

UNIVERSITÀ
DEGLI STUDI
DI TRIESTE



Francesco Bassi,
Ph.D. student at BioingTS

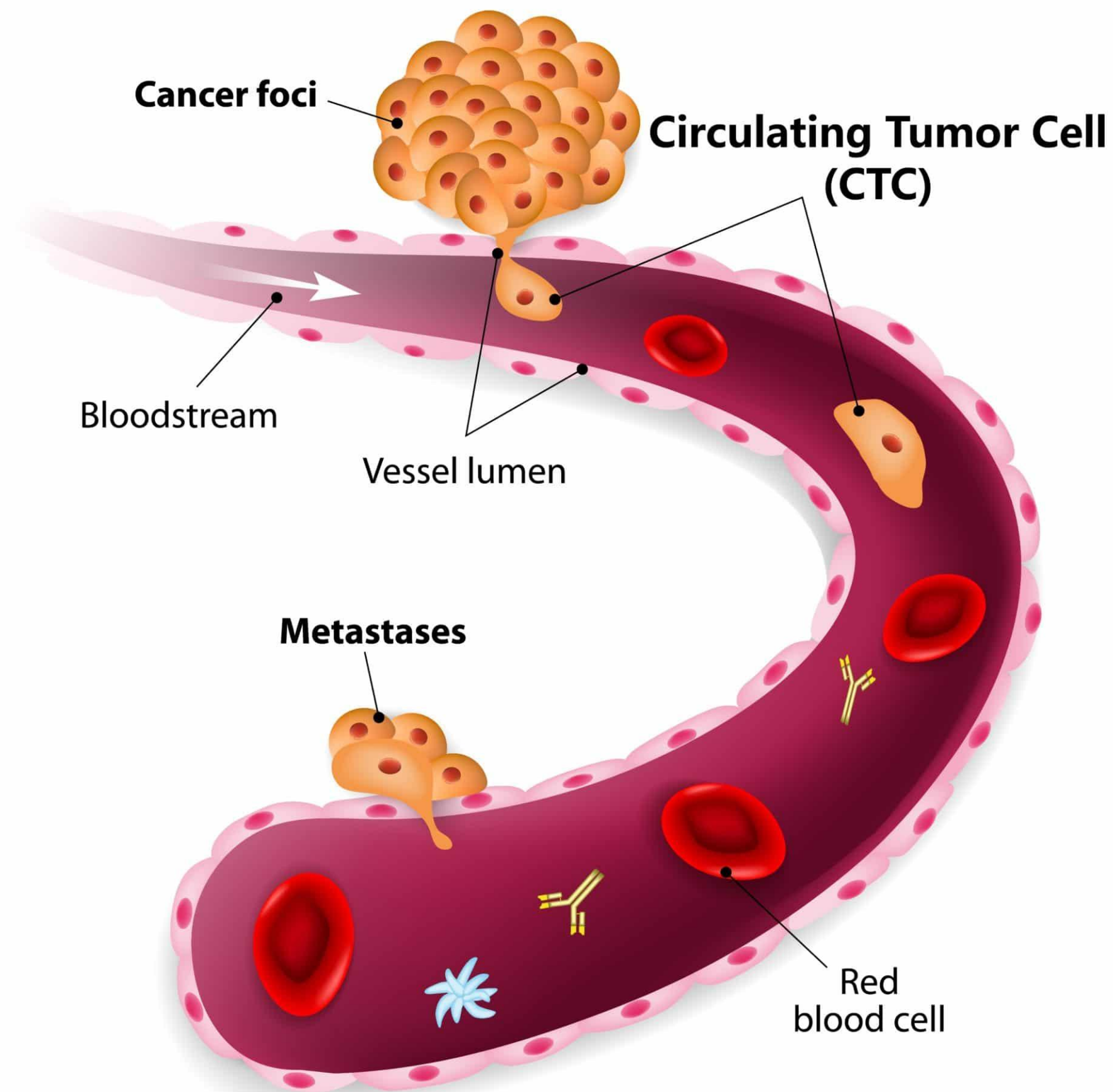
RESEARCH PROJECT:

Development of an AI-based system for the detection of target cells in liquid biological samples

RESEARCH INTERESTS:

- Biosignal and bioimage processing
- Artificial Intelligence
- Biological systems and response to treatments modelling

