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### O1 INSTITUTIONAL CHARACTERIZATION

The Centro de Filosofia das Ciências da Universidade de Lisboa (CFCUL) was established in 2003 as a PERMANENT R&D UNIT of the Universidade de Lisboa (UL).

CFCUL is predominantly associated with the Faculdade de Ciências, making it possible to develop interdisciplinary work with scientists from a wide spectrum of disciplines.

Since the beginning of 2018, CFCUL broadened its institutional affiliations

within the UL enjoying strong partnerships with the Faculdade de Belas Artes, the Faculdade de Letras, the Instituto Superior Técnico, the Instituto de Direito Penal e Ciências Criminais.

In the national context, **CFCUL has** signed partnerships with 17 institutions.

### MANAGEMENT AND PARTICIPANT INSTITUTIONS

### MANAGEMENT

#### INSTITUTION

FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências (FCiências.ID)

### PARTNERSHIP AGREEMENTS WITH PARTICIPANT INSTITUTIONS

- Faculdade de Ciências da Universidade de Lisboa (FC/ULisboa)
- Faculdade de Letras da Universidade de Lisboa (FL/ULisboa)
- Faculdade de Belas-Artes da Universidade de Lisboa (FBA/ULisboa)
- Instituto de Direito Penal e Ciências Criminais (IDPCC)
- Instituto Superior Técnico (IST/ULisboa)

- Universidade Aberta (UAberta)
- Universidade de Coimbra (UC)
- Universidade de Évora (UE)
- Fundação Ensino e Cultura Fernando Pessoa (FECFP)
- Universidade Nova de Lisboa (UNL)
- Universidade Lusófona Cooperativa de Formação e Animação Cultural, CRL (COFAC)
- Marinha (Marinha/MDN)
- Direcção-Geral das Artes (DGArtes)
- SGHL Sociedade Gestora do Hospital de Loures, SA
- Hospital CUF Descobertas (HCD)
- Agrupamento de Escolas de Santa Catarina (AESC)
- Psicosophos Apoio Terapêutico da Expressão Afectiva, Lda

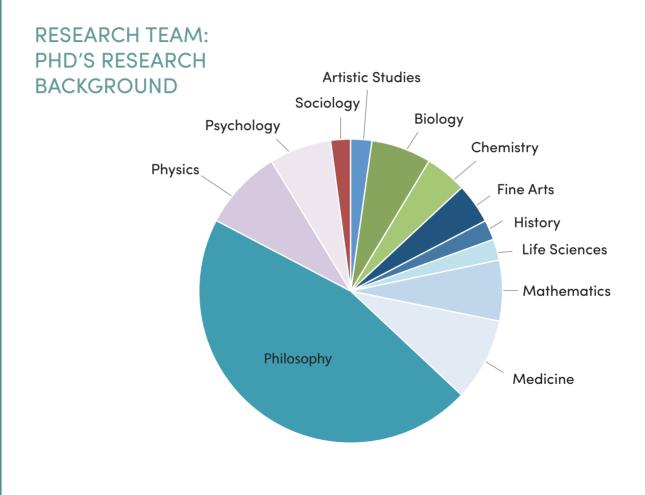
# 02 CFCUL SCIENTIFIC IDENTITY

**CFCUL** was the **first R&D Unit** in Portugal fully devoted to Philosophy of Science and **it still is the only R&D Unit in Portugal fully devoted to Philosophy of Science.** CFCUL is, therefore, the absolutely pioneer in Portugal in this area.

CFCUL's mission is to promote research, training and dissemination of knowledge in the area of Philosophy of Science in accordance with the best international scientific standards.

**CFCUL's research profile is broad**, based on an extensive and open

understanding of Philosophy of Science that takes into account the "analytic" and "continental" traditions, thus spanning from formalized to historical and phenomenological approaches to science. Furthermore, CFCUL seeks to analyze the metaphysical, ethical, political and aesthetic dimensions and implications of scientific practice.

