



Internship proposition  
**One page max**  
M2 I3/OHNU 2024-25



**Lab:** CRCI2NA

**team:** 2 “Nuclear Oncology”

**Name and position of the supervisor:** Mathilde ALLARD, MCU

**Email of the supervisor:** Mathilde.allard@univ-nantes.fr

**Candidate:** to be determined

**Title of the internship:** “Radio-immuno-biological analysis of alpha-Targeted-radionuclide-therapy in murine models of triple-negative breast cancer”

**Summary of the internship proposal:**

Targeted-radionuclide-therapy (TRT) is an anti-tumor radiotherapy approach based on the injection of radionuclides coupled with vectors targeting malignant cells, thus allowing their specific irradiation. Combining high ionization energy and low tissue penetration, alpha particle emitters are the radionuclides of choice for TRT. Moreover, it seems that these ionizing radiations can, by enhancing their immunogenicity, sensitize tumor cells to immunotherapy approaches.

Our objective is to characterize the molecular and cellular mechanisms associated with the modulation of the immunogenicity of triple-negative breast cancers (TNBC) treated with alpha-TRT. To this end, we aim to analyze in syngeneic murine models of TNBC and using multiparametric techniques (RNAseq, ELISA-multiplex, immunohistofluorescence, and flow cytometry) the modifications induced by TRT-alpha in tumors and associated lymphoid tissues. Ultimately, this knowledge could contribute to the development of more effective therapeutic strategies based on alpha-TRT alone or in combination with immunotherapies.

The Master 2 student will participate in the ex-vivo study of the immunological response to alpha-TRT in murine models of TNBC. In this context, he/she will notably perform mRNA extractions, as well as immunofluorescent staining on tissue sections or isolated cells, and analyze them by immunohistology or flow cytometry. The ability to communicate and interact with various interlocutors will be a key skill for this internship, and an interest in computing and programming languages would be an asset.

Option(s) linked to the project:

- Clinical Research Profile
- Data Analyst Profile
- Experimental Biology Profile