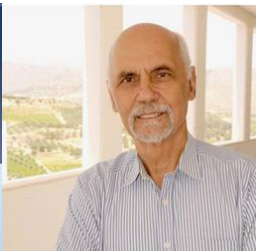




FORTH
INSTITUTE OF MOLECULAR BIOLOGY & BIOTECHNOLOGY



Founded in 1983 by *Fotis Kafatos*
one of the 3 founding Institutes

“Pursue cutting-edge research and promote scientific excellence in the field of Molecular Biology and Biotechnology.”

Insect Groups; Yeast Groups;
Mammalian Groups; Plant
Groups; Crystallography Groups
(~10 groups initially)

Organization of the
Graduate Program based on
Harvard –US in conjunction
with UoC

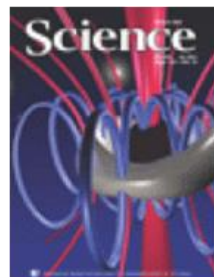
MINOTECH (in-
house enzyme
production and
sales unit)



Syntichaki et al (2000)



Syntichaki et al (2002)



Soutoglou et al (2002)



Syntichaki et al (2007)



Gouridis et al (2009)

Competitive funding
(5 ERC Grants)



Artal-Sanz et al (2009)



Sarrazin et al (2012)



Kourtis et al (2012)



Konstantinides et al (2014)



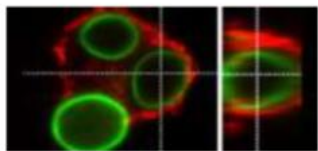
Palikaras et al (2015)



1. ***Iron Restriction inside Macrophage Regulates Pulmonary Host Defence against *Rhizopus* Species***

In a new study published in Nature Communications, IMBB-FORTH Researchers uncover the important role of iron regulation inside macrophages in host defense against airborne filamentous fungi.

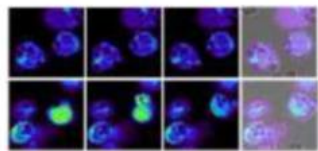
[\[PubMed\]](#)



2. ***Calcium Sequestration by Fungal Melanin Inhibits Calcium-Calmodulin Signaling to Prevent LC3-Associated Phagocytosis***

In a new study published in Nature Microbiology, IMBB-FORTH Researchers reveal a novel mechanism of melanin-dependent inhibition of calcium signaling during phagocytosis.

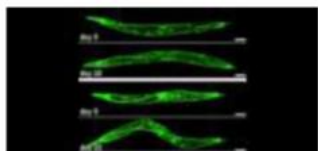
[\[PubMed\]](#)



3. ***Maintenance of Proteostasis by P Body-Mediated Regulation of eIF4E Availability during Aging in *Caenorhabditis elegans****

IMBB researchers identify mRNA processing bodies (PBs) as crucial regulators of proteostasis in *C. elegans*. The study reveals the mechanism for PB-promoted stress resistance and longevity.

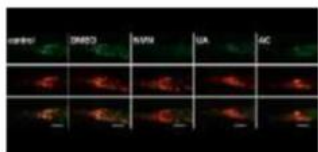
[\[PubMed\]](#)



4. ***Mitophagy Inhibits Amyloid- β and Tau Pathology and Reverses Cognitive Deficits in Models of Alzheimer's Disease***

Collaboration between researchers at NIH-USA, University of Oslo and IMBB-FORTH revealed the critical role of impaired mitophagy in Alzheimer's Disease pathogenesis.

[\[PubMed\]](#)



5. ***Challenging the Point Neuron Dogma: FS Basket Cells as 2-Stage Nonlinear Integrators***

In a new study published in Nature Communications, IMBB researchers provide a novel view of dendritic integration of interneurons and their role in brain function.

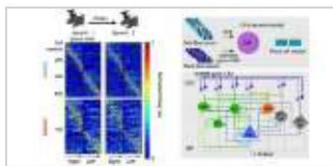
[\[PubMed\]](#)



7. ***Breakdown of Spatial Coding and Interneuron Synchronization in Epileptic Mice***

IMBB Researchers in collaboration with colleagues at Los Angeles, San Diego and New York demonstrate that epilepsy-induced deficits in spatial coding are caused by the de-synchronization of interneuronal populations.