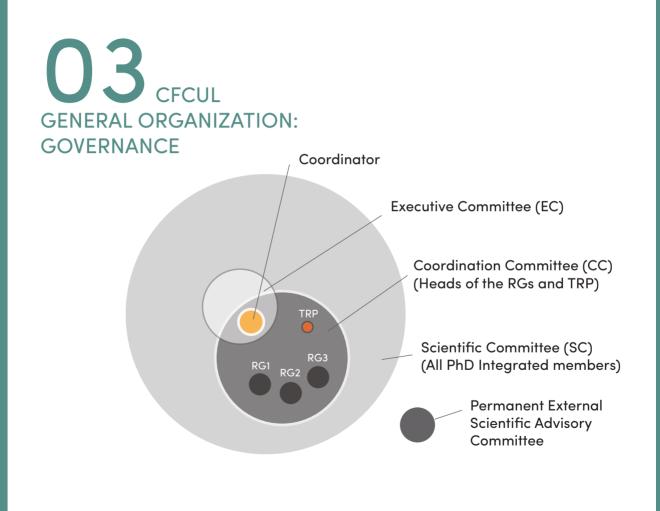


### **O3** GENERAL ORGANIZATION: RESEARCH GROUPS

Aiming for scientific robustness, CFCUL's research is currently organized in **3 research groups** (RG), **one transversal research pole** (TRP) and **10 research lines** (RL).

Each **research group** formulates its own research program with specific objectives and plans.

The **principal investigator** (Head) of each RG and of the TRP is responsible for the implementation and development of the respective research program and for keeping the members of the group in close contact.



### B. GENERAL OBJECTIVES AND STRATEGY

### GENERAL OBJECTIVES AND STRATEGY

CFCUL aims at promoting research of international excellence and at reinforcing its position as the national reference for Philosophy of Science by developing a broad, interdisciplinary approach to Philosophy of Science.

To reach this goal, it has defined a set of general objectives and related strategies in the following core areas:

01 RESEARCH
02 ADVANCED TRAINING
03 INTERNATIONALIZATION
04 DISSEMINATION

# **O1** RESEARCH

Since its foundation, CFCUL's main goal has been to develop first class interdisciplinary research in Philosophy of Science, by fostering dialogue and collaboration among philosophers, scientists and artists.

To pursue this goal, in continuity with what has been done in the previous years, CFCUL will apply the following strategies: • Implementation of a policy of integration of young researchers;

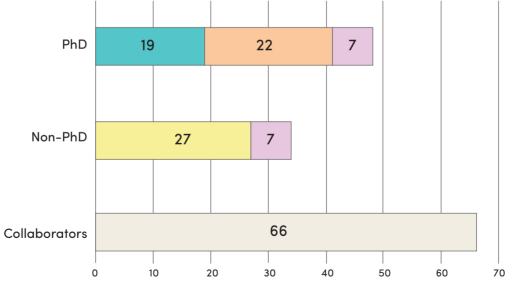
• Promotion of an interdisciplinary and inter-faculty team profile, bringing together researchers with different skills, abilities, backgrounds and expertise at differing career stages;

• Encouragement and support to CFCUL's members in publishing their research results in peer-reviewed journals and in monographs/edited books with international recognition;

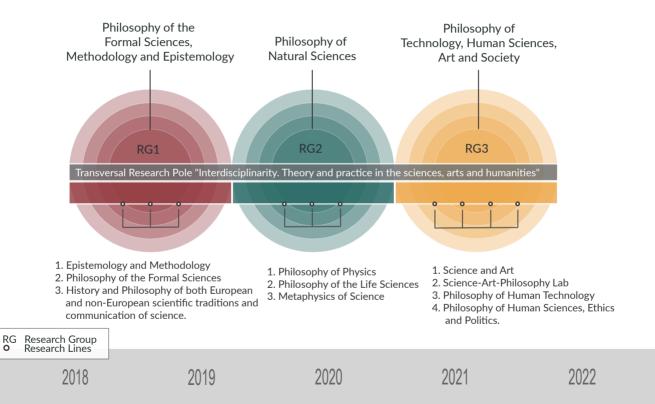
• Encouragement and support to CFCUL's members in participating in national and international research projects (a Science & Communication Manager was hired in 2019 to provide technical support for applications);

• Engagement in national and international networks and research groups.

