



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Sacha S. Del Bosque	Project Number J2107
Project Title Can a Smartphone Do Medical Imaging?	
Abstract Objectives/Goals The objective is to test a smartphone microscope and determine the best way to design a functional prototype with multiple applications centered around the prevention and detection of disease, illness, and environmental pollutants. Methods/Materials Smartphone with working camera, 1mm ball lens, circuit to illuminate slide, microscope slides with specimens, toilet paper tubes, and materials to draw a technical drawing. I tested two parts of a smartphone microscope, then used this information to design a functional prototype. Results There were two parts to my experiment, specimen illumination, and different sized objectives. The best illumination for a smartphone microscope is one small light bulb. The microscope is the most accurate when it is the closest to the slide. These questions had to be determined before the prototype could be designed. In my findings what would work best is a prototype designed like a microscope and phone case combined. This allows it to detach and attach for multiple uses. Conclusions/Discussion This prototype could enable doctors to diagnose and treat patients for blood borne diseases and other illnesses that can be seen through a microscope. Doctors and scientists can determine if there is an environmental pollutant in water, food, or soil that could be affecting health. My goal was to test and create a product that is inexpensive, easily accessible, and could do the above tasks. My experiment was successful.	
Summary Statement This project proposes a way to create a smartphone microscope, and introduces a prototype design that can be utilized as a solution to a lack of access to medical diagnostic facilities.	
Help Received I designed and tested the experiment myself. My mentor was Bonita Hamilton, she answered my questions, and gave moral support. My mother edited my report and assisted with my display board. My father bought my online supplies. My school lent me the microscope slides used to test my experiment.	