RADIOPATH
RADIOLOGY-PATHOLOGY MATCHING MOLD

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Radiology-Pathology matching mold
- A smart solution for combined radiological and pathological imaging -
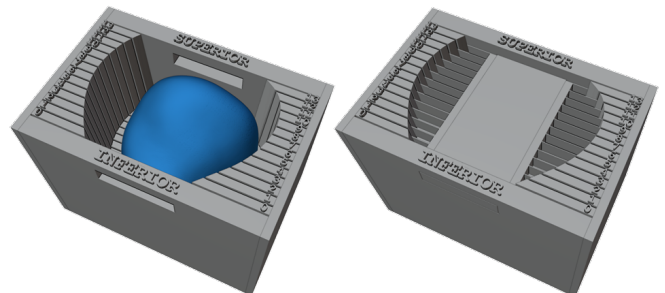
Introduction & Medical Need

The use of **radiological imaging to extract quantitative features** for the noninvasive characterization of tumors is gaining increased attention, yet whole **histopathological analysis based on tissue biopsy or surgical resection remains the diagnostic gold standard**. **To validate radiologic features and ensure reliable correlation between imaging and tissue-based observations**, accurate spatial alignment between radiologic and histologic data is essential. In this context, **3D printing** has emerged as a transformative technology that supports clinicians by enabling the production of cost-effective, **patient-specific medical devices** that can aid in specimen analysis.

Solution

RADIOPATH (Radiology-Pathology matching mold) is a patient-specific 3D-printed system that ensures accurate alignment between radiological imaging and histopathological analysis. Created from pre-surgical scans and image segmentation, it features a dedicated mold and cutting guides to preserve specimen orientation and ensure radiological–histological correlation. This consistency **improves reproducibility and enhances diagnostic confidence**.

Advantages

- **Patient-specific 3D-printed mold**
- **Accurate positioning** of the pathological specimen.
- **Standardization** of gross cutting procedures.
- **Adaptability** to different solid tumors.
- **Compatibility** with radiological imaging scanners.
- Possibility of pathological **specimen fixation directly inside the mold**.
- Possibility of **radiological-histological correlation**

Opportunity

We are seeking **industrial partners** interested in supporting the development of *RADIOPATH* towards clinical application.

Inventors

Dr. Giuseppe Renne, MD **Pathomic Division Director at IEO** (past-Dir. Uropathologist and Intraoperative Diagn. Div.). He collaborates with national and international research groups, excelling in digital pathology.	**Dr. Letizia Morelli, PhD** **Research fellow in Bioengineering at Politecnico di Milano.** Her research interest is multi-scale modelling, including radiomics and microstructural modelling, for personalized medicine.
Prof. Giuseppe Petralia, MD **Radiology unit director at IEO, Associate Professor of Diagnostic Imaging at University of Milan**, he is author of more than 100 journal articles and over 200 scientific communications.	**Prof. Chiara Paganelli, PhD** **Associate Professor in Biomedical Engineering at Politecnico di Milano.** Her research interest includes image-guidance for diagnosis and therapy with a focus on MRI guidance and multi-scale modelling
Dr. Paul Eugene Summers, PhD He is currently a **Researcher at IEO**. His research interests include magnetic resonance imaging in oncology, neuroradiology and neuroscience, and the medical applications of millimeter waves.	**Prof. Guido Baroni, PhD** **Full Professor in Biomedical Engineering at Politecnico di Milano**, he is specialized in imaging technologies, surgical navigation, and radiotherapy, and he leads the CartCas laboratory.

Contact: Marzia Fumagalli, Head of Technology Transfer Office, IEO-TT marzia.fumagalli@ieo.it • +39 02 9437 5179