

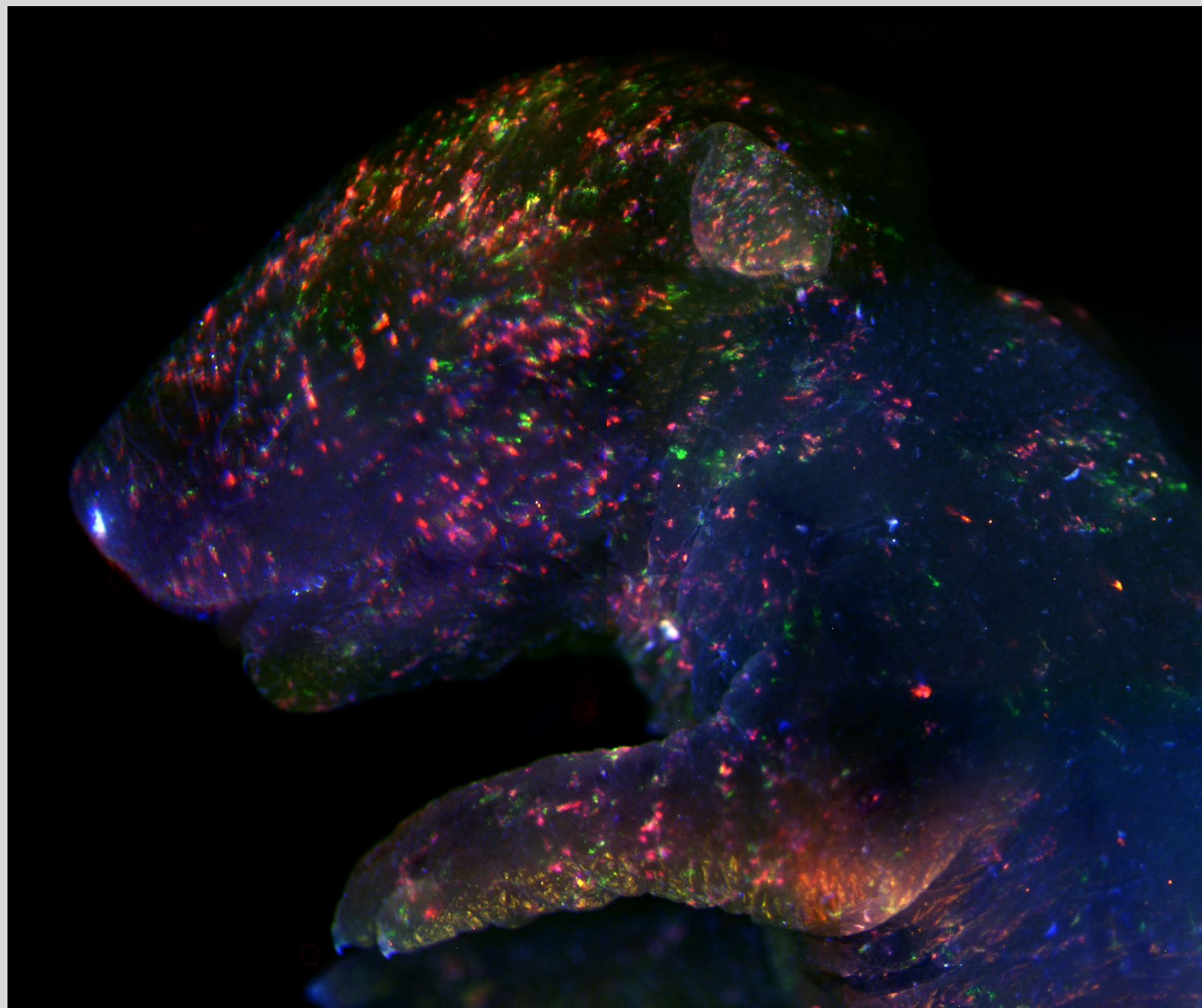
DEPARTMENT OF CHEMICAL & PHYSICAL SCIENCES COLLOQUIUM SEMINAR SERIES

Wednesday, October 24, 2018
3:10pm in CC2150

Dr. Daniel Schramek

Department of Molecular Genetics
University of Toronto

In vivo veritas - Using CRISPR to elucidate novel cancer genes in mice



Cancer is a multi-step disease in which cells progressively accumulate mutations that eventually disrupt their cellular functions and increase tumorigenic potential. To map the mutational landscape of human cancers large-scale genomic efforts have generated vast amounts of somatic mutation data. This provides an exceptional opportunity for cancer gene discovery and elucidating the etiology of cancer. A big challenge, however, is the extensive mutational heterogeneity

found in most cancers where typically only a handful of genes are mutated at high frequency while the vast majority of genes are mutated at much lower frequencies, a phenomenon referred to as the 'long-tail' distribution. While the frequently mutated genes are well-known cancer genes with clear transforming potential such as TP53, PIK3CA or RAS, the vast majority of the 'long tail' genes lack biological or clinical validation. During my talk I will discuss how we developed new CRISPR genome editing technologies to simultaneously screen hundreds of putative cancer genes directly in mice, which allowed us to identify novel bona-fide driver mutations that trigger Head and Neck Squamous Cell Carcinoma (HNSCC) development.