

ApoL2 and ApoL3 in the inflammasome pathway

When a host is infected by pathogen, PAMPS (pathogen associated molecular patterns) and DAMPS (damage associated molecular patterns) cause immune pathways get triggered. One of these pathways is the inflammasome pathway. There are two types of inflammasomes: the canonical and non-canonical. The main difference between the two is the caspases that they are activated by. The canonical inflammasome is dependent on caspase-1 while the non-canonical is dependent on caspase 4/5(in humans). My research project is based specifically on the non-canonical inflammasome pathway and the activation of the caspases through GBP proteins and apolipoproteins. I focus on two specific apolipoproteins: ApoL2 and ApoL3. The aim of the project is to investigate the function of ApoL2 and ApoL3 and whether they work in concert with GBPs.

Methods

- Cell culture
- Infect cells with Salmonella and LPS
- Lyse the cells.
- LDH assay to measure cell death.
- Perform Western blots with anti-APOL2 and anti APOL3 antibodies.
- siRNA to reduce the expression of APOL2 and measure the impact of infection.
 - o survival assay in bacteria
 - o classic inflammasome activation

Timeline

- Week 1: Preliminary reading and lab induction
- Week 2 and 3: Cell culture and Western Blots
- Week 4: Writing assignment
- Week 5 and 6 : siRNA experiment and write up of report