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**KEYWORDS –** Radiopharmacy, biomedical imaging, ovarian cancer, L1CAM, cancer stem cells


## MAIN FIELDS OF RESEARCH; ABSTRACT


Evidence is accumulating that ovarian cancer (OC) is driven by a rare cancer cell population displaying stem cell-like properties, the so-called "cancer stem cells" (CSCs). Besides being capable of self-renewal and generation of differentiated progeny, CSCs are highly tumorigenic and resistant against conventional therapies. This minor population of cells seems to give rise and to maintain the bulk population of the tumor, being also responsible for recurrence and relapse of the disease after first-line therapy. Ovarian CSCs are characterized by the expression of specific cell surface markers such as the AC133 epitope of CD133/Prominin-1, CD24, CD44, CD177, CD326 (EpCAM) and also express high levels of the intracellular aldehyde dehydrogenase (ALDH) enzyme. ALDH activity, in combination with CD133 and L1 cell adhesion molecule (L1CAM) expression, has been shown to correlate with poor prognosis in ovarian cancer patients. L1CAM is a neuronal cell adhesion molecule driving cell migration during neural development and supporting metastasis of human cancers. In glioblastoma, L1CAM was found to co-segregate with CD133 and the dual expression of these markers defines a glioma CSC population, suggesting L1CAM as CSC-specific target for therapeutic intervention. Considering these findings, we hypothesize that L1CAM may be expressed on ovarian CSCs in combination with other cell surface markers specific for CSCs (e.g. ALDH, CD133, CD24, CD44, EpCAM). Our research focuses on understanding the role of L1CAM expression in different ovarian progenitor cell populations. Based on the previous work in our lab, which identified anti-L1CAM radioimmunotherapy (RIT) as a promising option for treating OC, we will try to establish a novel approach for in vivo characterization of CSCs by single-photon emission tomography (SPECT) imaging. This approach may be useful for patient stratification, helping the prediction of tumor response to therapy and the selection of a reliable therapy for each individual patient. We also aim to develop targeted Auger and conversion electron RIT for treatment of ovarian CSCs using the promising radiolanthanide terbium-161 (161-Tb).


## SPECIAL TECHNIQUES AND EQUIPMENT

Small animal SPECT/CT imaging, *in vivo* experimentation, radiolabeling of antibodies, flow cytometry