

FINNISH BIOMEDICAL IMAGING

ANNUAL REPORT **2022**



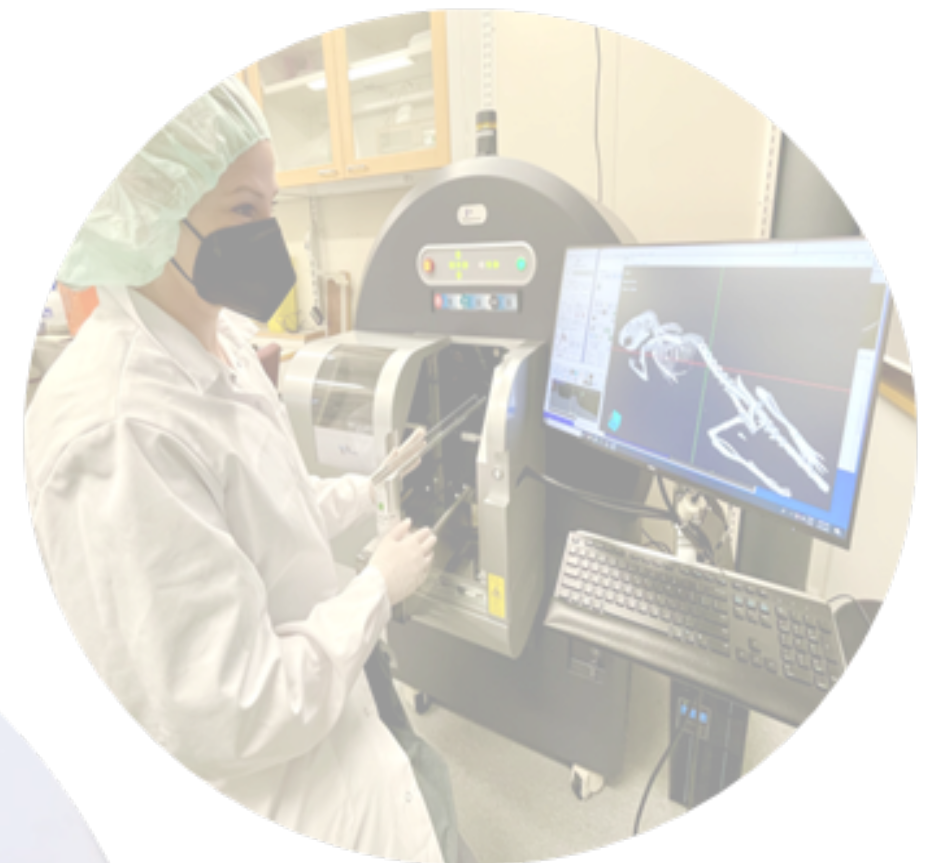
TURKU

KUOPIO

HELSINKI

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INTR DUCTI N

The Finnish Biomedical Imaging Node (**FiBI**) is a multisided service-providing Node of **Euro-BioImaging ERIC**. Over the years, FiBI partners have contributed to numerous revolutionary discoveries that impacted health and life quality of the society at large. A trademark of each FiBI partner is a spearhead specialisation based on the partner's unique technology platform.

FiBI partners and their spearhead specialisations are:

- 1) **Turku PET Centre (TPC)**: positron emission tomography (PET) imaging and PET tracer development;
- 2) **Kuopio Biomedical Imaging Unit (BIU)**: preclinical high-field magnetic resonance imaging (MRI);
- 3) **NEUROIMAGING Research Infrastructure (NI)**: magnetoencephalography (MEG);
- 4) **Helsinki In Vivo Animal Imaging Platform (HAIP)**: optical in vivo imaging.

The combination of FiBI's spearhead specialisations provides excellent interdisciplinary service continuum to both academic and industrial users. FiBI's research projects encompass neurological and cardiovascular diseases, inflammatory and infectious diseases including COVID-19, obesity, cancer, and other areas related to current burdens of the European health system.

KEY FIGURES – PUBLICATIONS & EDUCATION

The number of publications produced annually is a critical metric for any research entity reflecting the accomplishment of scientific endeavours. 2022 was a record year of scientific productivity at FiBl. FiBl partners contributed to **316 peer-reviewed research publications**. Moreover, **12 PhD theses** were defended in doctoral programs of FiBl partners.

	TPC	BIU	NI	HAIP
PUBLICATIONS	225	30	56	5
PHD THESES	5	3	4	0

FiBl partners are co-owned by five prestigious and internationally acknowledged Finnish universities:

- 1) the University of Turku ([UTU](#));
- 2) Åbo Akademi University ([ÅA](#));
- 3) the University of Eastern Finland ([UEF](#));
- 4) Aalto University ([AU](#));
- 5) the University of Helsinki ([UH](#)).

