Ilyas Singeç, M.D., Ph.D.

Dr. Ilyas Singeç is the Head of the NIH Stem Cell Technology Facility and leads the new phase of the Center for Regenerative Medicine, which is supported by the Common Fund and located at the National Center for Advancing Translational Sciences (NCATS). Dr. Singec completed his MD and doctorate in neurobiology (summa cum laude) at the Albert-Ludwigs-University in Freiburg, Germany. After clinical residency in Neuropathology, he conducted postdoctoral work at NIH/NINDS and the Sanford Burnham Prebys (SBP) Medical Discovery Institute. As a Lab Head at Pfizer, he was the biology lead of a preclinical drug discovery program and developed human stem cell-based assays for new target identification & validation.

In his earlier scientific work, Dr. Singeç characterized the molecular and cellular diversity of the normal and diseased brain by using novel biomarkers for the detection of rare neuronal cell types as well as disease mechanisms (e.g. aberrant synaptic plasticity in temporal lobe epilepsy). He then spearheaded important studies in the neural stem cell field and was the first to demonstrate the limitations of the widely used neurosphere assay for clonal analysis. He also invented a novel slice co-culture model by connecting the rostral migratory stream (RMS) to the hippocampus. These studies demonstrated that RMS neuroblasts, typically destined to be become olfactory interneurons, can be reprogrammed into CA1 pyramidal neurons by environmental cues of the host tissue.

Dr. Singeç's recent work has focused on the generation and use of patient- and disease-specific induced pluripotent stem cells (iPSCs). At the Sanford Burnham Prebys (SBP) Medical Discovery Institute he served as the Director of Cell Reprogramming and pioneered the large-scale production of new iPSC lines. In addition, having developed a rapid 6-day neural induction method, he established the largest quantitative proteomic and phosphoproteomic datasets of human pluripotent cells and directly compared them to their earliest definitive neural stem cells. This work also led to the identification and functional characterization of midkine, a new autocrine/paracrine factor controlling neural induction. His current translational research interests include genetics-based disease modeling of neurological and psychiatric disorders, precise characterization of cell type identities, and developing novel approaches to elucidate pluripotency and controlled cellular differentiation by using integrated and scalable systems biology methods. Dr. Singeç has been the recipient of several scientific awards and fellowships from Pfizer, Merck, International Bipolar Foundation, German Research Council (DFG), California Institute for Regenerative Medicine (CIRM), and NIH.