

# Physioma 2019

## Physiology for a healthier, longer life

### 1<sup>st</sup> International Meeting of the Portuguese Society of Physiology (SPFis)

ISCTE – IUL, Cidade Universitária, Lisboa Portugal

10<sup>th</sup> and 11<sup>th</sup> October 2019

#### Honour Commission

HE Minister of Superior Education and Research  
The President of Science and Technology Foundation (FCT)  
The Rector of IUL (instituto Universitário Lisboa)\*

#### Science Commission\*

Margarida Caramona, Dep Pharmacology UCoimbra School of Pharmacy  
Correia de Sá, Dep Immuno-Physiology and Pharmacology ICBAS U Porto  
Almeida Dias, Health Sciences, CESPU  
Carlos Nunes Filipe, Dep. Physiology, Nova Medical School  
Jorge Gonçalves, Dep Pharmacology UPorto School of Pharmacy  
Beatriz Lima, Dep Pharmacol.Sciences,U Lisboa, Fac .Pharmacy  
Raquel Madeira, Dep.Sports Physiology, U Lusofona Fac Physical Educ.& Sport  
Ducla Soares (Emeritus), IBEB U Lisboa, Faculty of Sciences

#### Promoters

Ana Fernandes, CBIOS U Lusofona  
Hugo Alexandre Ferreira, IBEB U Lisboa, Faculty of Sciences  
Luís Monteiro Rodrigues, CBIOS U Lusofona and U Lisboa, School of Pharmacy

#### Meeting Chairman

Luís Monteiro Rodrigues

#### **Institutional science partners**

*On behalf of IUPS Executive Committee (ExCo) I would like to congratulate the Portuguese Physiological Society (SPFis) for its official registration in your country. The IUPS is pledged to joint force with national and regional physiological societies and federations to promote physiology in research and education towards the realization of our motto "Physiology without borders." Particularly, the inclusion of a debate on "what does the future hold for physiology" is timely relevant to the mission of IUPS to return physiology to center stage of biomedical science."*  
**Professor Julie Chan, President of IUPS**

*"I would like to congratulate you about launching the Portuguese Physiological Society and organising its first international event... and look forward to co-operating with you."*  
**Professor Dr. Bayram Yilmaz, Secretary General of FEPS**

*"On behalf of the APS Conference Committee, APS is pleased to support the 1st International Meeting of the Portuguese Society of Physiology."*  
**Julie Levin, Meetings Manager, The American Physiological Society**

*"The Physiological Society is pleased to support the Portuguese Physiological Society's Physioma2019 conference. This is an important time for physiology across the world and we welcome this new initiative. I look forward to working with the Portuguese Physiological Society now and in the future."*  
**Professor Bridget Lumb, President of The Physiological Society**



# Physioma 2019

10<sup>th</sup> and 11<sup>th</sup> October 2019

## 1<sup>st</sup> International Meeting of the Portuguese Society of Physiology (SPFis)

ISCTE IUL, Edifício 2, Auditório B104  
Cidade Universitária, Lisboa, Portugal

### FINAL PROGRAM

**October 10<sup>th</sup>** (Thursday)

08:30 Welcome  
Registration desk open

09:30 Opening Workshop (WS)  
*(free of charge for young research members of SPFis)*

**Workshop** Physiological computing: The BITalino platform  
Coordinators: **Hugo Silva & Hugo Ferreira**  
*Objective: To provide an end-to-end approach to biosignal acquisition, processing, and classification using low cost and open source technologies*

**Poster Installation**

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13:30 **OPENING CEREMONY**

**Remarks from the Honour Commissioners**  
**Remarks from the Chairmen of *Physioma 2019***

14:15 **Theme 1 Beyond Integrative Physiology – the Physiome I**

**Moderator:** **Felix Carvalho**, Chairman of the Portuguese Soc. Pharmacology (SPF); President-Elect of EUROTOX, the Federation of European Toxicologists and European Societies of Toxicology

**Keynote Speaker:** **Jose Viña**, Professor of Physiology, Universidad Valencia, Valencia, Spain

14:45 Podium Presentations

1.1 PUPIL SIZE DURING AUTHENTICITY RECOGNITION IN LAUGHTER AND CRYING

Gonçalo Cosme<sup>1</sup>; Mónica Costa<sup>2</sup>; Vânia Tavares<sup>1</sup>; Katja Brodmann<sup>3</sup>; César Lima<sup>4</sup>; Pedro Rosa<sup>4</sup>; Diana Prata<sup>1</sup>

*1) Instituto de Biofísica e Engenharia Biomédica, Universidade de Lisboa, Lisboa, PT; 2) Faculdade de Medicina da Universidade de Lisboa, Lisboa, PT; 3) Department of Neuroimaging, King's College London, UK; 4) Centro de Investigação e Intervenção Social, Instituto Universitário de Lisboa (ISCTE-IUL), CIS-IUL, Lisboa, PT*

