TCS/20/10 - The Immunology of Alopecia Areata: How do Macrophages Contribute to Hair Loss?

Alopecia areata (AA) is a common condition in which the immune system, which normally protects against infection, kills cells at the base of hair follicles. This causes patchy hair loss, which can progress to affect the entire scalp or the whole body. Available treatments for AA may be effective for those with patchy hair loss, but are rarely effective for severe disease, although clinical trials are now testing drugs that supress the immune system. To investigate AA we established a dedicated research clinic, in association with the charity Alopecia UK. This clinic provides samples that are used in my laboratory, however the majority of samples are stored in a Biobank and are accessible to other researchers. Using the samples from volunteers with AA we have shown that the immune system in the entire body is changed in people with AA. Our most recent results show that, in AA skin, immune cells called macrophages function differently than macrophages in healthy skin. These macrophages are located around the hair follicle, very close to the other immune cells that have previously been shown to contribute to AA. Because macrophages are important for controlling normal hair growth, and because they are known to control other immune cells, we here aim to investigate AA macrophages in more detail. By targeting the macrophages that control the hair-damaging immune response, we hope to develop new strategies for treating AA.