



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> Mark W. Fox	<b>Project Number</b> <b>J0212</b>
<b>Project Title</b> <b>Mountain, Road, or BMX: Which Helmet Type Works Best?</b>	
<b>Objectives/Goals</b> This project's goal is to determine which helmet materials protect best upon impact with solid ground. It is hypothesized that the Specialized helmet will work best in protecting the melon because of the type of foam, the alignment security of the outer shell, and the number of ventilation holes. The setup procedures were consistent but due to the weight of each helmet there were slight differences in the time it took to hit the pavement because of inconsistent weight.	
<b>Abstract</b> This project's goal is to determine which helmet materials protect best upon impact with solid ground. It is hypothesized that the Specialized helmet will work best in protecting the melon because of the type of foam, the alignment security of the outer shell, and the number of ventilation holes. The setup procedures were consistent but due to the weight of each helmet there were slight differences in the time it took to hit the pavement because of inconsistent weight.	
<b>Methods/Materials</b> There were three helmets in the comparison group: The Specialized mountain/road helmet, the Bell Rattler road helmet, and the Dynamic Back Trails Jr. BMX (Bicycle Motor Cross-) helmet. General materials included 3 helmets, 2 sacks of potatoes, a pillowcase, and a stop watch and tape measure. Procedures followed: place the melon inside the helmet and attach the potato-filled pillow sack to the bottom of the helmet with duct tape. Drop the melons and helmets out of the car window at 7 kilometers per hour. Then, record results on paper.	
<b>Results</b> The Mountain and Road helmets both received a score of 5 while the BMX helmet received a 4. Melon #1 and Melon #2 were both cracked down the middle. Unlike the other two melons, the Melon #3 (Dynamic Back Trails Jr.) received a score of with only a large bruise.	
<b>Conclusions/Discussion</b> These results indicate that even though the Specialized helmet was more expensive than the others, the least expensive helmet, the Dynamic Back Trails Jr. BMX helmet, essentially performed better offering more protection.	
<b>Summary Statement</b> This project tested the strength of helmets on an impact with the ground to see what type of helmet would protect the head the best in the event of an injury.	
<b>Help Received</b> My mother helped drive the car. My neighbor and my sister helped time the drop. My brother helped secure helmets. Specialized was able to donate 2 helmets for my testing and Bell donated an information packet.	