CIRCULATING TUMOR CELLS(CTC)



- Some Tumoral cells can detach from the main body of the tumor and enter the blood flow
- These Circulating Tumor Cells (CTCs) can subsequently land in other body districts, generating methastases
- CTCs detection can allow the discovery of tumors not easily identifiable in early stages of the disease

CURRENT SCREENING METHODS

Liquid biopsy:

- Circulating DNA (ctDNA) detection
- Sequencing (DNA, esomi, ...)
- Cellular count with staining methods

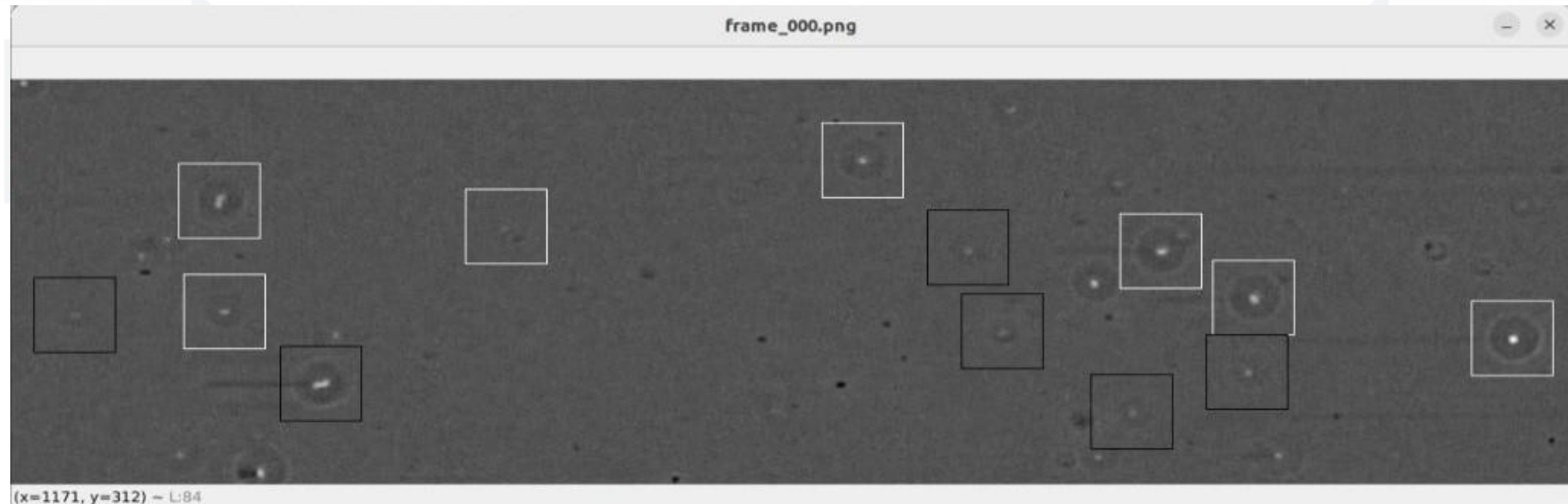
Limitations:

- Highly trained operators are needed to perform the analysis
- Significant costs
- Reagents needed

AIM

Development of an AI based system capable of:

- Morphological detection of different cellular species
- Detection of CTCs but also other pathological cell types
- Return a count of each different type of cell



