



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Patrick D. Webb</b>	<b>Project Number</b> <b>J0415</b>
<b>Project Title</b> <b>DNA: Whose Is Heavier?</b>	
<b>Objectives/Goals</b> The objective of my project is to determine which tested organism produces the most extractable DNA/RNA by weight. I believe that banana will produce the most extractable DNA/RNA, using my simple extraction method, because it is an organism that is neither too moist (meaning that it is not made of large amounts of liquid), nor too dry, and has good density.	
<b>Abstract</b> Ten various organisms, each measured out equally, were added to a blender containing 200ml of water and blended for 15 seconds to separate the cells. The mixture was then strained and a liquid detergent was added to open the cells and remove the membrane lipids. Cellular and histone proteins bound to the DNA/RNA were then removed by adding a protease (meat tenderizer). The DNA/RNA was then precipitated in cold isopropyl, and as DNA/RNA is insoluble in alcohol, it clings together. The DNA/RNA was then extracted from the layer of alcohol and allowed to dry on coffee filters. After drying, the extracted DNA/RNA was weighed on an electronic milligram scale.	
<b>Methods/Materials</b> Ten various organisms, each measured out equally, were added to a blender containing 200ml of water and blended for 15 seconds to separate the cells. The mixture was then strained and a liquid detergent was added to open the cells and remove the membrane lipids. Cellular and histone proteins bound to the DNA/RNA were then removed by adding a protease (meat tenderizer). The DNA/RNA was then precipitated in cold isopropyl, and as DNA/RNA is insoluble in alcohol, it clings together. The DNA/RNA was then extracted from the layer of alcohol and allowed to dry on coffee filters. After drying, the extracted DNA/RNA was weighed on an electronic milligram scale.	
<b>Results</b> In the end, chicken liver produced the most extractable DNA/RNA, beef liver produced the second most and banana produced the third most. Therefore disproving my hypothesis, since chicken liver did the best, and banana was the third best organism.	
<b>Conclusions/Discussion</b> My hypothesis was disproved, since chicken liver did the best, and banana was the third best organism tested. Since the two animal products worked the best, almost doubling some of the other tests, I can conclude that animal products work the best. There is much more to do in this field. For one thing, I could try seeing if different brands of the materials used affects DNA extraction. I could also try using different parts of the same organism to see if some parts work better than others for DNA extraction.	
<b>Summary Statement</b> Trying to find out what type of organism can provide the best source for DNA extraction.	
<b>Help Received</b> Father helped with experimental procedures; Mr. Gary Smith at Ukiah Waste Water Treatment Plant provided electronic milligram scale with instructions; Mother helped with displayed board.	