



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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Project Title Glove Wars	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine how the sterility of the economical medical grade exam gloves including latex, nitrile, and PVC vinyl compare to the six times more costly sterile surgical grade gloves and ungloved hands. I believe the exam gloves will show a significant amount of contamination and will compare more closely to an ungloved hand than to sterile surgical grade gloves. And therefore are not worth the up to 85% cost savings.</p> <p>Methods/Materials Nine unopened boxes of exam gloves (3 latex, 3 nitrile, and 3 PVC vinyl) and five pairs of sterile surgical grade gloves were obtained. Five randomly selected gloves obtained from various depths within each box were tested for a total of 45 gloves. Five sterile surgical gloves were also tested. In addition, 6 ungloved hands were tested, three freshly washed hands and three unwashed hands after handling everyday office equipment. Prepared sterile, nutrient LB agar plates were exposed by lightly pressing the fingertips of a gloved or ungloved hand to the agar. To prove initial sterility of the agar plates, one agar plate was left unexposed. All 57-test dishes were incubated inverted at 37 degree Celsius in a humidified CO(2) incubator for 72 hours. The dishes were examined and scored for contaminate colony growth and the findings evaluated.</p> <p>Results As expected, the sterile surgical grade gloves exhibited the lowest overall colony growth. The highest contaminate growth, with counts over 100, were regularly observed in the ungloved hands, both washed and unwashed and accounted for approximately 96% of all the colony growths seen. Of the three types of exam gloves tested, the latex and PVC vinyl gloves both consistently exhibited the lowest contamination with a mean of less than 1 growth per glove, each accounting for 0.5% of the total colony growths seen. The nitrile gloves# outcomes were varied, however, in general they showed a slight increase in contamination over the other gloves and constituted 3% of the total colony growth observed.</p> <p>Conclusions/Discussion My conclusion is that examination gloves compare closely in sterility to the pricey sterile surgical glove and are significantly cleaner than an ungloved hand even if that hand has just been washed. Therefore, I believe exam gloves are a safe, more economical, and eco-friendly choice for the exam room. Leave the surgical gloves in the surgical suite.</p>	
Summary Statement An extensive comparison of three types of bulk (non-sterile) examination gloves and (sterile) surgical grade gloves and how these gloves compare to ungloved hands, both washed and unwashed.	
Help Received Mother hot glued the frame of my two boards; Used lab equipment at Genesis Laboratories under the supervision of Dr. Clark.	