International Agency for Research on Cancer

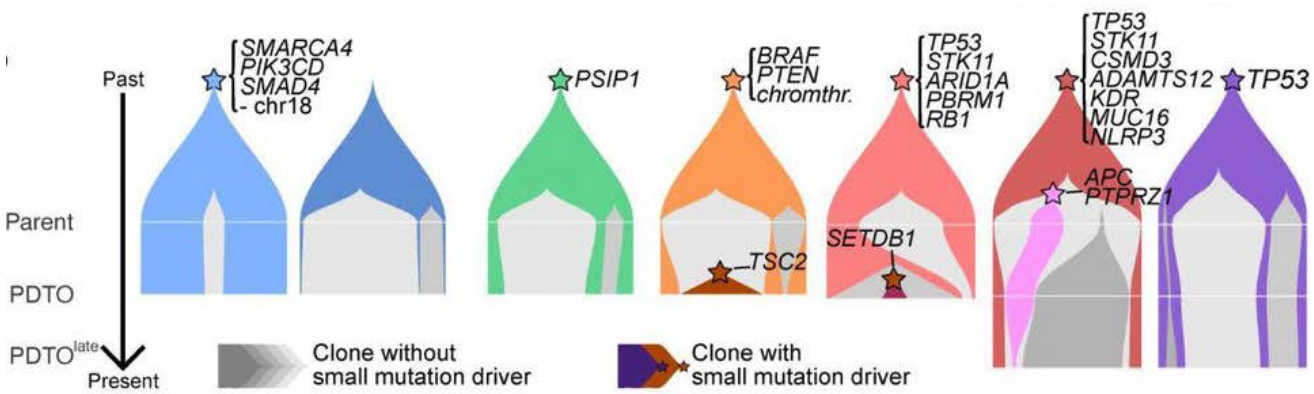
World Health Organization

Postdoctoral opportunity on single-cell and spatial 'omics of rare cancers

Keywords: *medical genomics, cancer, single-cell sequencing, data science*

Location: International Agency for Research on Cancer / World Health Organization, Lyon (Gerland bio-district), France
Start date: early 2024 (flexible)
Duration: 2 years with expectation of renewal
Salary: 2,950€ net per month
Contact: Candidates should send a CV with publication list, cover letter, and 2 letters of reference to Matthieu Foll (follm@iarc.who.int), Lynnette Fernandez-Cuesta (fernandez-cuestal@iarc.who.int), and Nicolas Alcala (alcalan@iarc.who.int).

Background: Although individually infrequent, rare cancers, defined as <5 cases/10,000 individuals, collectively account for ~25–30% of all cancer diagnoses and 25% of cancer deaths, representing a substantial burden of disease. Despite this, basic science research, clinical trials, and approval of new therapies for rare cancers are lacking. The Rare Cancers Genomics team therefore aims to investigate the genomics of these neglected cancers. We have recently provided multi-omic characterizations of rare thoracic cancers[1–4]. Our results unveiled specialized genomic, transcriptomic, and epigenomic profiles that shape the clinical behavior of the tumors. Nevertheless, the biological processes responsible for these profiles and the extent of intra-tumor heterogeneity are still poorly understood. The Rare Cancers Genomics team is seeking a postdoctoral scientist to **further explore the biological processes of rare cancers through single-cell and spatial transcriptomics.**



Temporal evolution of neuroendocrine neoplasms | *Adapted from ref. 1.*

Environment: IARC-WHO is located in the city of Lyon, France—a stunning UNESCO world-heritage city offering exceptional quality of life perfectly embodying the French "art de vivre." The Rare Cancers Genomics team at IARC-WHO (www.rarecancersgenomics.com) is a multicultural and multidisciplinary team including bioinformaticians, data scientists, and molecular biologists from four different nationalities, piloting large international consortia, and well-supported by multiple competitive grants. It is a vibrant environment ideal for someone willing to pursue an international career in medical bioinformatics or data science to make high-impact contributions and gain experience in state-of-the-art bioinformatics and big data analysis. Team alumni pursued their careers in world-leading medical research institutions (Barcelona Institute for Research in Biomedicine, Lausanne University Hospital,

University of Calgary, Stanford University), at IARC-WHO, and in private companies (bioMerieux). IARC welcomes approximately 60 postdoctoral scientists distributed across its research branches. The cost of travel for the postdoctoral scientist will be covered. Dependence and health insurance allowances will be paid, if applicable. For additional information about postdoctoral stays at IARC-WHO, you can consult the postdoctoral charter.

Duties:
The selected candidate will work under the supervision of Nicolas Alcala and Matthieu Foll and closely collaborate with other members of the team to enhance their competencies in the following activities:

- Analyze unique single-cell and spatial transcriptomic datasets (10X genomics) of rare tumors from our rare cancers genomics initiative
- Perform statistical analyses
- Write manuscripts
- Present results internally and at international conferences

Required skills and background:

- PhD in relevant area (bioinformatics/computational biology, biostatistics, genetics/genomics)
- Experience in single-cell and/or spatial transcriptomic analysis
- Expert knowledge of R or python
- Expert knowledge in statistics
- English proficiency
- Good communication skills
- Team player

References:

1. Dayton, Alcala *et al. Cancer Cell* In press
2. Mangiante, Alcala, Sexton-Oates, Di Genova, *et al. Nature Genetics* 2023
3. Alcala, Leblay, Gabriel, *et al. Nature Communications* 2019
4. Alcala, Mangiante, *et al. Ebiomedicine* 2019