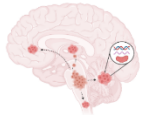


## Identification of resistance mechanism to radiotherapy combined with pharmacological approaches on patients derived cell lines.

We invite biology, medicine, bioinformatics, and life sciences students, for a 6 -12 months project aimed at identifying novel mechanisms involved in resistance to radiotherapy in diffuse midline glioma (DMG), the incurable pediatric brain cancer.

**Background:** The mission of our research group is to understand the biology of Pediatric DMG (Diffuse Midline Glioma), a highly aggressive tumor with a dismal prognosis of less than 1 year from diagnosis. For children diagnosed with DMG, radiotherapy remains the only standard treatment which provides only transient relief of clinical symptoms, thus there is an urgent need to develop new therapeutic approaches.



In the past few years, tumor sequencing allowed us to progress in our understanding of DMG biology and led to association of *TP53* mutation status with poor response to radiotherapy. In association with this marker, recurrent epigenetic alteration and genomic alterations or amplifications are identified as strong contributors to tumor cell infiltration throughout the brain, hindering surgical resection of tumor.

**In this context, our project is focused on identification of molecular mechanism of response to radiation and overcome this issue, targeting the involved pathways with the goal of identifying effective therapies for DMGs.**

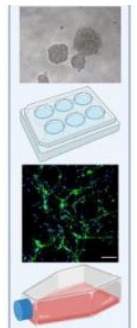
### If you are a Student:

- with strong motivation and passion for science
- eager to master novel techniques to advance clinical care of patients with brain tumor
- ready to broaden your scientific horizon

**This project is especially for you!**

### General Objectives:

- Identify the most relevant resistance pathways underlying radiotherapy resistance
- Finding innovative targets involved in resistance to develop alternative treatments and evaluate their therapeutic potential in vitro
- Analyze data from cells exposed to radiotherapeutic treatment and control cells



### Opportunities:

- Perform cell culture and a cell manipulation (transduction, selection, irradiation, etc)
- Perform a variety of cellular and molecular biology techniques, including DNA and RNA isolation, Western Blot, Immunofluorescence, Viability Assays, DNA double-strand break measurement, and quantification of mitochondrial reactive oxygen species ROS etc.

### Pre-requisites:

- Basic knowledge in cell/molecular biology and oncology is preferred, but **more important is a desire to learn translational research**
- Knowledge and experience with bioinformatics analysis, including R is a plus

**Work environment:** You will integrate in an international research group embedded in the DMG/DIPG group in collaboration with the Neuropathology Institute in the Universitätsspital Zürich. You will participate in group meetings, one-on-one discussions with the PI, progress reports and journal clubs and benefit from a research-oriented scientific environment.

***Student will be assisted and guided if/when needed***

**Project period:** Projects can start as soon as possible. The starting and ending times of the project can be made flexible for suitable candidates. The duration of the project can be extended for possible publication in high-impact journal.

**Contact:** Prof. Dr. Javad Nazarian ([Javad.Nazarian@kispi.uzh.ch](mailto:Javad.Nazarian@kispi.uzh.ch)), Dr. Kamil Wojnicki ([Kamil.Wojnicki@kispi.uzh.ch](mailto:Kamil.Wojnicki@kispi.uzh.ch)).