

International Fellowship in Translational Medicine, AI & Medical Innovation

Duration: 12 months

Context

IHU Strasbourg is an advanced medical research and training center located in Strasbourg, France, with an international scope and strong focus on digestive health, minimally invasive therapies, and surgical innovation. The institute integrates clinical care, research, education, and technological development within a single ecosystem, fostering close collaboration between clinicians, researchers, engineers, and industry partners.

The IHU's mission is to accelerate the translation of scientific and technological innovation into clinical practice, with a strong emphasis on patient-centered care, quality improvement, and real-world clinical impact. Its activities span the full continuum from fundamental and translational research to clinical validation, medical device development, and digital health solutions, including artificial intelligence and advanced imaging (with contributions from CAMMA, a research group specializing in AI and data-driven analysis of medical imaging and clinical workflows).

Program Overview

Through its fellowship programs, IHU Strasbourg aims to train high-level specialists and future leaders capable of bridging clinical expertise, research excellence, and innovation, while contributing to the development and dissemination of best practices in digestive health worldwide.

Fellows at IHU will benefit from:

- Active participation in international research projects and preclinical or clinical studies
- Exposure to innovation-driven workflows, including data-driven medicine, AI-assisted diagnostics, and structured medical annotation
- Strong connections with academic institutions, startups, and industrial partners

This one-year fellowship is designed for highly motivated medical specialists seeking advanced training in translational research, preclinical development, artificial intelligence in medicine, clinical research, medical education and healthcare innovation. The program combines hands-on laboratory immersion, multidisciplinary clinical exposure, and structured academic development, enabling fellows to acquire the skills required to lead innovative medical projects and to translate research findings into clinical applications.

The fellowship workload is divided into two complementary pillars:

- **Individual Development Plan (60%)**
 - Personal research or innovation project
 - Research methodology & technical skills development
 - Operating room exposure and CAMMA-specific rotations
 - Participation in preclinical experiments and model development

- **Institutional Contribution (40%)**
 - Teaching support in IHU educational programs
 - Participation in organ harvesting activities for preclinical research and training needs
 - Contribution to ongoing IHU projects, encompassing participation in project planning, execution, and evaluation, as well as collaboration with clinical, research, and innovation teams according to the fellow's background and competencies
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Fellowship Rotations

1. Preclinical Research Rotation

Supervisor: Amélie Gressier

Objective:

To provide in-depth experience in preclinical research, including preclinical study design, execution, and reporting, aimed at the development and validation of innovative minimally invasive technologies using advanced imaging modalities.

Key Activities:

- Development and refinement of phantoms, *ex vivo* and *in vivo* experimental models.
 - Design, implementation, and reporting of preclinical studies.
 - Hands-on technical training tailored to the fellow's background (laparoscopy, endoscopy, percutaneous procedures, radiology, pathology, etc.).
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2. CAMMA – AI in Medicine Rotation

Supervisor: Nicolas Padoy

Objective:

To introduce fellows to surgical data science and AI applications in medicine through close collaboration with engineers and data scientists.

Key Activities:

- Training in AI methods applied to medical imaging and clinical workflows.
- Contribution to ongoing AI research projects aligned with the fellow's profile.
- Exposure to development, validation, and clinical integration of AI tools.
- Participation in the *Summer School in Surgical Data Science* (as trainee, observer, or instructor).
- Hands-on annotation activities using platforms such as 3D Slicer and MOSaiC, aligned with the needs of DIAMS projects (platform supporting innovation in health data and

artificial intelligence), and contributing to AI development, validation, and translational objectives.

3. Clinical Research & Trials Rotation

Supervisor: Armelle Takeda

Objective:

To train fellows in the organization, regulation, and conduct of clinical trials in a hospital environment.

Key Activities:

- Introduction to regulatory, ethical, and quality requirements for clinical research.
 - Participation in monthly strategic meetings with the Clinical Research Department.
 - Support for reflection on clinical cases and participation in the operating room according to background and learning objectives.
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4. Medical Education Rotation

Supervisor: Agnès Gronfier

Objective:

To prepare fellows for leadership roles in medical education.

Key Activities:

- Participation as trainer/assistant in relevant diplomas, courses, and academic certifications.
 - Development and refinement of phantoms and ex-vivo models to meet educational objectives while respecting economical and ethical constraints
 - Contribution to the design and delivery of educational programs (including model preparation as part of practical sessions).
 - Teaching activities in workshops, simulation sessions, and clinical training courses, according to the fellow's background and expertise.
 - Contribution to the writing and publication of scientific articles on training methods or models.
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5. Innovation & Technology Transfer Rotation

Supervisors: Caroline Ramspacher

Objective:

To immerse fellows in the full medical innovation lifecycle, from ideation to commercialization.

Key Activities:

- Introduction to healthcare innovation frameworks.
 - Exposure to intellectual property and feasibility studies.
 - Participation in market analysis, including assessment of medical needs, environment, and shareholders assessment for innovative solutions.
 - Participation in the *BEST* entrepreneurship program (as participant or mentor, according to profile).
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6. IHU Research Projects

Supervisor: Maxime De Abreu

Objective:

To expose fellows to ongoing translational research projects within the IHU

Key Activities:

- Active participation in selected innovation and research projects currently conducted at the IHU, aligned with the fellow's medical specialty and expertise.
 - Exposure to prototyping tools, methodologies, and iterative design processes, supporting the development and evaluation of innovative solutions.
 - Collaboration within multidisciplinary teams involved in project development, including, where relevant, external academic partners and industry collaborators, particularly in the context of technology transfer activities.
 - Contribution to medical and clinical components of IHU projects, such as the design and conduct of preclinical and clinical study protocols.
 - Contribution to the preparation and publication of scientific articles related to ongoing IHU research projects, in accordance with each project's dissemination plan.
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7. Personal Project Development Rotation

Supervisor: Alexandre Haller

Objective:

To support the development of an original innovation project with the goal of scientific publication or intellectual property generation.

Key Activities:

- Use of methodologies learned in research activities and through mentoring to develop one's own innovation project.
- Application with a personal innovative idea to one of the IHU's internal funding programs for proof of concept (Sandbox or PoC projects frameworks)
- Project planning, milestone definition, and resource planning and management, including budget.
- Data collection, analysis, and manuscript preparation.

- Where applicable, drafting IP documents for protection
 - Presentation of results at institutional scientific meetings.
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Program Outcomes

At completion, fellows will have developed high-level expertise in:

- Translational and preclinical research
- Artificial intelligence for healthcare
- Clinical trials management
- Medical education methodologies
- Innovation and technology transfer in medicine

Graduates of the program will be prepared to assume leadership roles in academic medicine, pre-clinical and clinical research, and healthcare innovation worldwide.