

# IHI Call Days | Call 9

## ● A Real-time 3D Histopathology Imaging Solution for Improved Cancer Diagnosis and Patient Outcomes

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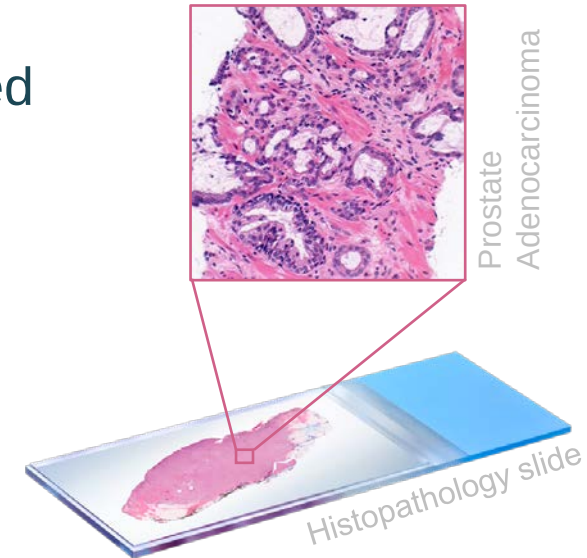
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Link to the IHI brokerage platform:

- [Proposal sharing tool](#)
- [Participant profile](#)

# Since **1896**, the **Histopathology** is the gold standard for diagnosing cancer

- Around **2 300 000 000** histopathology slides are examined worldwide each year\* - **this is 72 slides per second**
- Despite modernization and workflow optimization over the past 128 years, current histopathology methods **do not fully meet the ...**
  1. **Diagnostic needs of cancer patients**
  2. **Align with the demands of 21<sup>st</sup>-century healthcare systems**



# Challenges of current histopathological methodology for a fast and accurate diagnosis of cancer



- **Timely Diagnosis**
  - Long turnaround time, ~7 days for 70% of patient samples
- **Accuracy**
  - Provides only 2D information results in “histological sampling bias”
  - Low accuracy for early carcinoma diagnosis in breast, cervix, thyroid, and brain
- **Cost-Effective**
  - Not aligned with the Green Deal - High energy/waste demand

# Our technical solution to solve the problem:

- This proposal addresses the IHI specific **objective 2**



Instead of sending patient samples, 3D images will be sent directly to the pathologist.



Next to the operation rooms

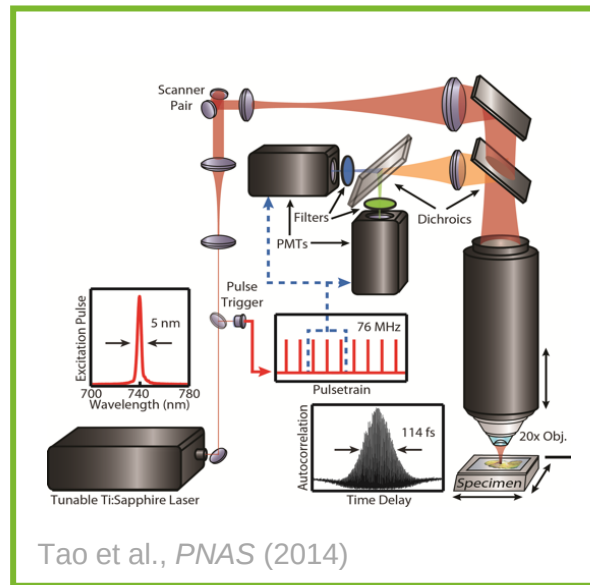


Doctors' offices

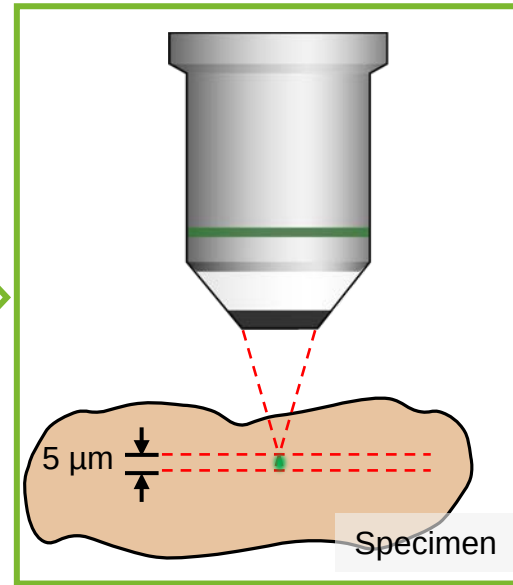


# Real-Time 3D Histopathology Imaging

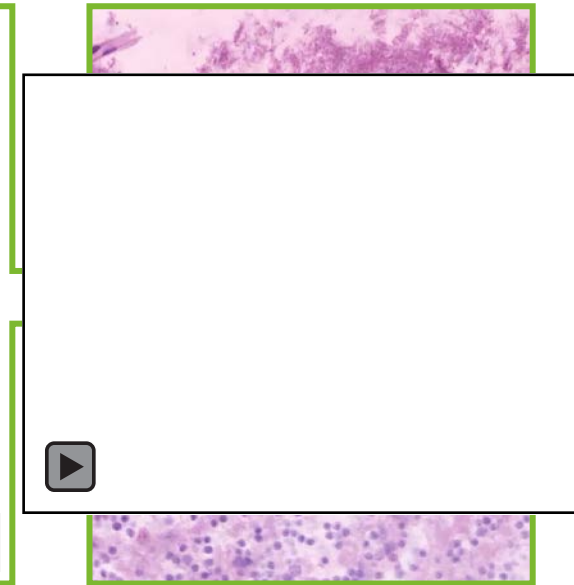
The methodology is based on Nonlinear Microscopy