FiBl participates in **8 Doctoral degree programs** and **5 Master's degree programs**, contributing to tenths of academic degrees every year.



KEY FIGURES – EDUCATION & TRAINING

Education and training belong to the key aims of FiBI. In addition to participating in numerous Doctoral and Master's degree programs, FiBI offers various top-quality online and onsite courses. The courses are aimed at core facility staff and investigators at different career stages from early-career researchers to principal investigators.

In 2022, FiBI organised **19** training events:

- Annual PET Basics Course (**114** participants);
- TPC Open Neuroimaging Course (**300** participants, plus **5,000** views of recorded lectures);
- Annual HAIP In Vivo Animal Imaging: Methods and Applications;
- **8th** Science Factory: TMS-EEG Summer School and Workshop;
- MEG/EEG source modelling: from principles to practice;
- MRI Safety Courses at Aalto University;
- MEG Trainings at Aalto University;
- and more...

The training events altogether attracted over **1,200** participants and most of the courses are recurring and will take place again in upcoming years.



KEY FIGURES – NEW INSTRUMENT ACQUISITION



5 new high-end imaging instruments were acquired at FiBI in 2022:

Human total-body PET/CT scanner (Siemens Biograph Vision Quadra);

€ 7,600,000

MEG System (MEGIN TRIUX);

€ 2,195,200

Ultra high-resolution U-CT system (MiLabs);

€ 319,000

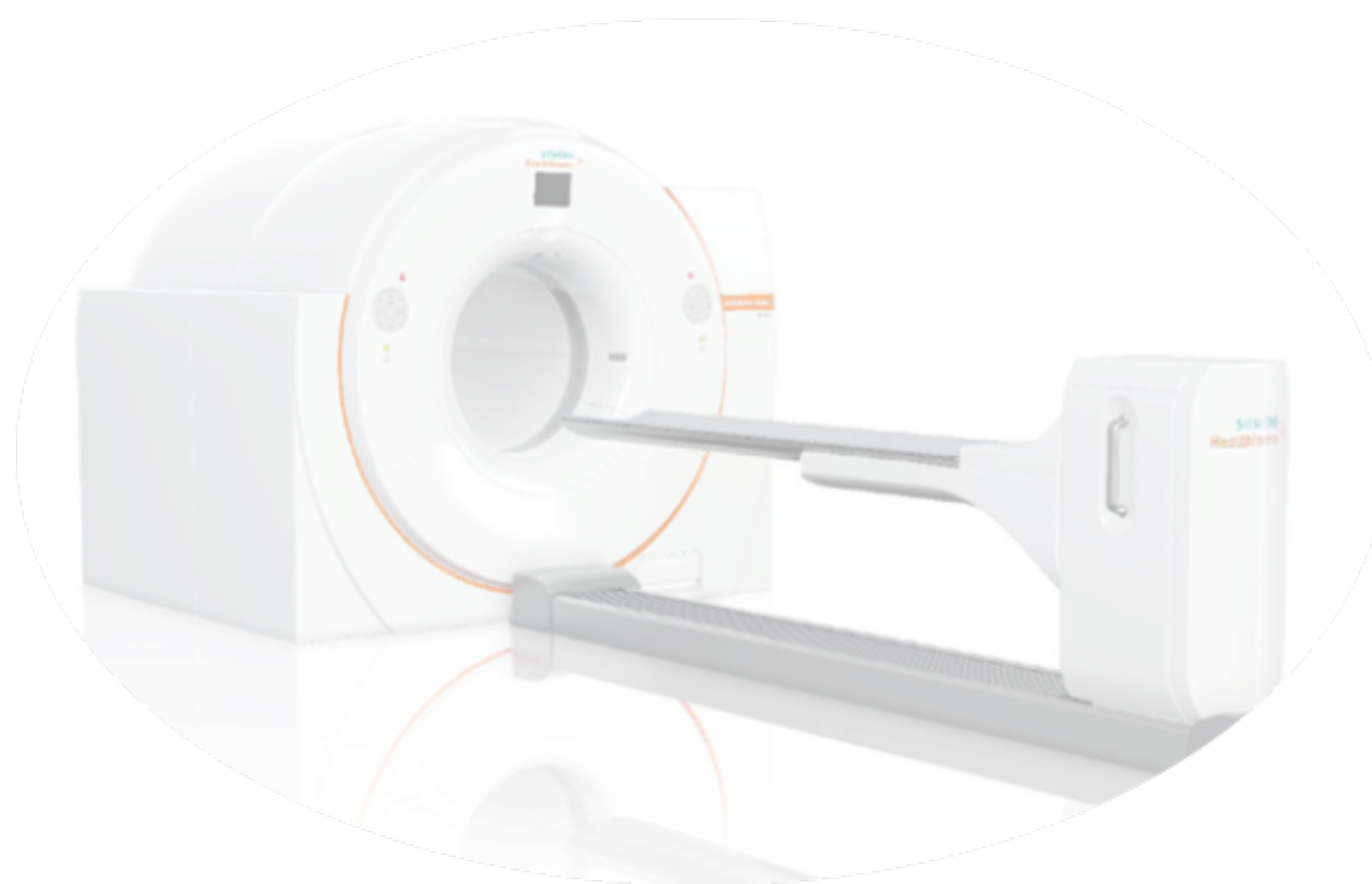
Portable animal PET and CT scanners (Molecubes);