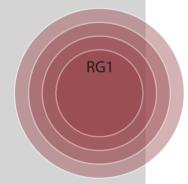








### RG1: PHILOSOPHY OF THE FORMAL SCIENCES, METHODOLOGY AND EPISTEMOLOGY



#### RL1: EPISTEMOLOGY & METHODOLOGY

a) applied evolutionary epistemology;b) rationality and decision-theoretical studies;c) formal epistemology.

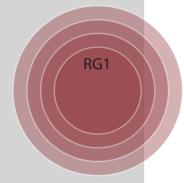
### **RL2: PHILOSOPHY OF THE FORMAL SCIENCES**

a) ontology and fiction in the formal sciences;b) logical pluralism and the role of non-classical logics.

### RL3: HISTORY & PHILOSOPHY OF BOTH EUROPEAN AND NON-EUROPEAN SCIENTIFIC TRADITIONS AND COMMUNICATION OF SCIENCE

a) studies in pluralist epistemology, with a special focus on the work of Mach, Bachelard and Feyerabend;
b) studies in non-European (African and Asian);
philosophical and scientific traditions.

### RG1: PHILOSOPHY OF THE FORMAL SCIENCES, METHODOLOGY AND EPISTEMOLOGY



### RL1: EPISTEMOLOGY & METHODOLOGY

RL1 seeks to develop theories on inference, reasoning and method. This does not only include proper logic, but also inductive logic, decision and game theory, psychological theories of human reasoning, Darwinian and non-Darwinian evolutionary theories and algorithms, and broadly construed methodological issues encompassing, among others, issues such as the computational modeling of scientific theories.

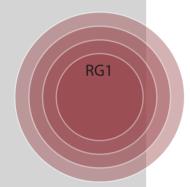
### **RL2: PHILOSOPHY OF THE FORMAL SCIENCES**

RL2 is concerned with philosophy of logic and mathematics. Main questions are: Should mathematical objects be understood as fictions? And if they are not to be viewed in that way, then how should they be viewed? What is the role of mathematics in scientific modelling? What is the role of abduction in mathematical reasoning? Should mathematical reasoning be accounted for in terms of classical logic or in terms of some non-classical logic?

# RL3: HISTORY & PHILOSOPHY OF BOTH EUROPEAN AND NON-EUROPEAN SCIENTIFIC TRADITIONS AND COMMUNICATION OF SCIENCE.

RL3 is interested in pluralistic approaches to scientific methods. One key focus is the notion of 'open epistemology' which can be traced back to Mach, Bachelard and Feyerabend. A second core issue consists in the methodological diversity of different (non-European) philosophical traditions and their ways of knowledge construction.

### RG1: PHILOSOPHY OF THE FORMAL SCIENCES, METHODOLOGY AND EPISTEMOLOGY



### **RESEARCH TEAM RG1**

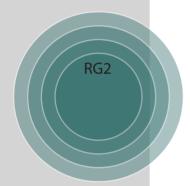
#### PhD Integrated Members

- 1. António Zilhão
- 2. Augusto Oliveira
- 3. Bruno Jacinto
- 4. Daniele Molinini
- 5. Elisa Maia
- 6. Filipe Varela
- 7. Gonçalo dos Santos
- 8. Isabel Serra
- 9. João Barbosa
- 10. José Oliveira
- 11. José Calazans
- 12. José Félix da Costa
- 13. Matthieu Fontaine
- 14. Nathalie Gontier
- 15. Vítor Rodrigues

### Non-PhD Integrated Members

- 1. António Fadda
- 2. Fernando Rua
- 3. Marta Facoetti
- 4. Nuno Jerónimo
- 5. Paulo Lucena
- 6. Vítor Almeida

### RG2: PHILOSOPHY OF NATURAL SCIENCES



### **RL1: PHILOSOPHY OF PHYSICS**

a) foundations of Quantum Mechanics;b) relational approaches to Physics.

