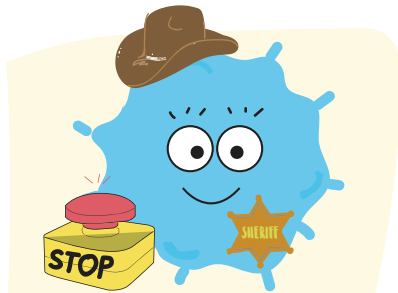
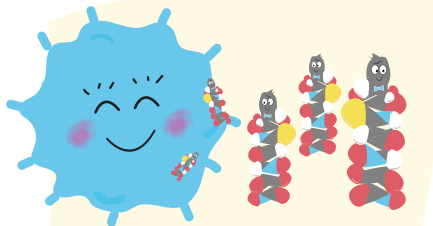


## Fighting Autoimmunity and Cancer: The Nutritional Key



Regulatory T cells (Tregs) are a specific type of white blood cells that act as a 'brake' on our immune system, keeping it in check.



Tregs produce high levels of a powerful detox molecule called glutathione.



To understand how glutathione allows them to do their job, LIH researchers engineered Tregs that cannot produce it...



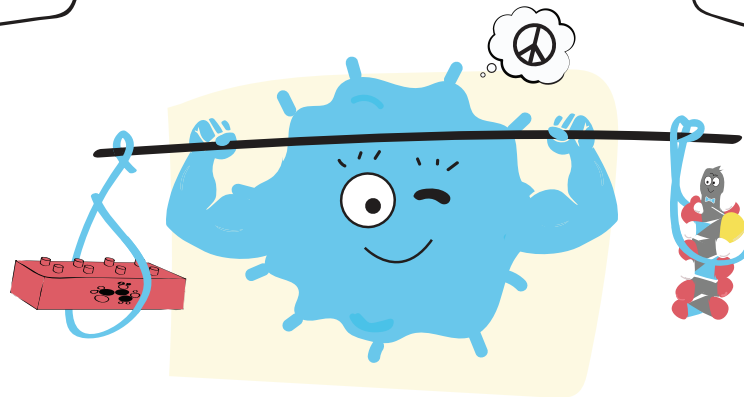
...and discovered that these modified Tregs could no longer keep the immune system under control. This caused the immune system to overreact and attack the cells of its own body! This is known as an 'autoimmune' reaction.



The entire metabolism became more active in Tregs that cannot produce glutathione. They especially consumed more serine, one of the 'building blocks' of proteins.



The scientists designed a special 'serine-free' diet to correct this excessive serine metabolism. Thanks to this nutritional plan specifically adapted to the metabolic abnormalities, they managed to completely cure the autoimmune condition!



But a highly reactive immune system is actually great for killing cancer cells. The scientists showed that low glutathione in Tregs boosted the immune system for a more efficient attack on cancer cells. The balance between glutathione and serine is therefore essential for Tregs to juggle their autoimmunity and anti-cancer activities.

Understanding the metabolic mechanisms that 'switch' immune cells ON and OFF could make it possible to cure autoimmune and metabolic diseases through specially-tailored diets and to develop new cancer immunotherapies.