METHODS

Healty and pathological blood sample images acquisition

- Microfluidic systems
- Optical microscopy

Creation of a dataset with all the different cellular species

AI models training for successive real time detection of cells

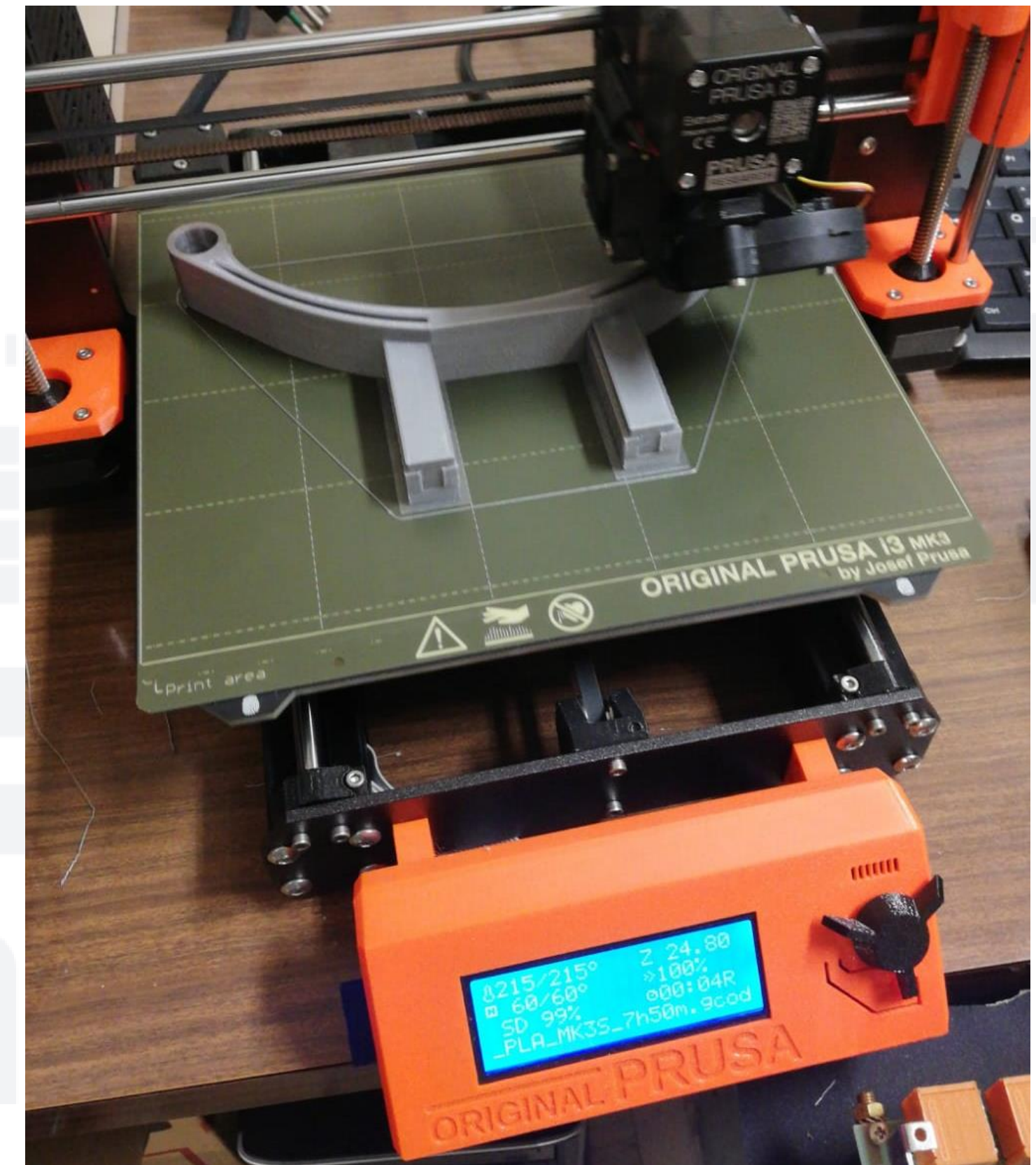
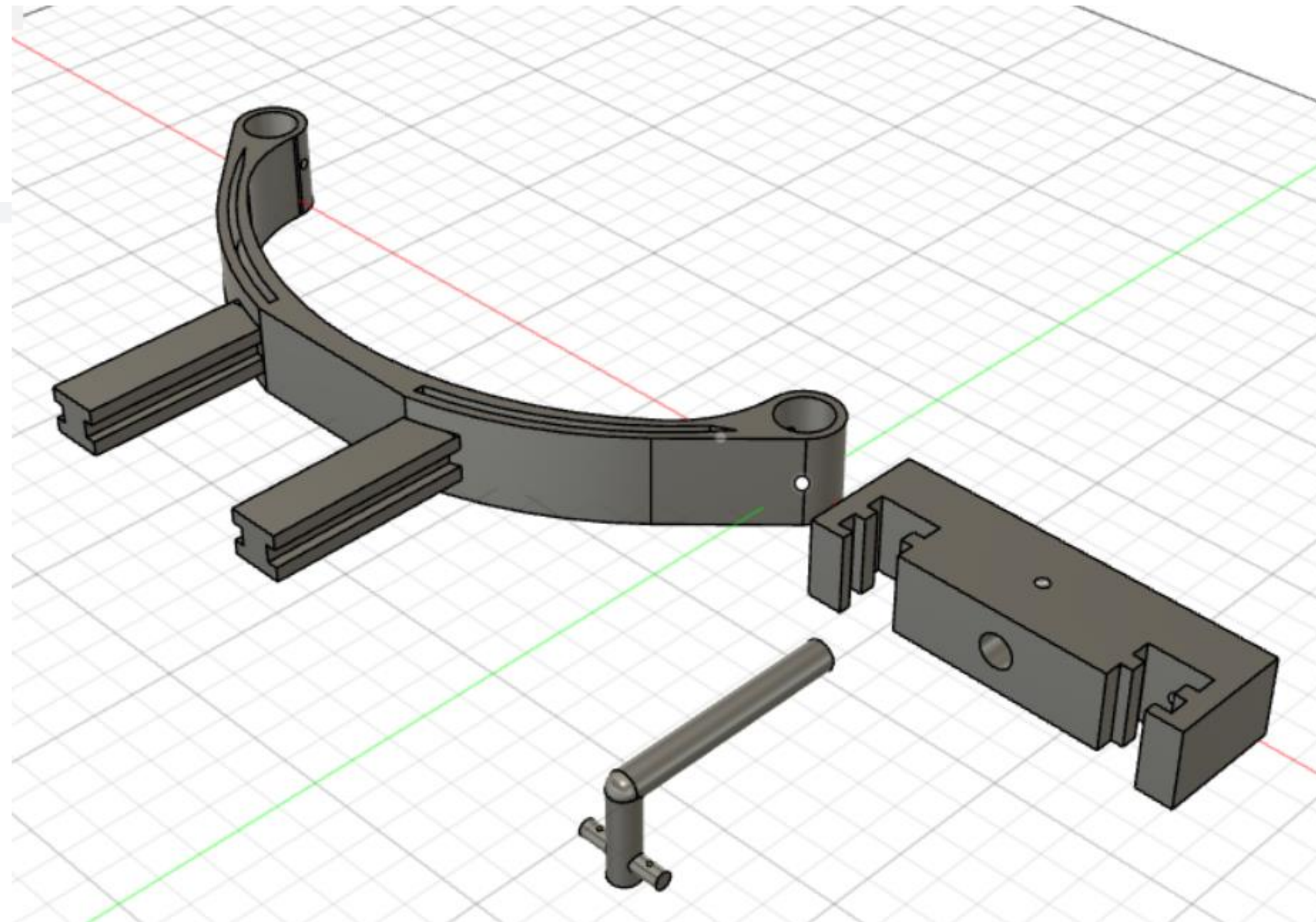
OTHER ACTIVITIES

