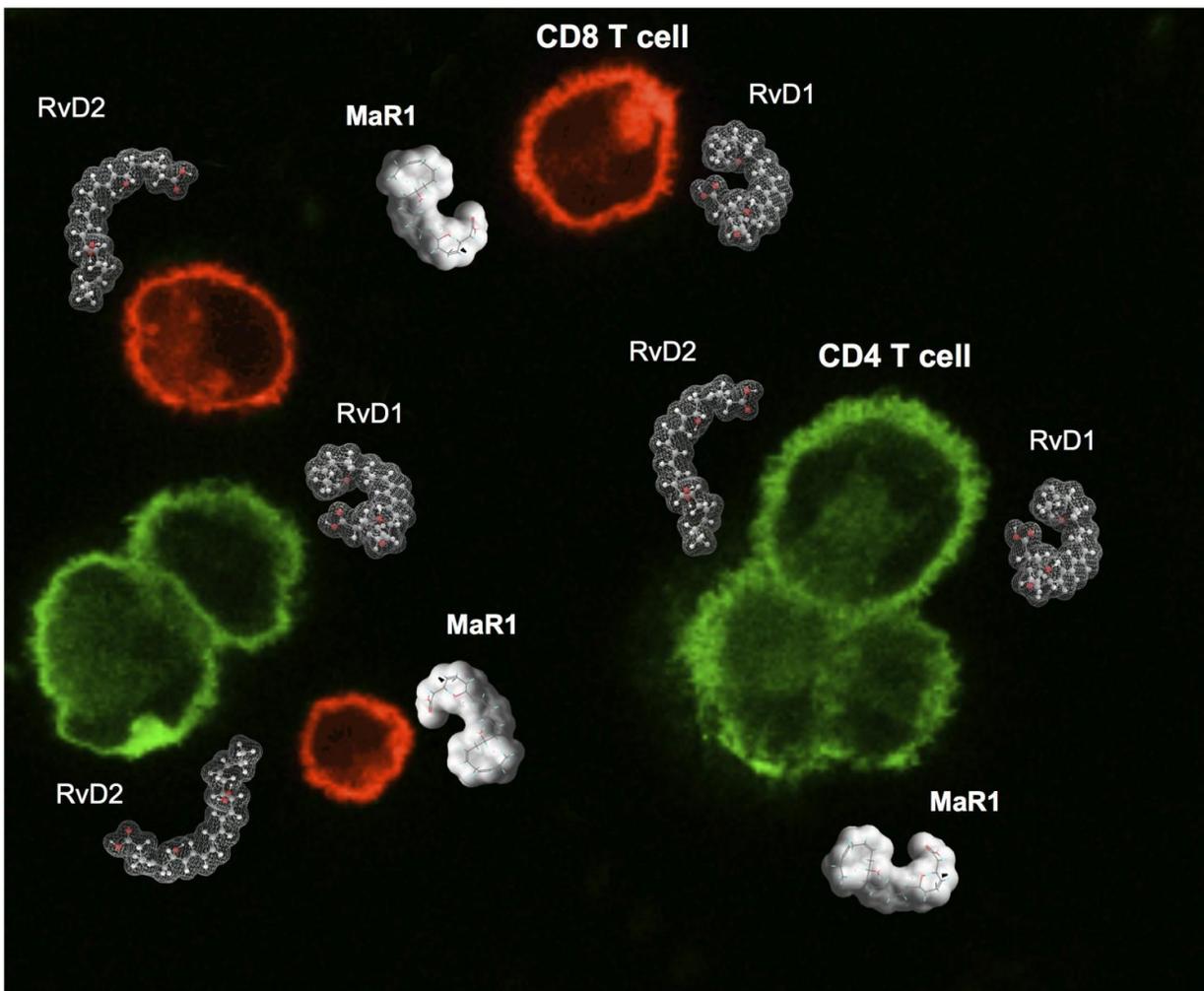


New class of molecules play key role in influencing the immune system

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Proresolving lipid mediators – resolvin D1 (RvD1), resolvin D2 (RvD2), and maresin 1 (MaR1) – modulate T cell responses. Credit: Valerio Chiurchiu et al., Science Translational Medicine (2016)

In a study published online this week in *Science Translational Medicine*, investigators from Brigham and Women's Hospital and the Santa Lucia Foundation in Rome report that resolvins and maresins, molecules produced in the body naturally from certain omega-3 fatty acids, regulate subsets of white blood cells that play a central role in inflammation and the immune system. The new findings suggest that resolvins and maresins are part of a new class of molecules that may be useful for treating chronic inflammatory and autoimmune diseases.

Resolvins and maresins, first discovered by Charles N. Serhan, PhD, director of the Center for Experimental Therapeutics and Reperfusion Injury at BWH, are critical to terminate and resolve acute inflammation. Uncontrolled inflammation or failure to resolve inflammation can lead to several chronic inflammatory and autoimmune diseases.

In the newly published work, the team examined the roles of two resolvins and one maresin in human blood lymphocytes, finding that they reduced the activation and prevented the differentiation of two types of pathogenic [white blood cells](#), Th1 and Th17 cells. The team also found that these molecules could regulate Treg cells, a separate subset of cells that can tamp down the immune response. The team further verified these results in a mouse model deficient in these molecules. Together, these discoveries suggest that pro-resolving lipid mediators influence the balance between pathogenic Th1/Th17 and tolerogenic Treg cells, a balance that is typically altered during chronic inflammatory and [autoimmune diseases](#).

The team proposes that these pro-resolving lipid mediators may prove effective as potent anti-inflammatories by targeting those key cells responsible for triggering chronic inflammation or autoimmunity.

"It is now widely appreciated that uncontrolled inflammation is integral to many human diseases including neurodegenerative diseases,

cardiovascular diseases as well as [chronic inflammatory disease](#)," said Serhan. "The results of this study now provide the ground work to appreciate the role of resolvins, and potentially other novel pro-resolving mediators, in the immune system. Armed with the results of this collaboration, we and other investigators can now consider new treatments and therapeutic strategies for translating these findings with pro-resolving mediators to human health and many diseases."

More information: "Proresolving lipid mediators resolvin D1, resolvin D2, and maresin 1 are critical in modulating T cell responses," *Science Translational Medicine*, [stm.sciencemag.org/lookup/doi/ ... scitranslmed.aaf7483](http://stm.sciencemag.org/lookup/doi/10.1126/scitranslmed.aaf7483)

Provided by Brigham and Women's Hospital

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