

# Scientists uncover two micro mechanisms that regulate immune system

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A Keck Medicine of USC-led team of microbiologists has identified previously unknown interactions between critical proteins in the human immune response system, uncovering two independent regulatory mechanisms that keep the body's immune response in check. Their findings appear in the February 2014 edition of *Cell Host & Microbe*, the top peer-reviewed scientific journal that focuses on the study of cell-pathogen interaction.

"The body's response to infection consists of a complex network of biological processes set off by the intrusion of disease-causing microbes," said Qiming Liang, Ph.D., USC post-doctoral fellow and study co-author. "This is a powerful response that needs precise regulation to ensure that the host body is not harmed after the pathogen is destroyed."

For this reason, the authors suggest that it is just as important to know what stops the body's [immune response](#) as what activates it. Scientists do not yet fully understand this regulatory mechanism and continue to study it in hopes of harnessing its power to cure disease.

"We report that the direct interaction between the cGAS DNA sensor and the Beclin-1 autophagy protein shapes innate immune responses by regulating both the production of the cGAMP molecule and the process that destructs the microbial DNA," said Gil Ju Seo, Ph.D., post-doctoral fellow and study co-author. "This is significant because the cGAMP molecule signals the production of inflammatory cytokines, which kill

viruses and bacteria but can also harm the body if uncontrolled."

Provided by University of Southern California

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