusetts Institute of Technology in 1976, and a Ph.D. in biophysics from Harvard University in 1983, where he was awarded a prestigious fellowship by the Harvard Society of Fellows. He worked for a decade at Cold Spring Harbor Laboratory in New York, first as a Harvard graduate student and Junior Fellow, and then as a faculty member. Subsequently, he spent twenty-one years at the University of California San Francisco before moving to EPFL in 2009.

As a graduate student, Dr. Hanahan developed methodology that markedly facilitated the molecular cloning of genes in *E. coli*, which continues to be a cornerstone methodology in life sciences. In the early 1980's Hanahan helped pioneer the genetic engineering of mice heritably endowed to develop organ-specific cancers that mimic human carcinogenesis. His research program has centered ever since on using mouse models of human cancer to investigate mechanisms of stepwise tumor development and progression, and to design and evaluate mechanism-guided therapeutic strategies with promise to improve the treatment of human cancers.

Hanahan discovered, in collaboration with the late Judah Folkman, the 'angiogenic switch', which is activated to produce new blood vessels that enable incipient neoplasia to progress toward malignancy. He conceptualized, with Robert Weinberg, an organizing principle that rationalizes the daunting complexity of human cancers; their landmark publication in 2000, entitled 'The Hallmarks of Cancer', proposed that a set of distinctive functional capabilities acquired by most human cancers, a concept that is now widely accepted, and beginning to influence cancer therapy. This perspective and an update in 2011 are amongst the most highly cited publications in cancer research.