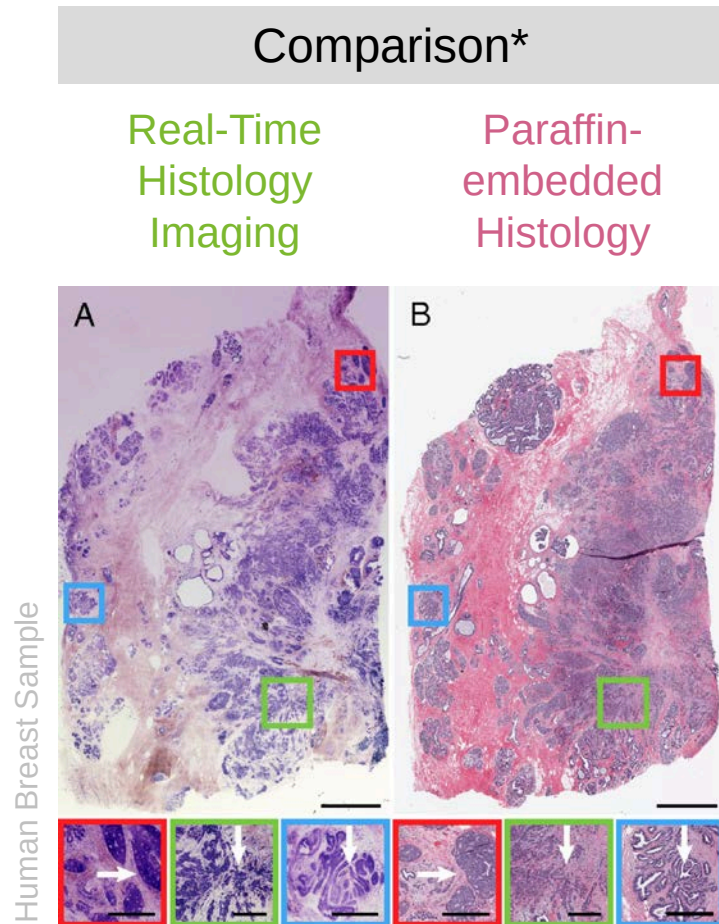
Scanning the freshly stained sample



Generating 3D Images



# Real-Time Histopathology Imaging generates 3D images with 94.1% accuracy and 95.4% sensitivity\*



|                  | Comparison                  |                             |
|------------------|-----------------------------|-----------------------------|
|                  | Real-Time Histology Imaging | Paraffin-embedded Histology |
| Accuracy         | Yes                         | Yes                         |
| Information      | 3D                          | 2D                          |
| Further Analysis | Yes                         | No                          |
| Workflow         | Very Short                  | Very Long                   |
| Turnaround Time  | 5 minutes                   | >7 days                     |
| Digital Result   | Yes                         | No                          |
| Cost-Effective   | Yes                         | No                          |

# Contribution of industry/private sector in this proposal



Real-Time Histopathology Imaging – A device with small footprint

Cooperation with Industry and the private sector is required to adopt this innovative technology into a cost-effective, user-friendly device and make it accessible for widespread use in **healthcare systems**.

The contribution of the following sectors is required:

- o Medical Devices
- o Optical Imaging
- o Digital Health
- o In vitro Diagnostics
- o Medical Technology Regulations

# Outcome and Impacts:

Integrating this technical solution in various healthcare settings, such as **next to operating rooms**, or in **doctors' offices** will result in...

- **Outcome:** An accurate histopathological diagnosis can be made immediately after collecting the patient's biopsy.
- **Impact:**
  - **For Patients:** (1) fast and accurate diagnosis, (2) reducing number of surgeries, (3) ensuring the right treatment, (4) reducing unnecessary hospital stays
  - **For healthcare systems:** (1) reducing costs, (2) more sustainability, (3) aligning with Green Deal
  - **For Union's healthcare industry:** High competitiveness, the histopathology market is valued at EUR 16 billion in 2023\*

# Expertise and Resources

- We have...
  - Strong expertise in **optical imaging**
  - Access to **pathologists** and **patients' samples** for validation
  - Experience in translational research
  - Access to 237 biological and medical imaging research infrastructures in 18 European countries through our association with **Euro-Biolmaging**

# Expertise and Resources

- We are **looking for** partners from the industry/private sector to ...
  - 1) develop the **mechanics**, **lasers**, and **optical systems** for the device
  - 2) develop **software solutions** essential for operating the instrument, enabling real-time imaging and integration with existing digital pathology platforms
  - 3) develop **sample preparation kits**, enhancing compatibility with gold-standard histopathology
  - 4) fulfill the **medical technology regulation**

# Interested in cooperation?

- You can contact each of the following persons (all are present at the IHI event):



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