



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sahejvir S. Dhillon</b>	<b>Project Number</b> <b>J1208</b>
<b>Project Title</b> <b>Blood Flow Rate Debate</b>	
<b>Objectives/Goals</b> Which factor will affect the blood flow rate (viscosity levels) the greatest: water, whole milk, or mango juice in both a 1/4 in. and 3/8 in. diameter of tubing? How will the diameter (1/4 in. or 3/8 in.) of tubing affect the time of flow rate in a system like the human body.	
<b>Abstract</b> <b>Methods/Materials</b> In my experiment, I drilled two holes with different diameters in the bucket. I used two different sized valves and pipes to compare the flow of three different liquids (i.e. water, whole milk, mango juice etc.) that had different viscosity's. I filled the bucket with the different liquids one at a time to the same level each time, and then I conducted the experiment. I used a stopwatch to keep track of the time it took to fill up half of a measuring cup in each trial. I did five trials with two different sizes of valves and repeated the same number of trials for each liquid. From the data collected, I analyzed the affect of size and viscosity on the flow rate of different liquids.	
<b>Results</b> My initial data consisted of four tables and four graphs. The exact values showed the 1/4 inch valve#s blood flow rate and the other two tables and graphs showed the 3/8 inch valve#s blood flow rate. The trends that occurred in each of the graphs were that the order of the liquids always kept constant and was always in the order, water, mango juice, whole milk. In the end the results of the experiment showed that the liquid water was the fastest to flow and the least dense and that the 3/8 inch valve made the liquids flow faster.	
<b>Conclusions/Discussion</b> My hypothesis for this experiment was that the size of the arteries and the thickness of blood affect the flow rate of the blood. I am going to use a home-made model of the cardiovascular system made from a 5 gal. Gallon plastic bucket with 1/4 in. tubing on one side and 3/8 in. tubing on the other side which will measure different times and the 1/4 in. tubing will take more time to fill 1/2 of the measuring cup while the 3/8 in. will take less time to fill 1/2 of the measuring cup. I also predicted that water will flow easier than my other variable, whole milk and mango juice. My trial examples and graphs thoroughly support my scientific guess. There were many hardships during my project, but I managed to pull through and finish great. In conclusion, that the bigger the diameter of the artery and the thinner the blood, the better the flow of blood is. Blood Flow Rate Debate!	
<b>Summary Statement</b> The different factors that affect the blood flow in the human circulatory system.	
<b>Help Received</b> Father helped with timing during experiment.	