ETIMSred

Establishing immune tolerance in multiple sclerosis with peptide-coupled red blood cells
ETIMSred is a Wyss Zurich Project
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With approximately 2.5 million patients worldwide, Multiple Sclerosis (MS) is one of the most common causes of permanent neurological disability in young adults.

It is a chronic autoimmune disease that induces severe inflammation within the central nervous system, causing a wide variety of symptoms, including loss of balance, extreme fatigue and blurred vision. The symptoms occur when immune cells mistakenly destroy myelin, the protective covering surrounding the nerve cells in the brain and spinal cord.

So far, there is no cure for MS. Current treatments only reduce disease relapses and carry the risk of severe side effects caused by inhibiting the patient’s immune system. What is needed is a long-lasting therapy, which will specifically target the harmful autoimmune response without affecting the rest of the immune system.

A team led by Professor Roland Martin already developed an innovative therapy known as ETIMS (Establish Tolerance in MS). This therapy employs the patient’s white blood cells and chemically couples them with myelin peptides. These altered blood cells now target the immune cells responsible for the inflammation and stop the autoimmune process by educating the immune system to tolerate structures such as myelin. This approach has been successfully tested in a first-in-man trial in MS patients.

With the ETIMSred project, the Wyss Zurich team is now advancing this therapy further by using red instead of white blood cells to induce immune tolerance. Since it is easier to collect a high number of red blood cells from patients, this approach will substantially improve the feasibility of the treatment and enable its widespread application. Treatment efficacy will probably be also improved. The key objective of the ETIMSred project is to establish the safety, tolerability and efficacy of this new approach in a phase I/II clinical trial in MS patients.