### **RL2: PHILOSOPHY OF THE LIFE SCIENCES**

a) the nature of evolutionary change (including its relation to development);

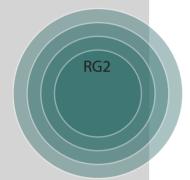
b) biological diversity (biodiversity, species problem, concept of biological organism);

c) the nature of cognition and conscious experience in natural and artificial organisms, broadly understood.

### **RL3: METAPHYSICS OF SCIENCE**

- a) theory of emergence and reductionism;
- b) ontic structural realism;
- c) theory of causation;
- d) metaphysical grounding, dualities and fundamentality.

### RG2: PHILOSOPHY OF NATURAL SCIENCES



### **RL1: PHILOSOPHY OF PHYSICS**

RL1 continues the analysis of the foundations of Quantum Mechanics, following de Broglie's account of the nature of quantum and sub-quantum reality and pursues the study of a general and unified relational approach to physical reality.

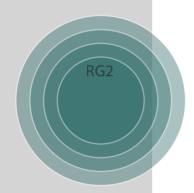
### **RL2: PHILOSOPHY OF THE LIFE SCIENCES**

RL2 focuses on Philosophy of Biology. The main areas of inquiry are the nature of evolutionary change (including its relation to development) and biological diversity (biodiversity, species problem, concept of biological organism). It also covers issues concerning the nature of cognition and conscious experience in natural and artificial organisms, broadly understood.

### **RL3: METAPHYSICS OF SCIENCE**

RL3 gives continuity to the study started in 2015 of the theory of emergence and reductionism, relational ontology and ontic structural realism, theory of causation and metaphysical grounding, dualities and fundamentality, while it integrates the philosophical account of space of the former RL Philosophy of Space.

## RG2: PHILOSOPHY OF NATURAL SCIENCES



### **RESEARCH TEAM RG2**

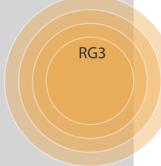
#### PhD Integrated Members

- 1. António Vieira
- 2. Davide Vecchi
- 3. Elena Casetta
- 4. Francisco Carrapiço
- 5. Gil Santos
- 6. Inês Orfão
- 7. João Cordovil
- 8. José Croca
- 9. Klaus Gärtner
- 10. Lorenzo Baravalle
- 11. Luís Vicente
- 12. Maria de Melo
- 13. Mário Gatta
- 14. Paulo Castro
- 15. Rui Moreira

### Non-PhD Integrated Members

- 1. Ana Pato
- 2. Andrea Mazzola
- 3. Ângela Brandão
- 4. Bárbara Ferreira
- 5. Filipe Pamplona
- 6. João Pinheiro
- 7. Marco Pina
- 8. Maria Charrua
- 9. Maria Carvalho
- 10. Naïd Mubalegh

### RG3: PHILOSOPHY OF TECHNOLOGY, HUMAN SCIENCES, ART AND SOCIETY



### **RL1: SCIENCE AND ART**

a) perspectives of the body;b) cartographies of the territory;c) image and technology.

### **RL2: SCIENCE-ART-PHILOSOPHY LAB**

Collective and participative creative processes in Art and Science.

### **RL3: PHILOSOPHY OF HUMAN TECHNOLOGY**

a) ELS and political/policy aspects of development of human technologies;

b) assessment of embodied technologies and their potential;c) technophenomenologies and technoanthropologies of hacking/inventing/engineering/enhancing human experience.

### RL4: PHILOSOPHY OF HUMAN SCIENCES, ETHICS AND POLITICS

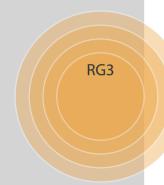
a) communication between scientific disciplines and external instances;

b) the debate on the "natural question";

c) the criteria of: c1) demarcation of science vs. non-science,

c2) autonomy vs. regulation and limits of Science.

### RG3: PHILOSOPHY OF TECHNOLOGY, HUMAN SCIENCES, ART AND SOCIETY



#### **RL1: SCIENCE AND ART**

RL1 is interested in: a) the role of images in Art and Science. It aims to develop an Ontology of Image that matches problems and challenges of contemporary Philosophy, Arts and Science; b) the study of theoretical crossovers between science and art, engaging in questions such as: what are the parallels between Science and Art? What does scientific and artistic creation have in common?

