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RESEARCH AREA

In mice, the targeted absence of Nkx2-3 induces a number of morphological changes, mainly in the vascular pattern of the red pulp and the marginal zone. Previous research publications have described the emergence of ectopic HEV-like postcapillary venules and ectopic lymphatic vessels isolated from the systemic circulation, which show an anti-LYVE-1 positive reaction in the absence of the transcription factor Prox1.

At present, it is not clear which vascular-forming cells are affected in the modified vascular patterning, nor is it known exactly what role ectopic lymphatic vessels play in the lymphocyte migration of mutant spleens. The aim of this study is to characterise in detail the process of lymphocyte migration in the spleens of Nkx2-3-deficient mice using immunological methods and to investigate the effects of Nkx2-3 deficiency on endothelial cells.

TECHNIQUES AVAILABLE IN THE LAB

The primary research activity of our team focuses on the developmental biology of non-hematopoietic stromal constituents of peripheral lymphoid organs in mouse models. In this work we use the following methodologies:

- Immunohistology (immunohistochemistry, multiple label immunofluorescence, whole-mount labeling)
- Flow cytometry, cell separation, (MACS, FACS)
- Monoclonal antibody production (rat, mouse), immunochemistry (antibody purification, conjugation)
- Immunoassay development
- Animal models, hematopoietic chimeras (allogenic, xenogenic, humanization)
- In vitro cell- and tissue culture, cell tracing

SELECTED PUBLICATIONS

Kellermayer, Z., Vojkovics, D., Dakah, TA., Bodó, K., Botz, B., Helyes, Z., Berta, G., Kajtár, B., Schippers, A., Wagner, N., Scotto, L., O'Connor, OA., Arnold, HH., **Balogh, P.** (2019) IL-22-Independent Protection from Colitis in the Absence of Nkx2.3 Transcription Factor in Mice. **J Immunol 202:** 1833-1844.

Jia, X., Bene, J., Balázs, N., Szabó, K., Berta, G., Herczeg, R., Gyenesei, A., **Balogh, P.** (2022) Age-Associated B Cell Features of the Murine High-Grade B Cell Lymphoma Bc.DLFL1 and Its Extranodal Expansion in Abdominal Adipose Tissues. **J Immunol 280:** 2866-2876.

Gábris, F., Kiss, G., Szirmay, B., Szomor, Á., Berta, G., Jakus, Z., Kellermayer, Z., **Balogh, P.** (2023) Absence of Nkx2-3 induces ectopic lymphatic endothelial differentiation associated with impaired extramedullary stress hematopoiesis in the spleen. **Front Cell Dev Biol 11:** 1170389.

Vojkovics, D., Kellermayer, Z., Gábris, F., Schippers, A., Wagner, N., Berta, G., Farkas, K., **Balogh, P.** (2019) Differential Effects of the Absence of Nkx2-3 and MAdCAM-1 on the Distribution of Intestinal Type 3 Innate Lymphoid Cells and Postnatal SILT Formation in Mice. **Front Immunol 10:** 366.

Jia, X., Gábris, F., Jacobsen, Ó., Bedics, G., Botz, B., Helyes, Z., Kellermayer, Z., Vojkovics, D., Berta, G., Nagy, N., Jakus, Z., **Balogh, P.** (2020) Foliate Lymphoid Aggregates as Novel Forms of Serous Lymphocyte Entry Sites of Peritoneal B Cells and High-Grade B Cell Lymphomas. **J Immunol 204:** 23-36.