"Why me?" The mutagenic origins of cancer for individual tumors and tumor types

Jeffrey Townsend, PhD
Elihu Professor of Biostatistics and Professor of Ecology and Evolutionary Biology

Needs: To date, risk factors are nearly the only answer that science or medicine has been able to give patients who ask "why me?" I will report on our discovery of an answer to these questions—an answer that directs our research efforts toward these most important causes, and toward effective public health prioritization, by informing all of us of what actions we can take to prevent cancer.

Objectives: Understand how the cancer effect of every single-nucleotide mutation can be quantified, and the importance of cancer effect estimation for guiding basic research, pharmaceutical development, clinical trials, and precision medicine; understand how the mutagenic sources of single-nucleotide mutations in individual tumor genomes can be quantified.