



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

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| <b>Name(s)</b><br>Lupita Guerrero; Melinda Mendoza  | <b>Project Number</b><br><br>22869 |
| <b>Project Title</b><br>Rise to the Point: Ice-Nucleating Protein in Water  |                                    |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>Ice-nucleating protein is a protein used as a snow inducer. Our project was to test this protein to see how much it raises the freezing point of water.<br><b>Methods/Materials</b><br>We used a container and added ice, rock salt, and water to get the temperature to be -5°C. Then we mixed ice-nucleating protein with distilled water. We put 3 ml of distilled water in one test tube and 3 ml of the ice-nucleating protein water in another test tube. To get data we connected a Vernier LabPro to a computer and two sensors to the LabPro. The computer graphed the temperature of the two test tubes for 35 minutes.<br><b>Results</b><br>In two of our test the plain water froze at a higher temperature. In three of our tests the water with ice-nucleating protein froze at a higher temperature.<br><b>Conclusions/Discussion</b><br>We didn't find a specific difference of degrees in the two, but we learned that water with ice-nucleating protein always freezes faster than plain water. |                                    |
| <b>Summary Statement</b><br>Our project was to find out how ice-nucleating protein affects the freezing point of water.   |                                    |
| <b>Help Received</b><br>Our teacher helped us research.   |                                    |