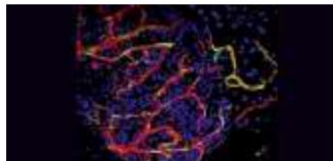
[\[PubMed\]](#)



8. ***Tissue-Infiltrating Macrophages Mediate Exosome-Based Metabolic Reprogramming Upon DNA Damage***

IMBB Researchers identified a novel mechanism by which irreparable DNA damage induces chronic inflammation and tissue pathology.

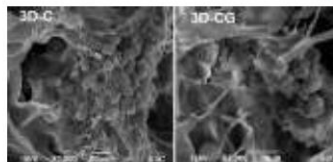
[\[PubMed\]](#)



9. ***Neural Stem Cell Delivery via Porous Collagen Scaffolds Promotes Neuronal Differentiation and Locomotion Recovery in Spinal Cord Injury***

IMBB Researchers developed novel 3D culture systems to study neuronal regeneration.

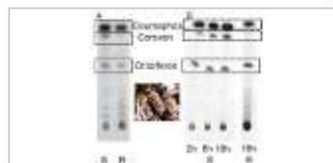
[\[PubMed\]](#)



10. ***Reduced Proinsecticide Activation by Cytochrome P450 Confers Coumaphos Resistance in the Major Bee Parasite *Varroa Destructor****

Operation of a rare evolutionary strategy for circumventing pesticide resistance in the major bee parasite.

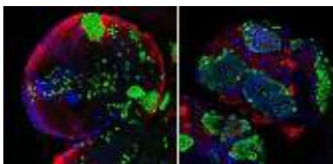
[\[PubMed\]](#)



11. ***Dissecting Hes-Centred Transcriptional Networks in Neural Stem Cell Maintenance and Tumorigenesis in *Drosophila****

A single genetic insult is sufficient to cause neoplastic overgrowth to *Drosophila* neural stem cells and their early progeny.

[\[PubMed\]](#)



Publications in high profile top journals



IMBB SCIENTIFIC HIGHLIGHTS 2020-2022

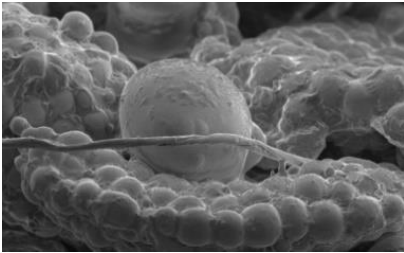
<https://www.imbb.forth.gr/en/news-en/research-news>

Distinctive character of the Institute

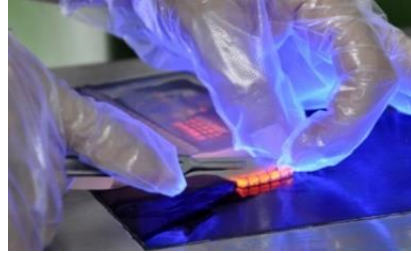
- 1) High impact on Greek Science
 - high scientific standards similar to top international centers
 - academic freedom and independence
 - model for connecting Research Centers with University (Joint faculty appointments)
 - post-graduate education schemes (rotations, qualifying exams, training ..)
- 2) Multi-thematic Research Institute
- 3) Regular evaluation by SAC
- 4) Multidisciplinary and entrepreneurial neighborhood (FORTH, University, Hospital, Tech Park)
- 5) Adherence to principles of scientific integrity, gender equality, cultural diversity & inclusion..
- 6) Member of EU-LIFE Alliance (since 2020)

Research Labs and Thematic Orientations

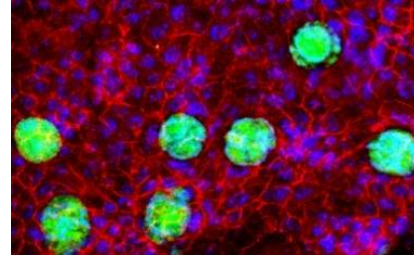
Currently **7 Research Divisions with 33 labs** run by fully independent Group Leaders (IMBB Researchers or Co- University Faculty)



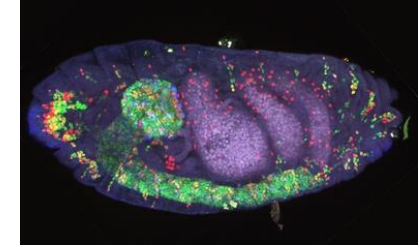
NEUROSCIENCES
(6 Groups)



