Lab: CRCI2NA UMR INSERM U1307
team: 7 stress adaptation and tumor escape
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Candidate: Abed El Razzak SALEH

Title of the internship: Characterization of extracellular vesicles with mitochondrial content from an in vitro model of Temozolomide resistance in glioblastoma cells.

Summary of the internship proposal:
The search for circulating biomarkers of anti-cancer drug effectiveness makes it possible to improve the longitudinal monitoring of patients with cancer. Extracellular vesicles and their contents are among circulating markers of interest in oncology. Our laboratory works on the role of mitochondria in adaptation to stress induced by anticancer treatments and the acquisition of resistance. We have an in vitro model of acquisition of resistance to temozolomide in glioblastoma. This model is stable, reproducible and well documented on the different steps of mitochondrial adaptation from initial stress to resistance. We noted the presence of mitochondrial proteins in extracellular vesicles associated with resistance.
The goal of the project is to use this model to characterize these vesicles with mitochondrial content:
-   Kinetics of vesicles secretion during the several stages of resistance acquisition?
-   Nature of the mitochondrial content of the vesicles (mitochondrial DNA, whole mitochondria)?
-   Characterization of their functional role: resistance transmission to neighbouring cancer cells? early biomarker of treatment escape?

Material and Method
-   Culture cell: U251 cultured in exosome-depleted medium
-   extracellular vesicles isolation and analysis of vesicles and cells by flow cytometry and confocal microscopy
-   Analyses of mitochondrial content of extracellular vesicles by western blot and qPCR
-   Analyses of the functional role of vesicles: paracrine transmission of resistance: measurement of cell death by flow cytometry and MTT.
-   Pharmacological modulation of mitochondrial content secretion in extracellular vesicles

Option(s) linked to the project:

☐ Clinical Research Profile
☐ Data Analyst Profile
☑ Experimental Biology Profile