Chemical signal can make it easier to personalize medication

June 23 2016

Common diseases like allergy, diabetes and other immune diseases have increased dramatically in recent decades. This indicates that the environment may have a more important role than genes in explaining this increase.

An international research team led by the Centre for personalized medicine at Linköping University has therefore searched for possible non-genetic causes of common immune diseases. They examined the chemical signals that regulate how DNA is converted into protein.

In the study, published in *Cell Reports*, they found that a signal called hydroxymetylcytosine (HMC) was in many regions of DNA with genetic changes associated with several immune diseases. HMC is easily measured in samples from patients.

Associate Professor Colm Nestor, who led the study also suggests that HMC may be used diagnostically to detect disease and to personalize medication. PhD Student, Antonio Lentini, also points out that from a broader perspective, HMC provides a link between how genes and environment interact to cause disease.

More information: 5-hydroxymethylcytosine remodeling precedes lineage specification during differentiation of human CD4+ T-cells. Colm Eamonn Nestor, Linköping University, Antonio Lentini, Cathrine Hägg Nilsson, Danuta Gawel, Mika Gustafsson, Lina Mattson, Hui Wang, Olof Rundquist, Richard R. Meehan, Bernward Klocke, Martin

Seifert, Stefanie M. Hauck, Helmut Laumen, Huan Zhang, Mikael Benson, *Cell Reports* 2016.