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Year in School: Junior
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Funding Source: Agricultural Institute Fund

Beclin association factors in the mouse testis

Survival of germ cells in the gonad is dependent upon the intracellular balance of cell death factors from the Bcl-2 family of proteins. These proteins can either stimulate or inhibit apoptosis (programmed cell death) depending upon their concentrations relative to each other. These molecules have the propensity to self-associate or associate with other members to titrate the effects of each other. Overexpression of Bcl-xL, a Bcl-2 member, in the mouse testis alters mouse spermatogenesis, as these transgenic males are sterile. Bcl-xL self-associates and co-immunoprecipitates with other apoptotic factors; therefore its function in germ cells requires protein-protein interactions. A yeast two-hybrid screen using Bcl-xL as a bait protein has uncovered several interacting proteins in the mouse testis. One of these interacting proteins, beclin, co-localizes and co-immunoprecipitates with Bcl-xL. Beclin is involved with autophagy and has been previously linked with the cell proliferation proteins PI3K and akt. We are initiating another yeast two-hybrid screen using beclin as the "bait" protein to further clarify the role of autophagy with cell proliferation (PI3K, akt) and apoptosis (bcl-xL) in germ cells.