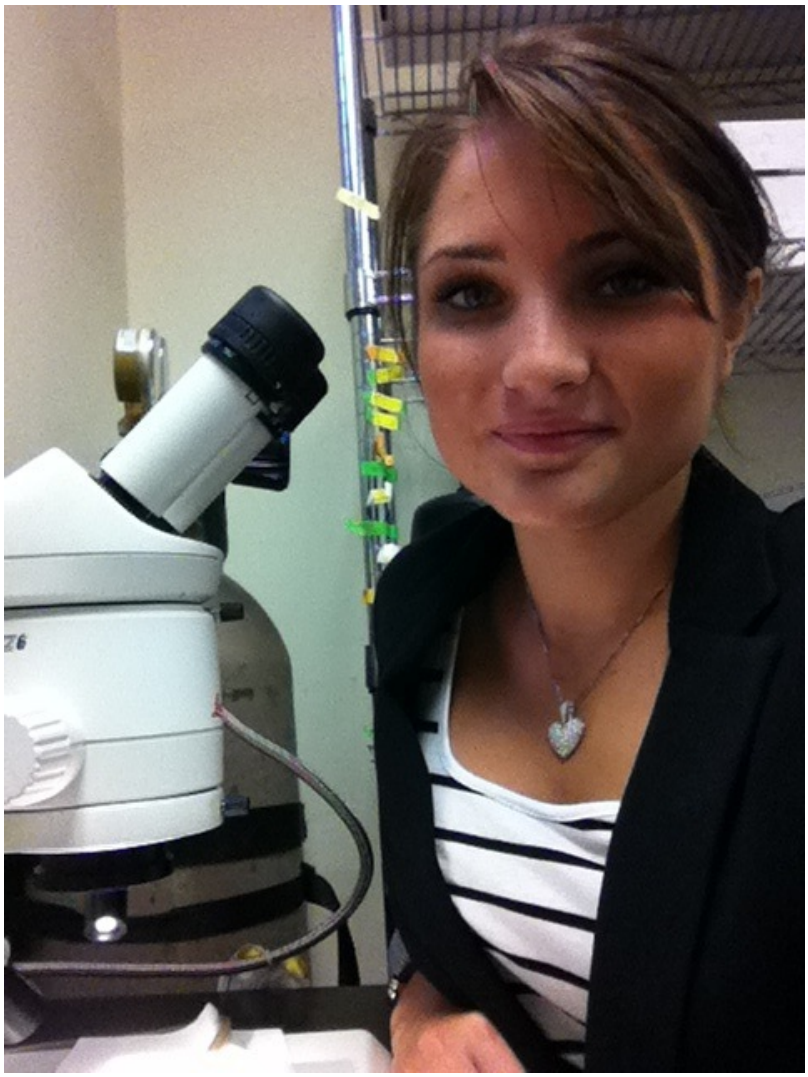

Kate is an undergraduate pursuing a BA in Biology at Hunter College. She joined Dr. Bratu's

research group in the Fall 2011, and has since been assisting on a project that involves elaborate genetic crosses to generate GFP-expressing fly lines in a secondary mutant background.

She is testing the practicality of the GAL4/UAS system, a binary system commonly used as a method for targeted gene expression, to express GFP-tagged transgenes for *kinesin heavy chain (KHC)* , *nod*, and *actin* in the ovaries of *Drosophila melanogaster* at different developmental stages. To exploit this system, Kate uses two separate transgenic lines, one which contains the activator GAL4 under control of an ovary specific promoter, and the other that contains the effector UAS with GFP-*kinesin*, *nod* or *actin* transgenes.

Through fluorescence imaging analyses, Kate is able to distinguish which GAL4 line is most efficient in its ability to drive the expression of these genes fused with GFP. These fly lines are then crossed with other fly lines that express mutations in genes that lead to cytoskeletal defects. Once these new fly stocks are generated, Kate will visualize the phenotypic defects in live oocytes and analyze the onset of these defects throughout oogenesis, thus determining the spatial and temporal necessity for these gene products during ovary development.