RÉGION ACADÉMIQUE
PAYS DE LA LOIRE

MINISTÈRE
DE L'ÉDUCATION NATIONALE,
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

BACCALAUREAT GENERAL ET TECHNOLOGIQUE

EPREUVE SPECIFIQUE MENTION

« SECTION EUROPEENNE OU DE LANGUE ORIENTALE »

Académie de Nantes, binôme : Anglais/SVT

Thème 3 – Corps humain et santé

3-A – Le maintien de l'intégrité de l'organisme

Your Immune System Is Made, Not Born

Question 1. Comment upon Doc. 1 and Doc. 2.

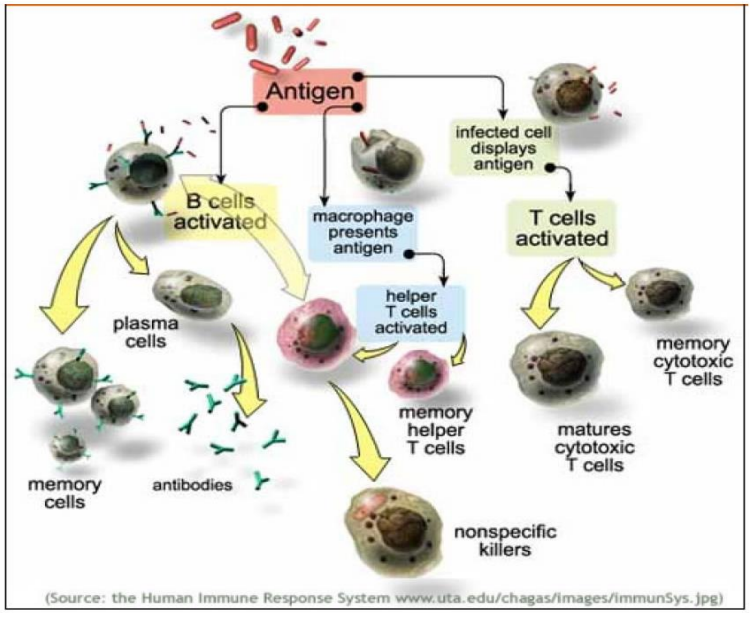
Question 2. Does the information in Doc. 3 corroborate the conclusions stated in the twins experiment?

Question 3. As immunity is influenced by our environment, how can we make our immune system more efficient?

Doc. 1. The twins experiment

Some people seem better than others at fighting the flu, and you might suspect they were born that way. A new study of twins, however, suggests otherwise. In one of the most comprehensive analyses of immune function performed to date, researchers analyzed blood samples from 105 sets of healthy twins. They measured immune cell populations and their chemical messengers—204 parameters in all—before and after participants received a flu shot. Differences in three fourths of these parameters depended less on genetics than on environmental factors, such as diet and prior infections. Genetics had almost no effect on how well individuals responded to the flu vaccine, judged by antibodies produced against the injected material. And among identical twin siblings, who have the same genome, immune system features differed more strikingly within older twin pairs than in younger sets. The findings argue that life habits and experiences shape our body's defenses more than the DNA passed down from our parents.

Esther Landhuis , scientificamerican.com, 2015



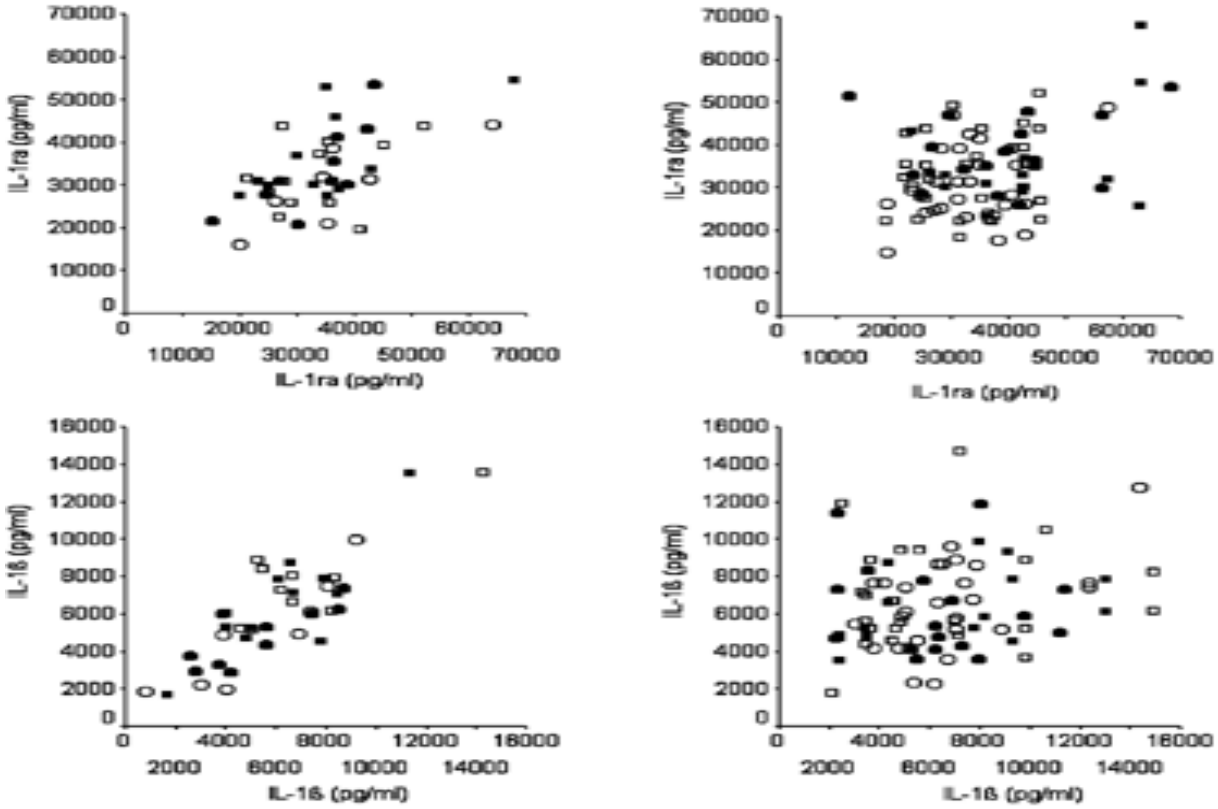
Doc. 2. Immune system cells

Doc. 3. Heritability estimates of innate immunity

Scatterplots of cytokine production capacity of all non-independent related pairs of family members, ordered across zygosity (monozygotic twins *vs* dizygotic twins or siblings). LPS-induced production capacity of IL-1, IL-1ra, IL-6, IL-10, and TNF*-.

http://www.nature.com/gene/journal/v6/n2/fig_tab/6364162f1.html#figure-title

*IL-1, IL-1ra, IL-6, IL-10, and TNF are all interleukins



Monozygotic twins dizygotic twins