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RESEARCH ABSTRACT FORM

TITLE: MicroRNA regulation in *Drosophila*

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MicroRNAs (miRNAs) are ~21 nucleotides (nt) small noncoding RNAs involved in control of gene expression. miRNAs are transcribed by RNA polymerase II and transported from the nucleus to the cytoplasm where they inhibit target mRNAs. miRNAs have been identified in plants and animals and have been found to play crucial roles in development and disease. Given the biological importance of miRNAs, methods to inactivate them and thus study their function are actively being sought. Here we describe progress towards developing a novel RNase P-based approach that has the potential to be broadly applicable in *Drosophila melanogaster*. Recently, *bantam*, a gene encoding a 21 nt miRNA that promotes tissue growth was identified in *Drosophila*. The *bantam* miRNA promotes cell proliferation while inhibiting apoptosis. We aim to reduce *bantam* miRNA levels using an anti-*bantam* RNase P molecule (α -ban) that can be regulated with the drug tetracycline. To test the system we are using the *bantam* sensor. The *bantam* sensor was developed by the Cohen laboratory and gives a green fluorescent protein (GFP) read-out of *bantam* activity. We expect knockdown of *bantam* using α -ban, this will increase expression of the sensor and result in more GFP fluorescence. To date, the clones have been made and transgenic flies are being generated.