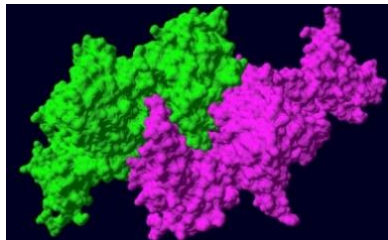
**GENE REGULATION &
EPIGENETICS**
(9 Groups)



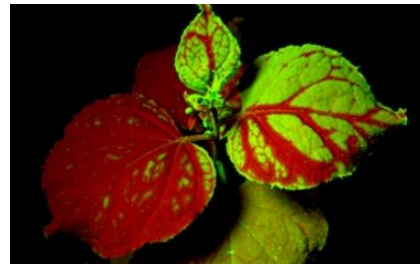
IMMUNITY
(5 Groups)



**EVOLUTION, DEVELOPMENT
& CELL BIOLOGY**
(4 Groups)



**STRUCTURAL BIOLOGY, BIOPHYSICS
NANOBIOTECHNOLOGY**
(4 Groups)



**PLANT & PLANT-
MICROBE BIOLOGY**
(3 Groups)



**INSECTS &
VECTOR-BORNE DISEASES**
(2 Groups)

2018+: expansion in Translational Medicine

IMBB Facilities and Support Units

A) Open access to Instruments and Services

- can be used by other Researchers

B) “Researcher-friendly” operation (cost).

C) Joint operation

- e.g. Med School FACS by IMBB personnel

D) Shared Instruments / Location

- e.g. IMBB Confocal microscopes, cryotomes,.. instruments in UoC buildings

E) Joint applications for new Instruments

1. Animal House – Transgenesis Facility

- “State of the art” buildings and instrumentation.
- 12 employees (PI, Staff scientist, caretakers, veterinary doctors).
- Users: 18 IMBB labs + 7 UoC.
- Services: mouse breeding, husbandry, genotyping, experiment permits, training, transgenesis, embryo-freezing.

