CME Session 14
Translational Molecular Imaging and Therapy Committee
Wednesday, October 23, 09:45 - 11:15

Session Title
CXCR4-targeted Theranostics in Haematological Cancers and Beyond

Chairpersons
Margret Schottelius (Lausanne, Switzerland)
Laura Evangelista (Milano, Italy)

Programme

09:45 - 10:05 **Bastien Jamet** (Nantes, France): 'CXCR4-targeted imaging in multiple myeloma'

10:06 - 10:26 **Andreas Buck** (Würzburg, Germany): 'PentixaFor and PentxaTher-based theranostics'

10:27 - 11:47 **Johanna Enke** (Augsburg, Germany): 'Moving towards CXCR4-targeted clinical SPECT'

10:48 - 11:08 **Rudolf Werner** (Frankfurt, Germany): 'Imaging CXCR4 expression in cardiovascular disease and inflammation'

Educational Objectives

1. Gaining detailed understanding of the tissue expression, role and function of the chemokine receptor 4 (CXCR4) in health and disease
2. Getting an overview over the currently available tracers for clinical CXCR4-targeted imaging and theranostics as well as insights into the potential and limitations of these approaches
3. Appreciating the versatility of CXCR4 as a relevant molecular target in various pathological conditions, ranging from cancer over inflammatory conditions to adrenal pathologies and beyond.

Summary

Due to its central role in the context of tumor cell growth as well as metastasis, the C-X-C motif chemokine receptor 4 (CXCR4) has gained considerable attention as a target for molecular imaging and theranostics, and optimized tracers for both PET and SPECT as well as targeted therapy have found their way into clinical studies during the last decade. Although most widely used in the diagnosis and targeted radioligand therapy of hematological malignancies such as multiple myeloma and lymphoma, CXCR4 targeted imaging also plays an increasingly important role as a diagnostic modality in other pathologies. Since CXCR4 is endogenously expressed on various pro- and anti-inflammatory immune cells, with particularly high expression levels on macrophages and T cells, CXCR4 is one of the key players in the orchestration of inflammatory responses to a variety of local and systemic inflammatory stimuli. Imaging inflammation (i.e., infiltration of tissues by CXCR4-expressing immune cells) by targeting CXCR4 therefore represents another very vibrant field of preclinical and clinical research.Furthermore, there is an increasing body of evidence that CXCR4-targeted imaging allows precise and sensitive diagnostics in the context of primary aldosteronism, in addition to its established role in the detection of adrenocortical adenoma. All these aspects will be discussed in detail during this session, providing a comprehensive overview over the current state-of-the-art in CXCR4-targeted nuclear theranostics.

Key Words
CXCR4; PET; SPECT; theranostics; multiple myeloma; hematological cancers; inflammation; cardiovascular imaging; adrenocortical carcinoma; primary aldosteronism