

X/Y chromosome variations & Immune System Health

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How X/Y chromosome variations affect the Immune System Health

Subjects enrolled thus far	Numbers
<u>XX males</u>	
47, XXY	48
47, XXY/XY Mosaic	2
48, XYY	1
46, XY/46,XX Mosaic	1
XYY males: 47, XYY	2
XY males: 46, XY	119
X0 females: 45, X0	40
XX females: 46,XX	150
XXX females 47,XXX	3

**X Chromosome contains many genes
that can control our immune system**

The X chromosome in immune functions: when a chromosome makes the difference

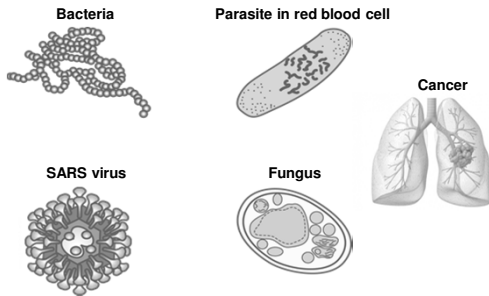
Claude Libert*, Lien Dejager and Iris Pinheiro*

Abstract | In response to various immune challenges, females show better survival than males; the X chromosome has an important role in this immunological advantage. X chromosome-linked diseases are usually restricted to males, who have only one copy of the X chromosome; however, females are more prone to autoimmune diseases, and the X chromosome may be involved in the breakdown of self tolerance. Several hypotheses have been proposed in recent years that support a role for the X chromosome in shaping autoimmune responses. Here, we review the main mechanisms responsible for increased immune activity in females. This provides a survival advantage in the face of pathogenic insult but can also enhance the susceptibility of females to autoimmunity.

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Libert et al (2010), Nature Review

Immune system fights against the invaders in the body



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The Immune system is a network of many immune cells and molecules

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We have found many immune changes in relation to X/Y variation

- **Alterations in**
 - memory T cells
 - Killer T cells
 - Cytokine producing cells
- **More production of undesirable ‘auto’antibodies, but no overt disease** [or you are not telling me the full story]

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Pitfalls with our study and how you can help

- **We need more people to enroll in the study, so we can be confident about the results.**
- **Control participants: We also need samples from XY and XX individuals who are, ideally, ‘matched’ for ethnicity and age+/- 5 years.**
- **Follow up study: If you gave blood sample previously, we need your sample again.**

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Implications of our study and Future Directions

- **Might provide explanation for unexplained symptoms that you may have.**
- **Might help in**
 - early diagnosis of immune related conditions,
 - proper use of vaccination against pathogens,
 - screening for autoimmune diseases, and
 - use of preventive strategies.

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X/Y chromosome variations & Immune System Health

You can enroll for this study, provide consent, & complete the Questionnaires at <https://ctq.ctrl.ucla.edu/ctq/login/>

We will then arrange for a blood sample to be drawn at your physician's office or at the next meeting.
You may contact us at:

uclastudies@yahoo.com
310-206-1883

UCLA Health **Thank You!!**
