



Phd Thesis at INRIA Sophia Antipolis on “Joint Biological & Imaging Markers for the Diagnosis of Severe Lung Diseases”

Phd Topic: The goal of the thesis is to define joint pertinent features in biological samples and medical images to better diagnose severe lung diseases such as lung cancer, chronic obstructive pulmonary disease (COPD) and pulmonary fibrosis. This work will be based on a set of unique biological and imaging databases acquired by the [Institute for Research on Cancer and Aging](#) (IRCAN) and the Nice University Hospital. The objective is to combine the extraction of imaging features (texture, structural indices, presence of pulmonary nodules) from low dose CT Lung images with biological and clinical information including the density of Circulating Tumor Cells which is a new and [promising marker of the onset of Lung Cancer](#).

The objective of the thesis is to develop **medical image analysis** and **machine learning algorithms** to automatically select joint biological and imaging markers predictive of lung cancer and useful for grading the severity of the disease.

Localization: This thesis will take place within the [Asclepios team](#) at Inria Sophia Antipolis in close collaboration with [Prof. Paul Hofman](#) of Nice University Hospital and the Research Center IRCAN, CNRS UMR 7284 / Inserm Unit 1081. It will also involve the [IPMC](#) biological center in Sophia Antipolis.

During the course of the thesis, a doctoral stay of 3 months within a leading foreign academic institution (MIT, Brown, UCL, ICL..) is planned to foster academic and clinical collaborations.

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:

Please send a resume and motivation letter to the following persons:

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