**North Forsyth HS – Abstract**

**Deterring Fruit Flies Through Genetic Modification**

Over 400 fruits and vegetable species are impacted by the infestation of *Drosophila melanogaster*. Fruit flies are drawn to fruits by the presence of Ethylene, a gas that is released as fruits ripen. Studies have shown that fruit flies can be deterred by scents such as peppermint, lavendar, basil, and lemongrass. Through CRISPR editing, our goal is to genetically modify the scent production pathways of highbush blueberries to produce these scents to repel *Drosophilia melanogaster* despite the presence of Ethylene during ripening. We plan to approach this genetic modification by utilizing guide RNA to target all alleles coding for scent production. Our research serves as the foundation for a two-year undertaking to later implement in the CRISPR editing of highbush blueberries.

Our team is looking into ways to effectively modify Blueberry plants over a two year period through CRISPR editing using *Agrobacterium*-mediated transformation. By targeting the *Vcpds* endogenous reporter gene, we are able to locate and alter the genetic makeup to deter fruit flies, *Drosophila melanogaster*. The genetic manipulation of fruit ripening using antisense technology shows promise in specifically modifying biochemical pathways to alter fruit without affecting other aspects of ripening.