2. Genomics Facility

3. Proteomics Facility

4. BIOIMAGING: Confocal & High Content Microscopy

5. Fly Room

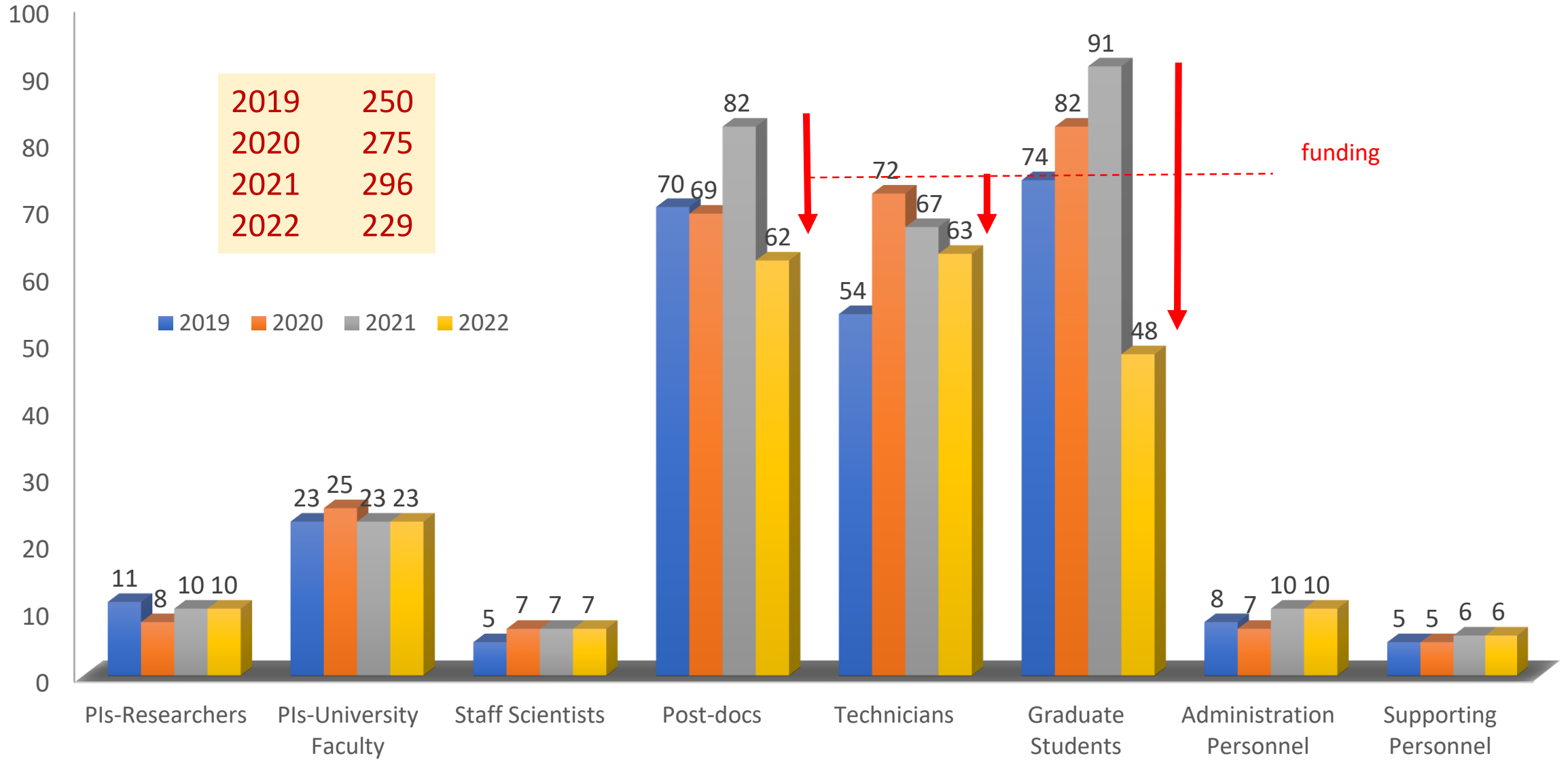
6. FACS and FACS sorting Facility

7. Electrophysiology Unit-Behavioral Phenotyping Unit

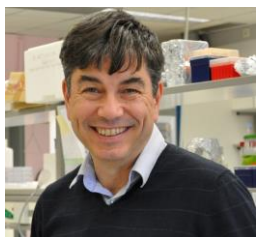
8. Structural Biology Unit

9. MINOTECH Biotechnology

IMBB Personnel (2019-2020-2021-2022*)



Partnerships and strategic alliance EU-LIFE

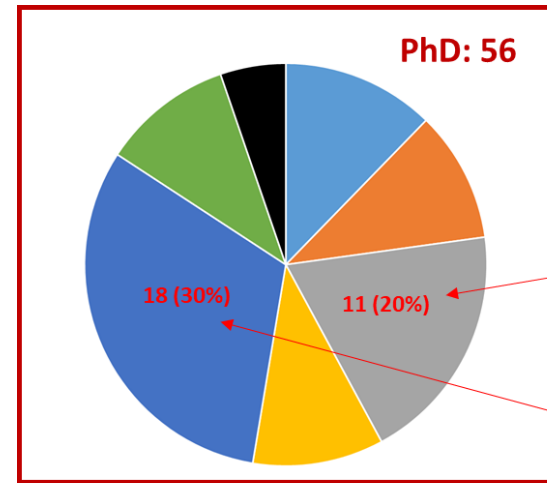


- Alliance of **15 premier European biomedical Institutes**
 - **IMBB Researchers and personnel actively involved in EU-LIFE Working Group;** sharing information, experience in a wide range of scientific and organizational practices.
- **international visibility of IMBB.**

Training Programs

IMBB participates in 6 post-graduate programs:

- **Molecular Biology and Biomedicine (MBB)**
- **Protein Biotechnology**
- **Molecular Basis of Human Disease**
- **Plant Molecular Biology and Biotechnology**
- **Bioinformatics**



PhD students 2018-2021

- Structural Biology, Biophysics-Nanobiology
- Neuroscience
- Immunity
- Evolution, Development & Cell Biology
- Gene regulation & Epigenetics
- Plant & Plant microbe biology
- Insect & Vector Borne Diseases

Scientific Interactions - Communication

1. IMBB Colloquia and Seminars (weekly)
2. IMBB-UC Med School Joint Seminar Series on Translational Research (weekly)
3. Joint thematic clubs – Bioimaging, Chemical Biology (bimonthly) & computational Biology (September)

Promotion of Equality, Diversity, Inclusion and Scientific Integrity (independent “offices”)

