



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrew T. Ostrom</b>	<b>Project Number</b> <b>S0614</b>
<b>Project Title</b> <b>Edible Fuels</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of this project was to determine which type of food oil makes the best biodiesel fuel. <b>Methods/Materials</b> Five different types of edible oils were used in this experiment: soybean oil, olive oil, peanut oil, canola oil, and corn oil. The oils were refluxed at 60 degrees Celsius with methanol and potassium hydroxide as a catalyst to synthesize the biodiesel. The triglycerides in the oils reacted with methanol to produce glycerol and a methyl ester (biodiesel). This process is known as transesterification. The biodiesel was separated from the glycerol and its cloud point was measured. The best biodiesel was determined by the lowest cloud point. <b>Results</b> My hypothesis was that canola oil should have the lowest cloud point, which would make it the best oil to use to make biodiesel. This is because canola oil has the highest percentage of unsaturated fats, which have a lower melting point than saturated fats. The results of my experiment showed that the corn oil was the best biodiesel because it had the lowest cloud point temperature. <b>Conclusions/Discussion</b> Based on cloud point, corn oil makes the best biodiesel. Canola oil was the next best by 0.55 degrees Celsius. This difference could be due to some contaminants in the oil. The rest of my data followed the trend of percent unsaturated fats in the oils tested.	
<b>Summary Statement</b> My project synthesizes biodiesel from edible oils by a process known as transesterification and compares the products using a cloud point measurement to determine which oil makes the best biodiesel.	
<b>Help Received</b> My father supervised the experiments and helped me fill out this form. My mother helped me assemble the project board.	