

**Project 1.3. Identification of genes and evolutionary changes in the genome that underlie the human-specific features of astrocytes.**

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**WWW:** <https://pekowskalab.github.io>

**Background:**

Recent studies indicate that astrocytes, in addition to strictly homeostatic functions, play critical roles in the regulation of synaptic plasticity and in the processes of learning and decision making. Astrocytes have changed in the evolution of mammals: morphology, interaction with neurons, and the dynamics of signal transduction pathways are significantly different in human and mouse astrocytes. At present, however, it is not known which evolutionary changes in the genome underlie the modification of astrocyte biology.

**Aim:**

Identification of genes that are critical for human-specific features of astrocytes

The successful Ph.D. candidate will use the RNA-seq data generated in the lab to determine the transcriptomes of astrocytes in multiple mammalian species. She/he will identify genes that are most likely to be crucial for astrocyte evolution. In collaboration with other team members, the candidate will inactivate these loci, using genome editing tools based on the CRISPR-Cas9 system, and determine the impact of these genome modifications on astrocyte biology.

**Requirements:**

- master 's degree in bioinformatics,
- outstanding commitment to science (documented by trainings and/or internships in research institutes),
- ability to work independently,
- systematic working style,
- excellent lab-work reporting skills,
- good spoken and written English,
- skills in basic bioinformatic tools are required.