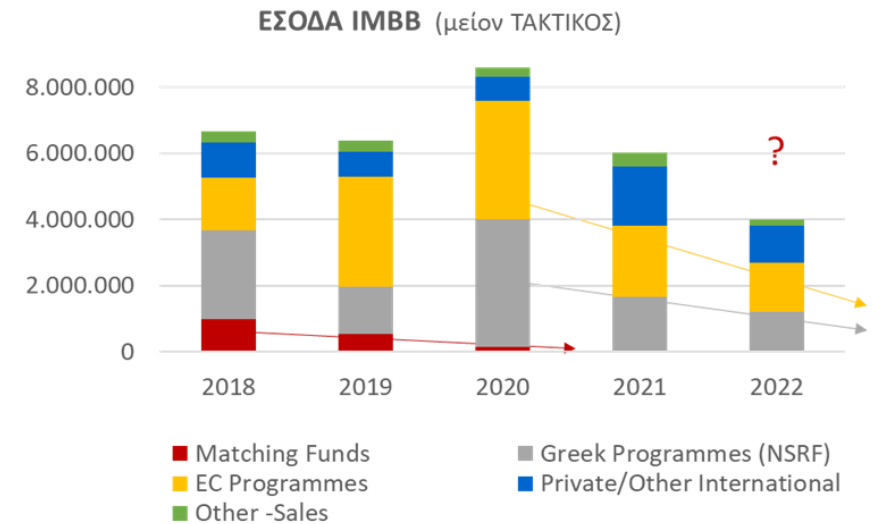
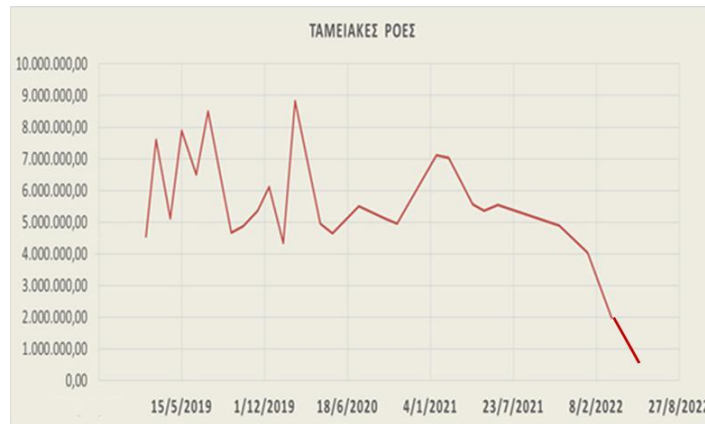
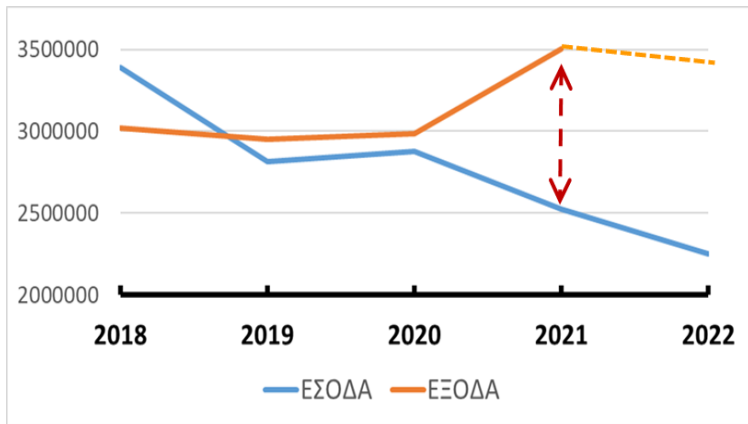
IMBB OFFICE OF SCIENTIFIC INTEGRITY

IMBB GENDER EQUALITY GROUP

Very active, many problems solved !

interaction with FORTH (Documents, harmonization of GEPs across, transferring EU-LIFE GE Working Group experience ..

