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TRANSCRIPTIONAL LANDSCAPE OF POSTISCHEMIC SUBVENTRICULAR ZONE OF THE ADULT PRIMATE BRAIN

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Introduction. The subventricular zone (SVZ) along the walls of the cerebral lateral ventricle (LV) of the primate brain is a stem cell niche which retains capacity for stem/progenitor cell proliferation into adulthood. The SVZ along the anterior (frontal) horn of the LV is designated SVZa, while the SVZ along the inferior (temporal) horn of the LV is designated SVZi. We have previously shown that both the SVZa and the SVZi respond with an increased proliferation of stem/progenitor cells following a global cerebral ischemia in monkeys. However, only the SVZa showed an enhancement of postischemic neurogenesis. The differences in the neurogenic capacity of SVZa and SVZi could be underlined by a differential gene expression in response to ischemia.

Main part. Here we studied the transcriptional response SVZa and SVZi of adult monkey brain following transient, global cerebral ischemia. Using RNA Sequencing analysis we detected differentially expressed genes after ischemia in both SVZa and SVZi. We then applied bioinformatics analysis on the differentially expressed genes and detected significantly different transcriptional profiles between SVZa and SVZi. We studied the expression of selected genes using high-throughput *in situ* hybridization which precisely localized the response to ischemia to specific SVZ layers.

Conclusions. The reported here transcriptomics and in situ expression results provide for the first time a molecular basis for the differential neurogenic capacity of primate SVZ subdomains.