€ 567,800

R820 Tricolor Multichannel Fiber Photometry System (RWD).

€ 25,000

Moreover, several instruments have been updated to the state-of-the-art level.



KEY FIGURES – FUNDING ACQUISITION

In last three years FiBI acquired over **34** million € funding mostly for research infrastructure development.

GRANTED FUNDING	2020	2021	2022
ORGANISATIONAL FUNDING	5,375,000	7,202,000	6,323,000
ACADEMY OF FINLAND FUNDING	1,610,000	2,480,000	0
OTHER COMPETITIVE FUNDING	2,100,000	660,000	5,650,000
OTHER PUBLIC FUNDING	839,000	890,000	890,000

Recent infrastructure funding highlights:

Jane & Aatos Erkkö Foundation grant for TPC to purchase new Human total-body PET/CT scanner – € **5,000,000**;

The Academy of Finland Research Infrastructure funding (FIRI 2021) – € **2,480,000**;

Aalto University support for NI to purchase new MEG System – € **2,000,000**.



KEY FIGURES – USER ACCESS & USAGE HOURS

In 2022 FiBI provided services to hundreds of users and the cumulative imaging hours of FiBI's instruments reached the all-time maximum.

217 external users (users not affiliated to the Node hosting organisations);

557 users in total (both internal and external);

36 remote users (users that did not have to travel to visit the facilities in person);

Increasing number of remote users is in accordance with FiBI's efforts to reduce carbon footprint. Moreover, FiBI partners have committed themselves to be carbon neutral by 2030.



18,351 cumulative hours of imaging;

111 full-time equivalent staff at all four FiBI Node facilities.



KEY FIGURES – PROJECT HIGHLIGHTS

Euro-Biolmaging Projects:

FiBI received **7** project proposals in 2022. **5** of them were finished in the same year.

	TPC	BIU	NI	HAIP
EU BI PROPOSALS	2	4	1	0
FINISHED PROJECTS	1	3	1	0

Other project and technology highlights:

TPC with the University of Gothenburg conducted a PET imaging clinical study to investigate effects of loading by weight vest applications on glucose metabolism in obese subjects.

In NIH funded project researchers at BIU developed a novel Zero Echo Time fMRI approach that can measure brain activity in awake behaving rats.

NI requested to include MEG as one of Euro-Biolmaging technologies. MEG was added to the catalogue of services in 2023 after showcasing and proof-of-concept studies.

Optical whole-body imaging at HAIP was used in projects studying brain metastases of breast cancer and to develop new targeted cancer therapies.

COMMUNITY BUILDING

FiBI organised several scientific conferences and symposia in order to strengthen and grow the biomedical imaging community within Finland as well as on the international level. The biggest events were:

Turku PET Symposium (over **250** participants);

19th Kuopio bio-MRI workshop (over **120** participants);

Annual HAIP In Vivo Imaging Minisymposium (**95** online participants).



CONTACT INFORMATION

FiBI STEERING GROUP

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HELSINKI IN VIVO ANIMAL
IMAGING PLATFORM



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FINNISH BIOMEDICAL IMAGING

NODE PARTNERS

 EURO BIOIMAGING

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 Åbo Akademi University

HOSPITAL DISTRICT OF SOUTHWEST FINLAND

TURKU

HELSINKI



KUOPIO UNIVERSITY HOSPITAL



UNIVERSITY OF EASTERN FINLAND

KUOPIO



UNIVERSITY OF HELSINKI

 HUS Helsinki University Hospital

 A! Aalto University