

PhD Thesis at Inria on “Multimodal Biomarker Extraction for the Prediction of Lung Cancer Targeted Therapy Response”

Context: Lung cancer is currently the leading cause of cancer-related deaths worldwide, highlighting the urgent need for better prognostic and predictive biomarkers to optimize patient care. Many existing therapies have improved overall survival rates in lung cancer patients, particularly those targeting specific driver mutations such as EGFR, ALK, KRAS, and ROS1. Treatments targeting the KRAS G12C mutation, one of the most common genomic alterations in non-small cell lung cancer, show great promise, but their effectiveness varies among patients. To prevent adverse toxicities, it is crucial to better understand and anticipate this variability.

The PhD will be conducted at the newly established IHU RespirERA institute, which focuses on respiratory health, and providing an excellent environment for translational research.

PhD Topics: The proposed thesis aims to identify biomarkers that can predict the response to targeted therapies in patients with KRAS-mutant non-small cell lung cancer. To achieve this, machine learning algorithms will be developed to extract discriminative and predictive features from a multimodal dataset, which includes digital histopathological images, lung CT scans, and clinical, genomic, and multiproteomic data from over 1,000 lung cancer patients.

Practical Information: This 3-year PhD thesis will be supervised by Dr H. Delingette and Dr N. Ayache within the Epione team at Inria, Sophia Antipolis, France in close collaboration with pathologists at Nice University Hospital. The scholarship is funded by the French AI Institute “3iA Côte d'Azur” which also provides a high quality collaborative environment with competitive salary (gross monthly salary around 2650€).

Required Skills

- Master degree with strong competences in statistical learning and mathematical modeling, as well as knowledge in medical imaging, signal and image processing (Master 2 level).
- Solid programming and IT skills are necessary (Python and C++, bash scripting, version control systems).
- Strong communication abilities
- Fluent English (written and spoken)

Contact Persons:

Send a CV and motivation letter to:
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