

Program Project Design and Analysis continued: Neurogliomics—Generating & testing new hypotheses about nervous system evolution using genomics tools

Last week each team identified gene products that you hypothesized would be central to the properties of the tripartite synapse. We restricted our analyses to a mouse model because 1) the trisynaptic synapse has been most thoroughly characterized in mammals and 2) the mouse is the most widely used mammalian model in which genomics, genetic manipulation, anatomy, physiology and behavior can be combined.

This week, we would like to use the gene products you selected as probes to attempt to trace the evolution of the neuron:glial partnership at the synapse evolved.

Summary of last week:

1. Identify key gene products involved in specific aspects of tripartite synapse function.
2. Propose experiments to test their localization & function in a mouse model.
3. Lay out your ideas on paper, as a draft of a coherent strategy to be continued today.

### **This week:**

Develop the genomics part of your experiments.

1. Re-evaluate specific genes that you propose to study.  
Check point: You may have done this last week—do you have the accession #(s)?  
If not, you need get them.
2. Follow up, if appropriate, in the mouse.  
Don't have a gene? Now is a good time to get one.  
Not satisfied with your gene choice? Choose a new one, or add additional comparator genes.
3. Class discussion to consider genes, controls, caveats, pitfalls, and potentially observations regarding evolution of the nervous system.
4. Define comparative questions that you can propose with your gene sequence(s) to test the evolution of the tripartite synapse. See the Phase2 table for steps in how to proceed.
5. Leave today with a set of planned comparisons, and division of labor for how to complete your analyses this week.
5. Leave US a written plan that addresses each step in the table for phase 2.
6. Come to lab next week having done analyses, and talked over you findings with your Team. Be prepared to lay out your analyses, and to post results (e.g. printouts of Metazome searches, and trees) in an informal poster. We will have a lively discussion among ourselves, and with notable experts in the fields of genomics and evolution (e.g. Professors Hutchison, Vernon and Jackson).