

## **Title: Circulating extracellular vesicle characterization in solid tumors**

### **Research topic**

Clinically informative biomarkers detectable in blood are particularly attractive to assess and monitor patients in real-time, since blood collection is minimally invasive and cost effective. The study will focus on the evaluation of nucleic acids (small RNAs, long RNAs and DNA) included in extracellular vesicles circulating in the blood of patients with solid tumors including cancers of unknown primary, melanoma, sarcoma and osteosarcoma. The enrichment of specific small-RNAs, including microRNAs, in extracellular vesicles (EVs) released by cancer cells compared to normal cells, coupled with their stability and functional role, entails microRNAs in EVs particularly attractive biomarkers for the early detection and monitoring of cancer. Moreover, microRNAs and other active effectors shuttled by EVs might be directly involved in the escaping mechanisms mastering metastasis formation. The researcher will pursue the identification of EV content both in clinical settings and preclinical models using next generation sequencing technologies and EV-characterization technologies. The clinical relevance of the experimental data will be verified by using correlation and association statistical analyses.