Inflammaging is a highly significant risk factor for both morbidity and mortality in the elderly, as most, (if not all), age-related diseases share some type of inflammatory response. One of the ways in which we can examine the extent of inflammaging is through the detection of increased inflammatory markers. These markers are protein molecules produced by our white blood cells, including monocytes. Although we know that the level of these inflammatory markers is associated with important health outcomes, much less is known about their impact at the cellular level, especially to the functionality of monocytes. I aim to understand the mechanism by which such inflammatory markers may alter the activity and regulation of monocytes at the DNA level, since they are effectively bathed in them. Specifically, I will study the epigenetic DNA methylation profile of human monocytes when they are grown in the lab and are chronically exposed to these markers. DNA methylation can respond to the environment and can essentially remain bound for a long period of time to persistently regulate the degree of which a gene is activated or not. Importantly, the methylation profile can act as a memory of what the cell is supposed to do and these effects can potentially last over the lifespan of a human being. So, by comparing the global methylation profile of monocytes grown in the presence versus the absence of inflammatory proteins, I hypothesize that we will see DNA methylation changes at in genes that are associated with regulating immune system functioning.

Themes:

Check (highlight) the most applicable theme according to the abstract.

- [ ] Innovation and Technology
- [ ] Health and Wellness
- [ ] Culture and Society
- [ ] Sustainability and Conservation

Comments:

There is lots of great content here. Some minor rewording has been suggested (above) for increased fluency and impact. Note: Should to provide a definition for key term used in the opening sentence, 'inflammaging'. Also: Perhaps consider a title change, including a few words to explain the human impact of this research, e.g. “Understanding how inflammatory responses alter white blood cell function: DNA Methylation Patterns...”