#### RL2: SCIENCE-ART-PHILOSOPHY LAB

RL2 is dedicated to the reinvention of the traditional external observer perspective of philosophers by actively engaging them in innovative experimental tasks with scientists and artists. Scientists and artists will actively engage in philosophical questions, while philosophy will try to take up this challenge stemming from Science and Art.

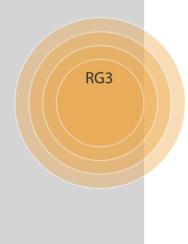
#### **RL3: PHILOSOPHY OF HUMAN TECHNOLOGY**

RL3 aims to study: a) how emergent technologies constitute and amplify human experiences or put autonomy, personhood, freedom, privacy and human life in question; b) how should policy and the public be advised in questions of technology; c) how do instruments, artifacts, techniques and bodily senses in their poetic actions, kinetics (e.g. gesture and diagrams) and aesthetic qualities, produce and transform human knowledge, experience and social life; and d) case studies in philosophy of human enhancement.

### RL4: PHILOSOPHY OF HUMAN SCIENCES, ETHICS AND POLITICS

RL4 is focused in the interdisciplinary links between social sciences and humanities and between science and common-sense. Case studies are to assess the impact of new digital technologies on the production and transmission of knowledge in higher education institutions.

### RG3: PHILOSOPHY OF TECHNOLOGY, HUMAN SCIENCES, ART AND SOCIETY



### **RESEARCH TEAM RG3**

#### **PhD Integrated Members**

1 Alexander Gerner 2. Amândio Fontoura 3. Caio Novaes 4. Catarina Nabais 5. Cristing Tayares 6. Estela Jardim 7. Graça Corrêa 8. João Ribeiro 9. Jorge Jesuíno 10. José Pio de Abreu 11. Luís Homem 12. Mara Almeida 13. Marlon Miguel 14. Nuno Carvalho 15. Olga Pombo 16. Sara Fuentes 17. Tereza Ventura 18. Tiago Mendes

### Non-PhD Integrated Members

- Ana Gaspar
   Ana Paula Suarez
   David Santos
   Diogo Cunha
   Guilherme Martins
- 6. Hugo Vale
- 7. Jane Guimarães
- 8. João Duarte
- 9. Luana Dias
- 10. Lucília Lopes
- 11. Maša Tomšič
- 12. Miguel Montenegro
- 13. Pedro Gomes
- 14. Pedro Caldas
- 15. Ricardo Julião
- 16. Sónia Duarte
- 17. Thiago Paiva
- 18. Vinícius Aguiar

### TRP: INTERDISCIPLINARITY THEORY AND PRACTICE IN THE SCIENCES, ARTS AND HUMANITIES

Transversal Research Pole "Interdisciplinarity. Theory and practice in the sciences, arts and humanities"

RG3

TRP explores the actual contradiction between the institutional permanence of disciplinary structures and the paradoxical appeal made by the same institutions for transgressing disciplinary boundaries in order to be original and innovative.

### TRP's work focuses on two main research questions:

1) how does this paradoxical situation work in science, arts and humanities?

2) which are the heuristic consequences of this situation in scientific research, artistic production and humanistic theory?

TRP advances the implementation of a horizontal, interdisciplinary approach to CFCUL's Research by promoting a place of cross-fertilization between RGs. TRP organizes the CFCUL Permanent Seminar, with the involvement of all CFCUL's Integrated Members.

# 02 ADVANCED TRAINING

Philosophy of Science, Technology, Art and Society

CFCUL aims to be the national reference for advanced training in Philosophy of Science, building upon the expertise gained in the previous years.

CFCUL was the proposer and driving force behind the International FCT Doctoral Program in **"Philosophy of Science, Technology, Art and Society"**, the only Doctoral Program in Philosophy funded by FCT in Portugal. Established in 2014, this Doctoral Program has **granted 20 doctoral studentships.** 

### CFCUL is also involved in other advanced training programs, namely:

FCUL Master and Doctoral Program in History and Philosophy of Science;
ISCTE - IUL Master and Doctoral Program in Complexity Sciences.

