



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

<b>Name(s)</b> <b>Caylin Canales; Daniel Godinez</b>	<b>Project Number</b> <b>J1901</b>
<b>Project Title</b> <b>Aging the Stars</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> We wanted to know how old is Monoceros R2, a little-researched star cluster in the Unicorn Constellation. We took images of Monoceros R2 using the Faulkes Telescope in Australia. We took them in two different filters, red and infrared. Using the programs SalsaJ and DS9, we analyzed the intensity of the stars and made a color-magnitude diagram. Once we got the color-magnitude of Monoceros R2, we compared it to other clusters with a known age. We then determined that Monoceros R2 could be around 100 million years old, but very likely is no more than 2.6 billion years old.</p> <p><b>Methods/Materials</b> #A good computer with internet access #The computer programs SalsaJ, DS9, GIMP 2, Microsoft Excel &amp; Word #Access to time on a high-quality telescope (we used the 2-meter Faulkes Telescope in Siding Springs, Australia) #The coordinates of a star cluster you wish to study. #Instructions and downloads from the Faulkes Telescope website on the following: oPhotometry with SalsaJ oScaling Images with DS9 oGIMPShop #An Excel file called Color Magnitude Diagram (CMD) Plotter from Faulkes Telescope website. #Most importantly, a good supporting science teacher. :)</p> <p><b>Results</b> We were correct about Monoceros R2 being a young cluster. All of its stars still appear to be burning up their hydrogen and helium and therefore they're still in the main sequence. There seems to be some sort of turnoff happening, but we don't have enough data to predict that some of the stars are about to evolve into Red Giants. But it is reasonable to say that Monoceros R2 open cluster is a young cluster that might be about 100 million years old, but probably no more than 2.6 billion years old.</p> <p><b>Conclusions/Discussion</b> In conclusion, the data support the hypothesis. We conclude that Monoceros R2 is a young cluster. All of its stars are still fusing their hydrogen into helium. Therefore, they are nowhere near evolving into the Red Giant Branch (RGB). Our data seems reasonable because Dr. Rachel Street used the same images to make her own color-magnitude diagram and got identical results.</p>	
<b>Summary Statement</b> We found the age of a recently discovered star cluster, Monoceros R2.	
<b>Help Received</b> Science teacher supported us in every way she could since October. Such as giving up her own time to discuss information with us.	