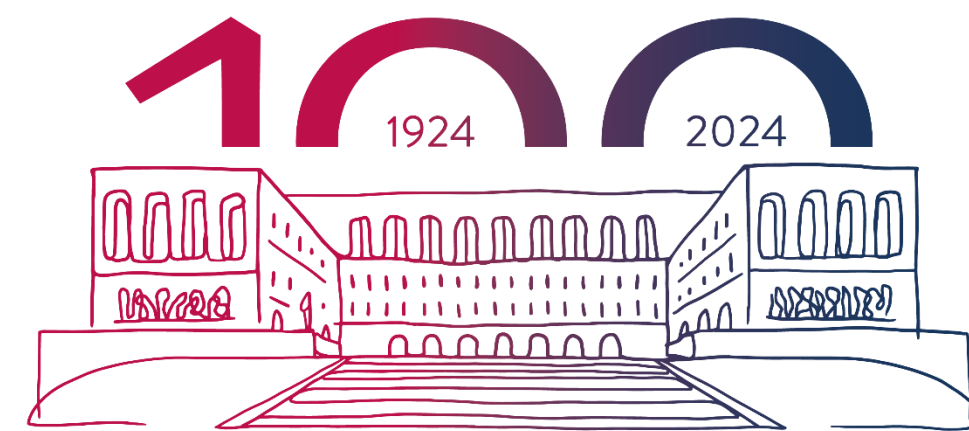
- Modelization of the biological response to different invasive ventilation methods



OTHER ACTIVITIES

- Prototyping of 3D models for other projects of the group





**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**

FRANCESCO BASSI

Department of Engineering and
Architecture

francesco.bassi@phd.units.it

www.units.it

