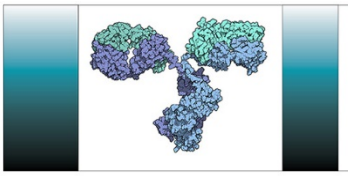

Research Highlight

Gut *Helicobacter* bacteria can drive homeostatic or inflammatory T cell responses

Most of the trillions of bacteria that reside in the gut provide important beneficial functions. However, inappropriate immune responses against these bacteria can spur problems like colitis, ulcers, and cancer. Whether certain bacteria elicit tolerance or immunopathology depends on the T cell responses induced by that bacteria.

Using a mouse model of colitis Dr. Chyi-Song Hsieh and his colleagues from Washington University and MIT determined that *Helicobacter* ssp. are strong inducers of T cell responses during both homeostasis and colitis. In healthy mice *Helicobacter* ssp. was found to induce regulatory T cell differentiation which helps to maintain homeostasis. To the authors surprise, *Helicobacter* ssp. specific naïve T cells differentiated into inflammatory effector T cells as opposed to regulatory T cells in colitic mice.

Taking this a step further, the authors found that the *Helicobacter* ssp. specific effector T cells were able to induce immunopathology and colonic inflammation in immunodeficient mice. Overall, this study suggests that certain mucosal bacteria can induce tolerance via the differentiation of helpful regulatory T cells or inflammation via the differentiation of harmful effector T cells depending on the mucosal environment.

The authors used Bio X Cell's anti-mouse IL-10R antibody (clone 1B1.3A) to induce colitis *in vivo* and anti-mouse MHC II (clone M5/114) to block TCR activation *in vitro*. Additionally, anti-mouse CD3 (clone 145-2C11), CD28 (clone 37.51), TGFβ (clone 1D11.16.8), IFNγ (clone R4-6A2), IL-4 (clone 11B11), and IL-12 (clone R1-5D9) antibodies were used to activate transgenic T cells *in vitro*.

Read the full article in Science Immunology: http://immunology.sciencemag.org/content/2/13/eaal5068