X/Y chromosome variations & Immune System Health

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How X/Y chromosome variations affect the Immune System Health

<table>
<thead>
<tr>
<th>Subjects enrolled thus far</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XX males</strong></td>
<td></td>
</tr>
<tr>
<td>47, XXX</td>
<td>48</td>
</tr>
<tr>
<td>47, XXX/XY Mosaic</td>
<td>2</td>
</tr>
<tr>
<td>48, XXXY</td>
<td>1</td>
</tr>
<tr>
<td>46, XY/46,XX Mosaic</td>
<td>1</td>
</tr>
<tr>
<td><strong>XYY males: 47, XYY</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>XY males: 46, XY</strong></td>
<td>119</td>
</tr>
<tr>
<td><strong>X0 females: 45, X0</strong></td>
<td>40</td>
</tr>
<tr>
<td><strong>XX females: 46,XX</strong></td>
<td>150</td>
</tr>
<tr>
<td><strong>XXX females 47,XXX</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

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 Piehlein*

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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Immune system fights against the invaders in the body

Bacteria
Parasite in red blood cell
SARS virus
Fungus
Cancer

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

Leave blank

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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]

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.

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.
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

Thank You!!