



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Abigail W. Goodman	Project Number J2304
Project Title B Flat Bee: Does Wingbeat Frequency Predict Honeybee Flower Shape Selection?	
Objectives/Goals I wanted to learn if the wing beat frequency (WBF) of honeybees can predicts their morphology and thus determine what shape of flower the bee pollinates.	
Abstract	
Methods/Materials I recorded honeybees on different flowers using a portable recorder on a microphone stand, and then used a Fast Fourier Transform tool to determine the wing beat frequency (WBF) to see if different WBFs were associated with differently shaped flowers.	
Results My results found that 2 similarly open-faced flowers had close average wing beat frequencies (WBF), while a flower that requires a narrow, smaller body, had a higher average WBF.	
Conclusions/Discussion The result suggests that acoustic analysis to determine average wing beat frequency in a colony could suggest which crops that colony would optimally pollinate. This could be important for farmers and apiarists to lower costs. It may also benefit native bee species by reducing the length of time honeybees pollinate resulting in less competition for pollination.	
Summary Statement My project tests the ability to use acoustic analysis to match honeybees with the flowers they morphologically fit.	
Help Received I received help from my science teacher and parents in thinking about this project, getting to places to record honeybees, and learning to use tools to get the wing beat frequency from sound recordings of honeybees.	