Over the years, CFCUL has attracted many students who cherish its open, creative and innovative environment.

# 02 ADVANCED TRAINING

To strengthen its position as a national reference in the advanced training in Philosophy of Science, the CFCUL will:

• Encourage the participation of its members in graduate and post-graduate programs;

• Host and supervise doctoral projects, by providing institutional and scientific conditions able to attract world-class students; • Award doctoral studentships. We propose the funding of 5 grants in the first year of this strategic project, and 4 grants per year (17 in TOTAL) after that. The duration of the scholarships is 4 years.

# **O3** INTERNATIONALIZATION

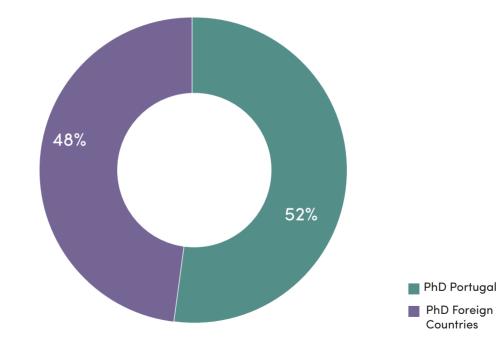
Books and book's chapters in Brill, Springer, Gradiva, Fim de Século, Colibri, World Scientific, etc.

### PUBLICATIONS

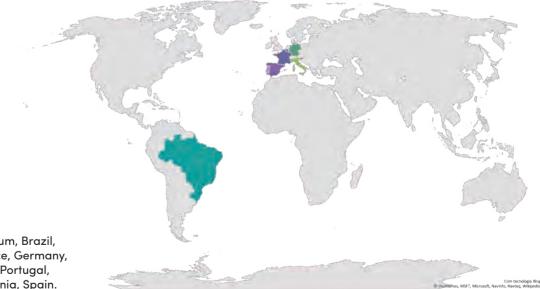
Publication of papers in international peer-reviewed journals, books and chapters of international distribution.

Papers authored by CFCUL members published in international journals such as Synthese, Foundations of Science, Axiomathes, Topoi, Aisthesis, Theorema, Evolutionary Biology, Studies in History and Philosophy of Science, History and Philosophy of the Life Sciences, etc.

### **03** RESEARCH TEAM: COUNTRY WHERE THE PhD WAS OBTAINED

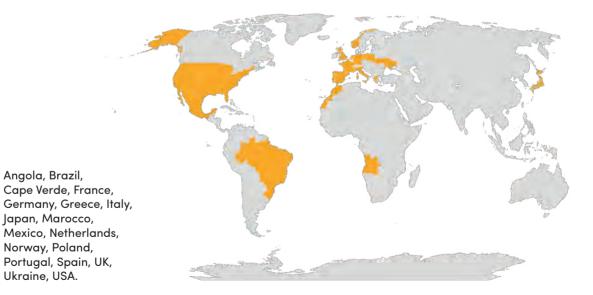


# 03 RESEARCH TEAM: INTEGRATED MEMBERS NATIONALITIES



Belgium, Brazil, France, Germany, Italy, Portugal, Slovenia, Spain.

### **O3** RESEARCH TEAM: COLLABORATORS NATIONALITIES



# **O3** INTERNATIONALIZATION

CFCUL aims to increase the international impact and visibility of the research of its members and to create strong links with the international academic community. To reach these goals, the CFCUL will:

- Support **publications** in top-rated international journals and participation in international conferences;
- Support the CFCUL researchers' international mobility;
- Continue to host visiting scholars;



#### • Organize the **4th Lisbon International Conference in Philosophy of Science**;

• Promote the indexing in different platforms and databases of **"Kairos, Journal of Philosophy & Science"**, the international peer-reviewed, open access journal edited by the CFCUL and published by De Gruyter;

• Maintain and foster CFCUL's participation in **international research networks** (e.g. COST Actions).

