



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Deena R. Abuyounes	Project Number S1502
Project Title The Effects of Klinefelter's Syndrome on the Social Approach Behaviors in Mice: Year 2	
Abstract Objectives/Goals The XXY chromosome arrangement is the most common sex chromosome aneuploidy in humans and occurs as frequently as 1 in 500 to 1 in 1,000 male births. Many studies have been performed to find causes of KS, but not very many have been conducted on the social behaviors caused by Klinefelter's Syndrome. An experimental XXY mouse model which exhibits symptoms close to human KS has been developed to use in experiments. The experiment would observe social interactions and gender preferences in XXY mice and may lead to further findings in this field. Methods/Materials Fourteen adult XY and XXY male mice were studied and video recorded. An apparatus of three equal chambers was assembled. The test mouse could choose to enter any of the three chambers. Each testing took place in three 3-10 minute stages. For each of the three types of recordings, the first timed segment was a habituation process. In the second timed segment, either a stranger mouse was introduced to the left chamber and a stranger mouse, of opposite gender, to the right (from camera's perspective), or different male and female odors were introduced. In the last timed segment, either a stranger object replaced the stranger mouse on the left, or a different odor was introduced. Two observers blind to the karyotypes of the test mice observed the tapes and recorded the number of entries into each chamber, the time spent in each chamber, and the sniffing of each stranger object. Results XXY mice compared with XY mice spent more time initially in the chamber containing a male mouse but subsequently spent less time in the chamber that contained the female mouse. In addition, the XXY mice spent more time in the chamber containing a male mouse odor than a female mouse odor. The XXY mice also exhibited significantly reduced sniffing behavior to the stranger object. After testosterone implantation, the differences between the behaviors of the XXY mice and XY mice were greatly reduced. Conclusions/Discussion The social interactions of XXY mice with stranger mice are affected by the latter's gender (a difference not seen in XY mice). This data suggest a role for the X chromosome, or X-inactivation, in gender preference. In addition, testosterone has a large affect on the behaviors displayed in the XXY mice.	
Summary Statement This project focuses on the effects of testosterone on the social behaviors of mice with Klinefelter's Syndrome.	
Help Received Used lab equipment and animal subjects at UCLA Harbor/ LA BioMed endocrinology lab under the supervision of Dr. Yan He Lue	