BONE MARROW MESENCHYMAL STEM CELLS FROM B CELLS FROM SLE PATIENTS HAVE INCREASED LUPUS AUTOANTIGENIC RESPONSES: AN INTRAVITRO STUDY

**Background**: We have previously shown that SLE BMSCs exhibit increased mRNA expression of IFNα/β/ω- and ISG15, which are produced by macrophages in response to type I IFN. This work investigated novel mechanisms of endogenous production and autocrine activity of IFNβ in SLE BMSCs.

**Methods**: IFNβ in BMSCs was analyzed using TNFα-secreting cell-based assay. Intracellular IFNβ expression was visualized and analyzed by super-resolution confocal imaging and ImageStream analysis. Single cell gene expression analysis was carried out using Fluidigm Biomark platform.

**Results**: BMSCs from SLE patients were analyzed using this methodology. Intracellular IFNβ expression was significantly increased in SLE BMSCs compared to controls.

**Conclusion**: Increased type I interferon (IFN) has been shown to affect survival and activation of B cells in SLE. This study investigated novel mechanisms of endogenous production and autocrine activity of IFNβ in SLE BMSCs.

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**B CELLS FROM SLE PATIENTS HAVE INCREASED ENDODGENOUS PRODUCTION OF IFNβ WHICH IS STIMULATED BY BCR SIGNALING AND IS REQUIRED FOR SURVIVAL OF AUTOACTIVE B CELLS**

**Background**: Increased type I interferon (IFN) has been shown to affect survival and activation of B cells in SLE. This study investigated novel mechanisms of IFNβ production and autocrine activity of IFNβ in SLE B cells.

**Methods**: IFNβ in B cells from SLE patients was analyzed using single-cell gene expression analysis. Intracellular IFNβ expression was visualized and analyzed by super-resolution confocal imaging and ImageStream analysis. Single cell gene expression analysis was carried out using Fluidigm Biomark platform.

**Results**: High-dimensional flow cytometry analysis identified intracellular IFNβ expression in pDCs, B cells, and CD4+ T cells. B-cell endogenous IFNβ was required for optimal in vitro BCR and TLR7-induced activation and survival of B cells. Using a Fluidigm targeted-gene approach, B cells could be divided into type I IFN expressing (IFN+) or type II IFN stimulated (ISG+) subpopulations, suggesting B cells not only respond to type I IFNs but also express type I IFNs in B cells.

**Conclusion**: Increased type I interferon (IFN) has been shown to affect survival and activation of B cells in SLE. This study investigated novel mechanisms of endogenous production and autocrine activity of IFNβ in SLE B cells.

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