



Deposited via The University of Leeds.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/144381/>

Version: Submitted Version

Proceedings Paper:

El-Sherbiny, Y, Md Yusof, MY, Hensor, E et al. (2016) Surface Tetherin Is A Novel Cell-Specific Biomarker for Interferon Response in Systemic Lupus Erythematosus. In: Annals of the Rheumatic Diseases. Annual European Congress of Rheumatology: EULAR 2016, 08-11 Jun 2016, London, UK. BMJ Publishing Group. Article no: FR10308, p. 546. ISSN: 0003-4967. EISSN: 1468-2060.

<https://doi.org/10.1136/annrheumdis-2016-eular.6052>

© 2016, Published by the BMJ Publishing Group Limited. This is an author accepted version of an abstract published in Annals of the Rheumatic Diseases. Uploaded in accordance with the publisher's self-archiving policy.

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

Medical or Research Professionals/Clinicians

Topic area: Clinical topics by disease

Topic: 17. SLE, Sjögren's and APS - clinical aspects (other than treatment)

EULAR16-6052

SURFACE TETHERIN IS A NOVEL CELL-SPECIFIC BIOMARKER FOR INTERFERON RESPONSE IN SYSTEMIC LUPUS ERYTHEMATOSUS

Y. El-Sherbiny^{1,2}, M. Y. Md Yusof^{1,2}, E. Hensor^{1,2}, M. Wittmann^{1,2}, P. Emery^{1,2}, E. Vital^{1,2}

¹Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, ²NIHR Leeds Biomedical Research Unit, Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

My abstract has been or will be presented at a scientific meeting during a 12 months period prior to EULAR 2016:

Yes

Abstract presented or will be presented at (meeting): EWRR2016

Is the first author applying for a travel bursary and/or an award for undergraduate medical students?: No

Background: Type I interferons (IFN-I) have diverse effects on immune cell populations in SLE, Measuring IFN-I response using PBMCs or whole blood interferon-stimulated gene (ISG) expression does not completely explain clinical features of SLE and IFN blocking therapy. Furthermore, the proportions of cell populations in blood altered with disease activity. Bone marrow stromal antigen 2/Tetherin (BST2), is a cell surface protein eminent in viral immunology as interferon-induced viral restricting molecule expressed on most circulating leucocytes.

Objectives: To develop a cell-specific IFN-I assay

Methods: PBMCs were collected from 133 SLE patients and 19 healthy controls. Disease activity was measured using BILAG-2004. PBMCs were analysed by flow cytometry for cell surface BST2 protein on each immune cell subset. Cells were FACS-sorted into naïve and memory B-cells, plasmablasts, CD3+ T-cells, NK-cells and monocytes in 12 SLE patients and 16 healthy controls. Expression of *BST2*, as well as 32 other ISGs, were measured using qPCR and a 33-gene IFN score calculated.

Results: Analysis of sorted cells confirmed that surface BST2 is a valid cell-specific IFN assay. *BST2* expression correlated with BST2 surface protein within each immune subset: naïve B-cells ($r=0.63$, $p=0.009$); memory B-cells ($r=0.78$, $p<0.001$); plasmablasts ($r=0.58$, $p=0.018$); NK cells ($r=0.63$, $p=0.008$); T-cells ($r=0.61$, $p=0.012$); monocytes ($r=0.47$, $p=0.064$).

We next used surface BST2 to compare IFN activity of each subset with clinical features in 133 patients. A strong correlation between the PBMC 33-gene IFN score and surface BST2 was found for each cell subset (all $p<0.001$) confirming validity of BST2 as a biomarker.

BST2 was significantly higher in SLE than HC on naïve and memory B-cells ($p=0.004$, $p=0.003$), plasmablasts ($p=0.047$), T cells ($p=0.043$), but not different on monocytes ($p=0.406$).

Association of total BILAG score with BST2 on naïve and memory B-cells (Tau-a = 0.23 and 0.22 respectively) was substantive and approximately twice as strong as monocytes and T-cells (Tau-a = 0.12 and 0.14). A similar pattern was seen for anti-dsDNA titre, with no association with monocyte BST-2 (Tau-a = 0.07) but a substantive association for memory B cell BST-2 (Tau-a = 0.18).

Conclusions: IFN-I response differs in cell subsets. This can be measured in a fast, cost-effective, convenient assay using flow cytometric analysis of surface BST2. Our results show that IFN activity measured on B cells is more clinically relevant than on other cell populations.

Disclosure of Interest: None declared