Max-Planck-Innovation

Technology Offer

Max-Planck-Innovation GmbH
Amalienstr. 33
80799 Munich
Germany

Phone: +49 (89) 29 09 19 - 0
Fax: +49 (89) 29 09 19 - 99
info@max-planck-innovation.de
www.max-planck-innovation.de

Novel target to suppress autoantibody generation

MZB1, a GRP94 co-chaperone, governs autoantibody secretion in “innate-like” B-cells

File no.: MI-0106-3865-LI-JK

Contact:
Dr. Dieter Link
Tel.: 089 / 290919-28
Dieter.Link@max-planck-innovation.de

Background

Specific subsets of B cells are very likely to play an important role in autoimmune diseases such as psoriasis, arthritis, diabetes mellitus and multiple sclerosis.
The marginal zone (MZ) and B1 subsets of B cells, which differ from conventional follicular B cells both developmentally and functionally, are known to be critical for an early response to several infectious pathogens and are thought to act in the early-induced immune response (“innate-like”). Furthermore, MZ and B1 B cells are critical for T-cell-independent immune responses, react rapidly to certain antigens and secrete so called “natural antibodies”. These antibodies are serum polyreactive and to some extent autoreactive.

Technology

Researchers at the Max-Planck-Institute of Immunobiology and Epigenetics identified and characterized a new protein, MZB1 (sometimes also named pERp1 or PACAP), that contributes to the proper maturation of immunoglobulin heavy chains (HCs). *Mzb1* is abundantly expressed in MZ and B1 B cells, is localized in the endoplasmic reticulum (ER) and regulates antibody secretion, calcium homeostasis and integrin-mediated cell adhesion (1).
In particular, MZB1 function is required under conditions of ER stress that occurs naturally during plasma cell differentiation and under conditions of DNA damage. On the molecular level, MZB1 interacts with the chaperon GRP94 and functions as a substrate-specific co-chaperone that enables proper folding of immunoglobulin µHCs (2).
It could be shown by in vitro and in vivo knock-down assays and siRNA-mediated inhibition that blocking MZB1 function prevents secretion of autoantibodies. Since these antibodies constitute one of the major causative agents for several autoimmune diseases, blocking their secretion is a promising approach to ameliorate the symptoms of these daunting diseases.

Licensing Information

Rights to the technology to screen for MZB1-inhibitors as well as rights to use inhibitors to prepare a pharmaceutical composition in order to treat an autoimmune disease, are available.

Patent Information

Priority application was filed 03/2008. EP has been issued 07/2014 (CH,DE,FR,GB,IT). US application is pending.

Literature

(1) Flach et al., Immunity 33, 723.735.
(2) Rosenbaum et al., Genes & Development 28, 1165-1178.