SECTION PAPER 2, WEEK OF OCTOBER 21, 2013 last four id: 5494

Inhibition of TLR signaling by a bacterial protein containing immunoreceptor tyrosine-based inhibitory motifs
Yan, et al (2012) Nature Immunology 13(11):1063-1072

Instructions. READ CAREFULLY:

1. Use 1 inch margins all around.
2. Use Times 11 point font (single spaced; this page is written in Times 11 point with 1 inch margins).

   If you use any other font or size, you will receive 0 credit. It will be enforced.
3. 1½ page maximum (you can go ½ way down the second page; no more). Keep it to 1 page if you can. If you go two pages, keep the top line the same on both pages and staple them together.
4. Staple if you use two pages.
5. It is due in Section week of October 21.
6. At the top left side of the page type just as is: "SECTION PAPER 2, WEEK OF OCTOBER 21, 2013." Then next type the last four digits of your student ID at the top right corner of the page. I have done so above as an example. ***Do not write your name on the page.***
7. It is important, encouraged, and assumed that you will read and discuss these papers in your study groups. If we could make it mandatory, we would. Write up the answers, however, in your own words and with your own thoughts. Please don't copy each other.
8. Even though you will be answering questions to a few figure panels, be sure to read the entire paper as this is essential in helping you answer the questions.

Tips for understanding the paper:

Immunoreceptor tyrosine-based **activation** motif (**ITAM**) is a short amino acid sequence on the cytosolic tail of some immunoreceptor proteins (textbook page 103, figure 7-3). When the receptor binds its extracellular ligand, an intracellular kinase phosphorylates a tyrosine within the ITAM sequence. Subsequently, the phosphorylated ITAM binds to other intracellular proteins which initiate a signaling cascade, through the MAP kinase pathway(JNK, ERK, p38) or NKκB. Activation of these pathways results in synthesis of proinflammatory cytokines, including TNF and Il6.

Immunoreceptor tyrosine-based **inhibition** motif (**ITIM**) is a short amino acid sequence on the cytosolic tail of some receptors which negatively regulate the immune response. Upon ligand binding, the ITIM is phosphorylated by an intracellular kinase. Subsequently the phosphorylated ITIM binds to a phosphatase (SHP-1, SHP-2, or SHIP), which inhibits the signaling cascades described above. This will dampen the production of proinflammatory cytokines.

Questions to answer:

In three separate paragraphs, answer the following questions regarding Figures 4h-k, 7d-e, and 7j-k.

What experiment is done? Why are they doing it? How did they do it? What are they measuring? Explain the controls. What results did they see? How did they interpret the experiment? Do you agree that the data support their interpretations?