Cell Communication and Signaling BioMed Central

Meeting abstract

Open Access

The immunoglobulin tail tyrosine of membrane-bound IgG and IgE provides antigen receptor-intrinsic costimulation to class-switched memory B cells

N Engels*[1], L König[1], C Heemann[1], T Tsubata[2], S Griep[1], V Schrader[1] and J Wienands[1]

Address: [1]Georg-August-University, Institute of Cellular and Molecular Immunology, Göttingen, Germany and [2]Tokyo Medical and Dental University, Laboratory of Immunology, Tokyo, Japan, Germany

* Corresponding author

from 12th Joint Meeting of the Signal Transduction Society (STS). Signal Transduction: Receptors, Mediators and Genes
Weimar, Germany. 29–31 October 2008

Published: 26 February 2009

Cell Communication and Signaling 2009, **7**(Suppl 1):A74 doi:10.1186/1478-811X-7-S1-A74

This abstract is available from: http://www.biosignaling.com/content/7/S1/A74

© 2009 Engels et al; licensee BioMed Central Ltd.

Improved antibody responses by class-switched memory B cells require enhanced signaling from their antigen receptor (BCR) in a coreceptor-independent manner. However, all BCR classes on newly generated and antigen-experienced B cells utilize the canonical Igα/Igβ subunit for signaling via the immunoreceptor tyrosine-based activation motif (ITAM) in their cytoplasmic domains. We have now identified the signal amplification mechanism of the activated IgG- and IgE-BCR on class-switched B cells. An evolutionary conserved tyrosine residue in the cytoplasmic segments of membrane-bound IgG and IgE heavy chains, named Immunoglobulin Tail Tyrosine (ITT), becomes phosphorylated and recruits the adaptor protein Grb2 in order to prolong activation of protein kinases and sustain the generation of second messengers. Exchange of the ITT for phenylalanine phenocopies the reduced signaling profile of the IgM-BCR expressed on naïve B cells. Hence membrane-bound IgG and IgE not only recognize antigen but also exert BCR-intrinsic costimulation to render memory B cells less dependent on T cell help for activation. Moreover, our finding of a signaling competent phospho-ITT confutes the paradigm of BCR tyrosine phosphorylation being confined to ITAM-containing subunits.