Financial situation: serious deficit in 2021 & 2022



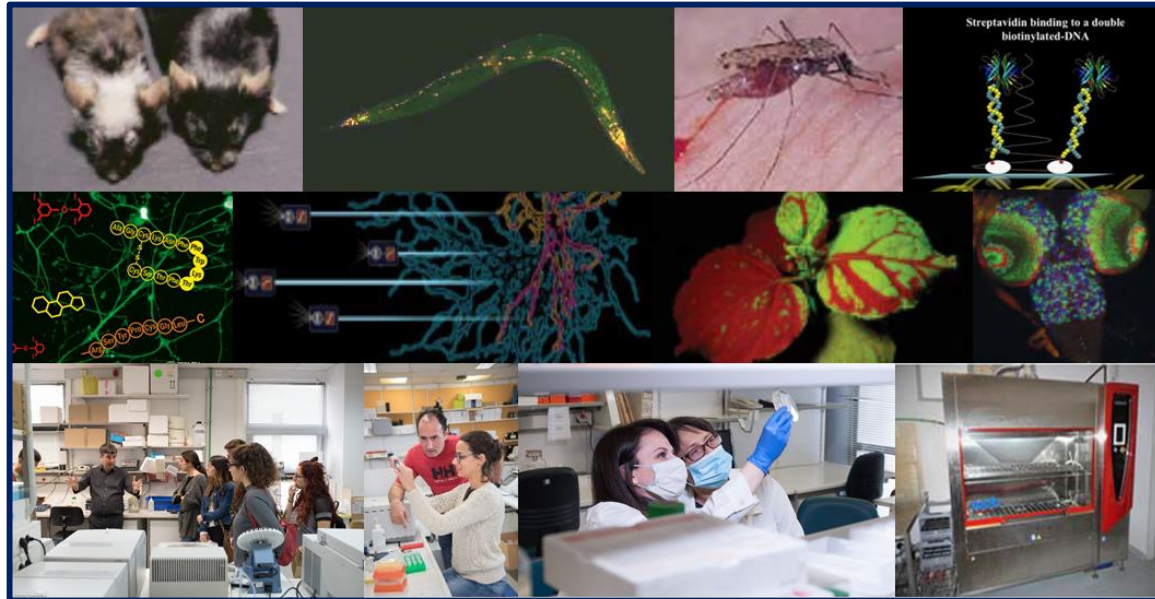
- **Significant drop in competitive research grants, no matching funds ..**
- **Dramatic increase in expenses** (for example DEH: IMBB 42,5%..)

2017-2021: Investments and Researcher-friendly policy

- **6/11 Researchers at IMBB are new** (start up funding + ...)
- **Bridge funding** (20PIs—no unpaid researchers, reagents ..)
- Researcher-friendly **Overhead** and Facility policy



Strategic Plan 2022 – 2025



1. Ensure **sustainable development goals**
2. Strengthen the **“Research Ecosystem”**
3. Establish a **beacon Institute** for **practices & procedures**, including Young Investigators **Mentoring and Career Track** programs

Funding



Widening
European
Commission

✓ ERA Chair



George Dimopoulos
Vector Biology



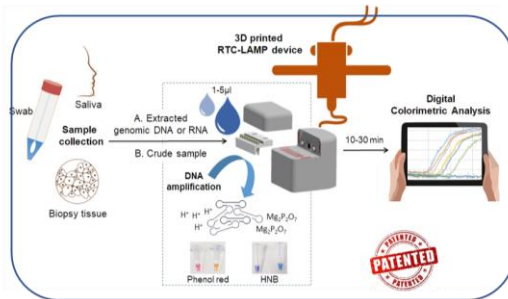
✓ EXCELLENCE HUBS

(TEAMING - 2d phase) ..

Innovation

Digital diagnostics: method for detecting infectious diseases via smart-phone

- 2 Innovation grants - Coordinator (EC-HORIZON2020 FET-OPEN-2018-20 & EC-H2020-CORONAVIRUS-2020)
- Lab Funding: 1,4M €
- 1 Industrial grant (50K €)
- 1 Patent, 1 Prototype
- 1 Spin-off (BIOPIX DNA TECHNOLOGY)



2d phase - in progress ..

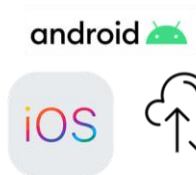


✓ Agri-food



BIOPIX-T

- 4M € from the European Investment Bank (9/2019)
- Portable device and 2 assays in the market (10/2021) (SARS-COV-19 / Influenza); approval as per IVDD



More applications by all researchers (individuals and groups), aim high !

