PROJECT RESUME

Recent findings show that in the adult mouse hypothalamus, beta-tanycytes generate new appetite regulating neurons that integrate into the hypothalamic neural circuitry. This involves morphological changes, symmetric and asymmetric cell divisions, cell migration, delamination and generation of an intermediate transient amplifying progenitor comprised of alpha-tanycytes, by beta-tanycytes. We hypothesize that herein changes in cell cytoskeleton in general, and dynamics of microtubule assembly/degradation in particular, are critical regulators of beta-tanycyte fate and lineage progression. To test this hypothesis, we will investigate changes in expression and distribution of key microtubule associated End Binding proteins (EBs 1-3) within the newly-identified hypothalamic stem cell niche, using antibodies specific to these proteins in conjunction with in vivo lineage-traced beta and alpha-tanycytes, and markers that delineate these cell domains. We anticipate that EB2, which has been associated with maintaining an undifferentiated state in other settings, would be restricted to beta-tanycyes, becoming downregulated as they generate alpha-tanycytes.

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