



Technology Opportunity

Ref. No. IRBP012

Title PEPTIDE INHIBITORS TARGETING THE CXCL-12/HMGB1 INTERACTION AND USES THEREOF

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Invention The present technology opportunity provides novel peptides binding to HMGB1 and inhibiting the interaction of HMGB1 and CXCL12. The peptides can be exploited for preventing and/or treating inflammation and/or an immune-related diseases.

Background Chemokines are key regulators of leukocyte migration and play fundamental roles in physiological and pathological immune responses. During inflammatory reactions, the production and release of chemotactic factors guide the recruitment of selective leukocyte subpopulations. HMGB1 and CXCL12 are both released in the microenvironment and can form a heterocomplex, which exclusively acts on the chemokine receptor CXCR4, enhancing cell migration, thus potentially exacerbating the immune response. The CXCL12/HMGB1 heterocomplex has been shown to be crucial in Rheumatoid arthritis. An excessive cell influx at the inflammatory site can be diminished by disrupting this heterocomplex. To date, despite the importance of this target, only few low affinity inhibitors (glycyrrhizin, salicylic acid) of the CXCL12/HMGB1 interaction have been described.

Advantages Disruption of the heterocomplex, leaves CXCR4 available to be triggered by CXCL12. This is fundamental for preserving its physiological activities, while inhibiting fueling of inflammation.

Field of Use The peptides are useful in the treatment of inflammation or immune-related diseases.

Patent Status patent pending, publication number WO/2020/188110

Keyword HMGB1, CXCL12, CXCR4 receptor, chemokines, inflammation, inhibition, Rheumatoid arthritis

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<https://www.irb.usi.ch/chemokines-in-immunity/>