Exploit Precision medicine Infrastructure and Translation Medicine expansion

Μονάδα Διαγνωστικής Γενετικής και Ιατρικής Ακριβείας (ΔΙΓΕΝΙΑ)



Κέντρο Ιατρικής Ακριβείας για τη νόσο Αλτσχάιμερ στην Κρήτη

Ιατρική Ακριβείας (Precision Medicine)
ΜΟΝΑΔΑ ΕΞΑΤΟΜΙΚΕΥΜΕΝΗΣ ΓΟΝΙΔΙΩΜΑΤΙΚΗΣ ΑΝΑΛΥΣΗΣ (ΜΕΓΑ)



Συνολικό εμβαδόν: 701 τμ



Ολοκλήρωση διαδικασιών διαπίστευσης κατά ΕΛΟΤ EN ISO 15189:2012 (Ιατρικά Εργαστήρια) στις 21/7/21



Ολοκλήρωση διαδικασιών πιστοποίησης κατά ISO 27001 (Συστήματα Διαχείρισης Ασφάλειας Πληροφοριών) στις 28/6/21



Ελληνικό Δίκτυο Μοριακής Ογκολογίας (ΕΔΙΜΟ)



Ίδρυμα Τεχνολογίας Έρευνας



Johns Hopkins University



Πανεπιστήμιο Κρήτης

Ιόνιο Πανεπιστήμιο



Translational Medicine



Pharmaceutical Laboratories S.A.



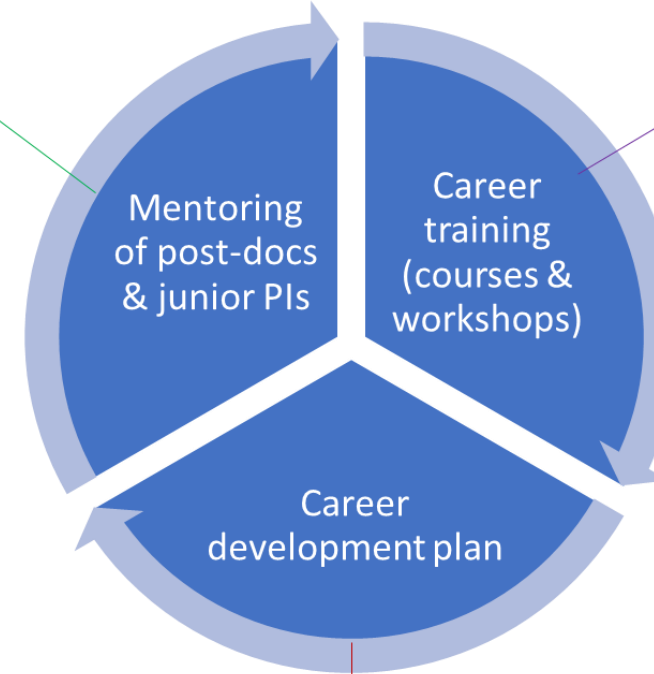
Goal 2. Strengthen the “Research Ecosystem”



Goal 3. Mentoring and Career Track Scheme



- Choose IMBB mentor(s)
- Produce Independent Development Plan (IDP)
- Define mentee’s goals
- Assess mentee’s skill
- Define career options
- Share experience and good professional practice



- Technical skills
- Scientific & grants writing
- Presentation skills
- Lab management/leadership
- Networking
- Supervising skills
- Innovation/entrepreneurship

- Define milestones for long-term plans; revise career plan (myIDP) every 6M with mentor
 - Timeline towards completion of post-doc and next career step
 - Re-assess necessary skills to develop action plan (myIDP)
- Identify & apply for research funding (e.g. ELIDEK, participating in other PIs proposals etc.)
 - Engage in research outreach to the public
 - Engage in innovatioin activities

Operational & legal framework for joint facilities

- describe capacity (full potential & visibility)
- enable and facilitate access
- support: personnel, maintenance and upgrade
- planning for rational strategic expansions

Key Objectives (performance indicators) for 2022-2025

(Goal 1):

- Maintain and improve research impact based on ERC evaluation standards (DORA)
- Maintain and increase annual research grant and contract income
- Promote and ensure **sustainability** of the Units, Research laboratories and Institute

(Goal 2):

- More common facilities fully operated within Research Ecosystem (FORTH-UoC)
- More communication platforms (active thematic clubs etc) and collaborative projects within Research Ecosystem (FORTH-UoC)
- Updated and upgraded postgraduate program; more international students and young investigators at IMBB

(Goal 3):

- Full implementation and compliance of best procedures and practices.
- Full implementation of mentoring and career track programs
- Improved gender balance/equality indicators.
- Improved rates of IMBB young investigator employment in relevant sectors

Milestone

IMBB's 40th anniversary in 2023:

- Showcase our past achievements
- Signal our plans to increase impact in Research, Education and Society
- Broaden and deepen our excellence and sustainability