WWTF Project LS18-013

A novel macrophage precursor in adult bone marrow

Abstract

Macrophages are key regulators of tissue homeostasis as well as inflammatory and neoplastic processes. Under disease conditions in adult organisms, macrophages are generally considered to arise from recruited inflammatory monocytes. In preliminary work we have identified a novel macrophage precursor (MacP) in adult mouse bone marrow, which is unrelated to the classical monocyte lineage and gives rise to specific subsets of long-lived macrophages in diseased tissues. MacP resemble yolk-sac derived erythroid-myeloid progenitors (EMP), the known embryonic precursors of tissue-resident macrophages. Our data therefore challenge a classical paradigm of haematopoiesis, which stipulates an obligatory linear monocyte-macrophage precursor relationship in inflammation and cancer. The principal goal of this application is to characterise the biology of MacP and to uncover their role in disease progression. Aim 1. To define the functional and developmental characteristics of MacP Aim 2. To determine the transcriptional profile of MacP and their progeny in comparison to defined myeloid progenitors and macrophages Aim 3. To determine the role of MacP in a model of breast cancer progression Aim 4. To identify and functionally characterize MacP in human bone marrow and blood We propose an entirely new pathway of macrophage generation in the adult. Understanding the new precursor will aid the development of therapies against inflammatory and cancerous conditions.

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301902 - Immunology (60%) | 302024 - Haematology (20%) | 301904 - Cancer research (20%)

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Further links about the involved persons and regarding the project you can find at
https://archiv.wwtf.at/programmes/life_sciences/LS18-013