The Doctoral Program

ION CHANNELS AND TRANSPORTERS AS MOLECULAR DRUG TARGETS („MolTag“)

is pleased to invite you to the following lecture

“Potassium channels in T lymphocytes as therapeutic targets in cancer“

by Laura CONFORTI, PhD

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http://www.med2.uc.edu/physiology/ADJUNCT_conforti-laura.htm

on: Monday, June 26th 2017, 05:00 pm (17:00 Uhr)

at: UZA II, Althanstraße 14, SE Room 2D 358

Abstract: This talk aims to give a general overview of ion channels in T lymphocytes and their role in cancer. **At the end of this presentation, you will have gained knowledge about the type of channels in T cells, their role in T cell functionality and their importance in cancer. New therapeutic strategies targeting ion channels will also be introduced.**

The immune system plays an important role in many solid malignancies where a high number of cytotoxic ($CD8^+$) T cells is associated with good prognosis as these cells are capable of attacking and destroying cancer cells. Unfortunately, the number and functionality of infiltrating $CD8^+$ T cells (TIL) is often low. Indeed, new immune therapies, that are revolutionizing the way cancer is treated, are designed to increase TIL function. The unique features of the tumor microenvironment (TME) contribute to ineffective TIL. Understanding how the TME limits T cell infiltration/function is necessary for improving immune surveillance in cancer and developing effective immunotherapies.

Ion channels regulate multiple functions of T lymphocytes including cytokine production, cytotoxicity and motility. Two K^+ channels, the voltage-dependent Kv1.3 and the Ca^{2+}-activated KCa3.1, regulate the electrochemical driving force for Ca^{2+} influx necessary for effector functions. These two channels also mediate the response to two key immune suppressive elements of the TME: hypoxia (Kv1.3) and adenosine (KCa3.1). Furthermore, T lymphocytes of cancer patients present with defective K^+ channels that impair their ability to fight cancer cells. Therefore, therapeutic interventions targeting ion channels in T cells constitute attractive new immunotherapies in cancer.

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