# 04 DISSEMINATION

CFCUL aims to improve its societal impact in the domains of Philosophy of Science, Philosophy of Technology, Science and Society and Science and Art.

In strategic terms, CFCUL will continue to promote Public Engagement through activities aimed at different audiences:

- Summer/Winter schools for graduate and undergraduate students;
- Open conferences and thematic seminars;
- Public debates;



- Exhibitions;
- New Website. New Image;
- Online platform to make easily available the CFCUL's works with direct societal implications;
- Actions in partnership with relevant stakeholders (e.g., foundations, cultural and civil society organizations, etc.).



### **D1** PROGRAMMATIC FUNDING: PhD SCHOLARSHIPS

Multi-year plan of PhD scholarships (2019-2022):

PhD-students are, and always have been, an important part of the CFCUL. The promotion of world-class advanced training in Philosophy of Science is a core component of this research unit.

**CFCUL** was the **first R&D unit and it still is the only R&D unit in Portugal fully devoted to Philosophy of Science**. CFCUL is, therefore, the main institution for the training of Philosophers of Science in Portugal.

Due to this importance, **we propose the funding of 5 grants in the first year and 4 grants per year** (17 in TOTAL) after that. The duration of the scholarships is 4 years each. This means we suggest 1 PhD student per group each year, and 1 PhD student per RL through the whole period of implementation of the strategic project. The profile of the candidates will reflect the research within the RGs and RLs.

### **D**2 PROGRAMMATIC FUNDING: HIRING PhDs

we consider funding to hire PhDs as essential. We propose the opening of 3 positions per year (12 in total) with a contract duration of 3 years. This corresponds to the hiring of one researcher per group each year.

FCT-Researchers and Post-Docs are, and always have been, vital to the development of the CFCUL.

The fact that over 50% of the integrated members of the CFCUL are in early career stages or are PhD-students shows the strong support of the Research Unit for young researchers, as well as their importance in the implementation of the strategic project.

In the light of what was stated above,

**D3** PROGRAMMATIC FUNDING: RESEARCH NETWORKS

PHILHUMTECH-NET – Philosophy of Human Technology Network (A. Gerner)

AppEEL-NETWORK – Applied Evolutionary Epistemology Lab Network (N. Gontier)

SENPLiS – South European Network in the Philosophy of the Life Sciences (D. Vecchi)

POND – Philosophy of Science around the Mediterranean (O. Pombo)

i-GEN – Interdisciplinary Genome Editing Network (M. Almeida)

### **04** PROGRAMMATIC FUNDING: EQUIPMENT AND OPEN ACCESS

- Upgrade of the CFCUL researcher's desktop computers;
- Image and sound software;
- Publications in Open Access;
- Conference sound speaking/ recording system for CFCUL debates/ Science Cafes;
- Other equipment need by the Research Lines on Philosophy of Physics and on Philosophy of Human Technology.



### **RESULTS (2018–2019)**

### PUBLICATIONS

• Papers authored by CFCUL members published in international journals such as Synthese, Foundations of Science, Topoi, Philosophia Mathematica, Time and Mind, etc.

• Books and book's chapters in Brill, Springer, Gradiva, Fim de Século, Colibri, World Scientific, etc.

### PROJECTS

- "Which Biodiversity definition for biodiversity conservation?" (PTDC/IVC-HFC/1817/2014).
- "Emergence in the natural sciences: towards a new paradigm" (PTDC/FER-HFC/30665/2017).

### CEEC (FCT) INDIVIDUAL CALL TO SCIENTIFIC EMPLOYMENT STIMULUS

• 2017: 3 contracts.

• 2018: 18 applications supported by CFCUL.

### ORGANIZATION OF SCIENTIFIC MEETINGS

- Permanent Seminar.
- Reasoning Seminar.
- From Automata to Robotics International Workshop (Mar 28-29, 2019).
- PROTOLANG 6 (9-12 September 2019).

• Open Epistemologies (20-21 September 2019).

#### **KAIROS**

Journal of Philosophy & Science.

### **EXHIBITIONS**

SPECERE (Mar 29, 2018 - Dec 31, 2023), MUHNAC, Lisbon.



















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