Technology Offer

Monoclonal Antibody to Detect Neutrophil Extracellular Traps via a Novel Post Translational Histone Modification

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A novel tool to detect and quantify NETs using a molecular feature of NET formation that has never been proposed as a marker for NETs before

Background

The formation of Neutrophil Extracellular Traps (NETs) represents an anti-microbial response by the innate immune system in mammals that is dedicated to confine invading microbes. Different stimuli trigger neutrophils to release their anti-microbial proteins and the neutrophil's own DNA into the extracellular space, a process called NETosis. In a number of non-infection related diseases, such as Rheumatoid Arthritis or Systemic Lupus Erythematodes, the dysregulation of NET formation has been observed [1].

Technology

Researchers of the Max-Planck-Institute for Infection Biology, Prof. Zychlinsky and his team from the Department of Cellular Microbiology, have developed a novel tool to detect and quantify NETs. They realized that histone H3 cleavage (or clipping) represents a molecular feature of NET formation [2, 3, 4] which has never been proposed as a marker for NETs before. When analyzing the histone H3 cleavage products and cleavage sites in more detail, they found a specific Serine-protease dependent cleavage event during NET formation [5]. The H3 fragment represents a new epitope that is formed and putatively distinguishes a nucleosome that is being disassembled to form a NET from intact nucleosome core complexes [5]. By developing a monoclonal antibody against this NET specific post translation histone modification, Prof. Zychlinsky and his team considerably advance the detection of NETs in affected tissues [5].
To summarize, our researchers present a novel epitope that gets unmasked upon NET formation. Further, they developed a monoclonal antibody that detects human NETs in vitro and in histological samples. Their findings are of particular interest in the context of the development of new diagnostic tools for NET formation. Further, their findings might help to better understand the pathological contribution of NETs to disease.

We are looking for a licensing partner that is interested in this technology.

Patent Information

A priority establishing patent application has been filed in 2021.

Literature

[1] Sollberger G et al., *Developmental Cell* (2018) 44(5):542-553
[2] Urban CF et al., *PLoS Pathog*. (2009) 5(10):e1000639
[3] Papayannopoulos V et al., *Journal of Cell Biology* (2010) 191(3):677-691
[4] Kenny EF et al., *eLife* (2017) 6:e24437
[5] Tilley DO et al., *bioRxiv* (2021) https://doi.org/10.1101/2021.03.15.434949

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