



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2019 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jasmine VanRenselaar</b>	<b>Project Number</b> <b>J1324</b>
<b>Project Title</b> <b>A Heating Pad that Stays Warm</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> My objective is to determine which combination of materials creates a heating pad that stays warm for a long time.</p> <p><b>Methods</b> 4 types of fabrics for outside, 3 types of grains for inside, infrared thermometer. Made 12 heating pads of identical size and volume of fillings, each of a different fabric and filling, heated up the bags for 2 min, and then took the temperature of the bags every 10 minutes until under 28 degrees Celsius.</p> <p><b>Results</b> All of the bags made of flannel cooled off quite fast while the fleece bags stayed the warmest. Overall jasmine rice stayed warm for the longest amount of time while the rolled oats were often the fastest to cool down.</p> <p><b>Conclusions</b> The rolled oats got hot very fast then dropped rapidly and finished decreasing slowly in all the fabrics, the jasmine rice and fleece stayed warm the longest by about 3.4 minutes.</p>	
<b>Summary Statement</b> By making heating pads of various materials I found that a heating pad made of fleece and filled with jasmine rice stays warm the longest.	
<b>Help Received</b> I designed and conducted this experiment on my own.	