ImmunoTools IT-Box-139 Award 2013

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Microglia derivation from human iPS cells as a therapy for Alzheimer's disease

Alzheimer's disease (AD) is the most common neurodegenerative disease affecting millions of people worldwide. There is no cure for AD but therapies to treat the symptoms or delay the disease are available. Pathological hallmarks of AD are accumulation of aggregated tau in neurofibrillary tangles and amyloid beta (Aβ) in plaques. Microglia activation is the first immune response of the central nervous system. Microglia compromise ~10% of the brain cell population and accumulate around plaques in AD and activation is induced by Aβ. During AD progression microglia shows activation and is concentrated in areas affected by pathology but does not lead to a decrease of Aβ plaques. It is believed that microglia undergo senescence and lose the capability to digest cell debris. Given that, we propose that microglia derived from viral iPS (viPS) cells can replace non-functional microglia and reverse or delay the degeneration due to AD.

To analyze the ability of iPS cells to differentiate into functional microglia, iPS cells are differentiated by embryoid body (EBs) formation followed by selection and expansion of microglia-like cells. Microglia–like cells are sorted by $CD11b^{+}$ (microglia marker) expression. Expansion of microglia-like cells is performed in presence of cytokines and analysis based on phenotype (e.g. CD11b, CD11c, CD45) and function are performed. Since during the differentiation process other cells types are present we corroborate the homogeneity of microglia-like cell, their subtype (M1 or M2 microglia) and tested for neuronal and astrocytes markers as well.

The use of ImmunoTools antibody specially *IT-Box-139* would be very beneficial for my research project. Fully characterization of the microglia-like cells from viPS is very important since different cell types are present during the differentiation process and the main goal is to have microglia-like cells fully characterize and to show functional activity. The advantage of the *IT-Box-139* is that all the necessary antibodies for macrophages, microglia and T-cells, among others are included facilitating my research project providing me with a wide range for antibodies for characterization.

ImmunoTools *IT-Box-139.2* for **Yahaira Naaldijk** includes 100 antibodies

FITC - conjugated anti-human CD1a, CD3, CD4, CD5, CD6, CD7, CD8, CD14, CD15, CD16, CD19, CD21, CD25, CD29, CD35, CD36, CD41a, CD42b, CD45, CD45RA, CD45RB,

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CD45RO, CD49d, CD53, CD57, CD61, CD63, CD80, CD86, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE - conjugated anti-human CD3, CD4, CD8, CD11b, CD15, CD14, CD18, CD19, CD20, CD21, CD22, CD31, CD33, CD38, CD40, CD45, CD45RB, CD50, CD52, CD56, CD58, CD62p, CD72, CD95, CD105, CD147, CD177, CD235a, HLA-ABC, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE/Dy647 -tandem conjugated anti-human CD3, CD4, CD8, CD14, CD19, CD20, CD25, CD54

APC -conjugated anti-human CD2, CD3, CD4, CD8, CD10, CD11a, CD11c, CD14, CD16, CD27, CD37, CD42b, CD44, CD45, CD59, CD62L, CD69, CD71, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

DETAILS