- 1.2 THE LEVELS OF OSTEOCALCIN IN OBESE AND NON-OBESE HEALTHY SEDENTARY MEN AND IT IS RELATION WITH ADIPOMYOKINES  
Sema Sayharman; Muaz Belviranli; Nilsel Okudan  
*Department of Physiology Faculty of Medicine, Selcuk University, Konya, Turkey*
- 1.3 BIOLOGICAL CLOCKS AND OBSTRUCTIVE SLEEP APNEA  
Ana Rita Álvaro<sup>1,2,3</sup>; Laetitia Gaspar<sup>1,2,3</sup>; Bárbara Santos<sup>1,2,4</sup>; Ana Santos-Carvalho<sup>1,2,3</sup>; Sara Carmo-Silva<sup>1,2,3</sup>  
1) *Centre for Neuroscience and Cell Biology (CNC), University of Coimbra, Coimbra, PT*; 2) *CIBB - Center for Innovation in Biomedicine and Biotechnology, University of Coimbra, Coimbra, PT*; 3) *Institute for Interdisciplinary Research (IIIUC), University of Coimbra Coimbra, PT*; 4) *Faculty of Pharmacy, University of Coimbra, Coimbra, PT*; 5) *Sleep Medicine Centre, Coimbra Hospital and University Centre (CHUC), Coimbra, PT*
- 1.4 MICROCIRCULATORY CHARACTERISATION OF THE STEP IN PLACE ACTIVITY  
Margarida Florindo<sup>1</sup>; L Monteiro Rodrigues<sup>2</sup>  
1) *Portuguese Red Cross Health School, ESSCVP – Lisboa, PT*; 2) *Universidade Lusófona CBIOS - Research Center for Biosciences and Health Technologies, Lisboa, PT*

15:45 Coffee break and visit to Posters

## 16:25 Theme 2 Beyond Integrative Physiology – the Physiome II

**Moderator:** **Claudia Cavadas, CNC** - Center for Neuroscience and Cell Biology & Faculty of Pharmacy, University of Coimbra, Coimbra, PT

**Keynote Speaker:** **Debra J. Skene**, Professor of Neuroendocrinology, Section Head of Chronobiology, University of Surrey, Guildford, UK

## 16:55 Podium Presentations

- 2.1 FREQUENT CONSUMPTION OF ARTIFICIALLY SWEETENED BEVERAGES IS ASSOCIATED WITH AN INCREASED RISK OF METABOLIC SYNDROME IN A MEDITERRANEAN POPULATION AT HIGH CVD RISK  
Cíntia Ferreira-Pêgo<sup>1,2,15,16</sup>; Nancy Babio<sup>1,2</sup>; Maira Bes-Rastrollo<sup>2,3,4</sup>; Dolores Corella<sup>2,5</sup>; Ramon Estruch<sup>6,7</sup>; Emilio Ros<sup>2,8</sup>; Montserrat Fitó<sup>2,9</sup>; Lluís Serra-Majem<sup>2,6,9</sup>; Fernando Arós<sup>6,10</sup>; Miguel Fiol<sup>2,11</sup>; José Manuel Santos-Lozano<sup>2,12</sup>; Carlos Muñoz-Bravo<sup>13</sup>; Xavier Pintó<sup>8,14</sup>; Miguel Ruiz-Canela<sup>2,3,4</sup>; Jordi Salas-Salvadó<sup>1,2,6</sup>  
1) *Human Nutrition Unit, Hospital Universitari de Sant Joan de Reus, Faculty of Medicine and Health Sciences, IISPV (Institut d'Investigació Sanitària Pere Virgili), Biochemistry Biotechnology Department, Universitat Rovira i Virgili. C/ Sant Llorenç, 21, 43201 Reus, ESP (complete list of author affiliations listed within Proceedings)*
- 2.2 THE SHORT DURATION MASSAGE OF A SINGLE LIMB IN HUMAN ALTERS CARDIOVASCULAR DYNAMICS IN BOTH LIMBS  
Clemente Rocha<sup>1</sup>; Henrique Silva<sup>1,2</sup>; Hugo Ferreira<sup>3</sup>; Luis Monteiro Rodrigues<sup>1,2</sup>  
1) *Universidade Lusófona CBIOS - Research Center for Biosciences and Health Technologies, Lisboa, PT*; 2) *Universidade de Lisboa, Faculty of Pharmacy, Pharmacol. Sc Dept - Lisboa, PT*; 3) *Universidade de Lisboa, Faculty of Sciences – IBEB, Lisboa PT*
- 2.3 TRENDS SHAPING THE FUTURE OF PHYSIOLOGY TEACHING AND PRACTICE: FINDINGS FROM A FOCUS GROUP FROM PMIG (The Physiology Majors Interest Group)  
Joao Gregorio<sup>1</sup>; Erica Wehrwein<sup>2</sup>; Luis Monteiro Rodrigues<sup>1</sup>  
1) *CBIOS - Research Center for Biosciences and Health Technologies, Lisboa, PT*; 2) *Dept of Physiology, Michigan State University, Lansing, MI USA*

17:30 Discussion  
Visit to Posters

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18:15 General Assembly of SPFis  
Election of the Board for the Mandate 2019-2022

**IMPORTANT NOTE:**  
**Only the regular associated members of SPFis can attend this general assembly**

1. Presentation of the running list(s) - strategy, critical aspects, and profile of running candidates lists
2. Election of the Board of the SPFis for 2019-2022
3. Other issues

20:30 Dinner at CCB rooftop restaurant “Topo Belém”  
See registration desk for further details

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*End of Day 1*

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October 11th (Friday)

08:30 Registration desk open

09:00 **Theme 3      Physiology of Stress**

**Moderator:** **Pedro Villa Polo**, Full Professor Physiology, Director of the Ph.D. Program in Health Sciences University of Alcalá – Faculty of Medicine, Madrid, Spain

**Keynote Speaker:** **João Laranjinha**, Centre for Neurosciences and Cell Biology, University of Coimbra, Coimbra, Portugal

09:30 Podium Presentations

3.1 MENTAL AND PHYSICAL PREPARATION IMPROVES PERFORMANCE IN COGNITIVE TASKS  
Carlos Moreira<sup>1</sup>; Daniel Rocha<sup>1</sup>; Paula Carvalho<sup>3</sup>; Carolina Amorim<sup>1</sup>; Ana Gouveia<sup>2</sup>; Hugo A. Ferreira<sup>1</sup>

1) Instituto de Biofísica e Engenharia Biomédica, Faculdade de Ciências da Universidade de Lisboa, Lisboa, PT; 2) Faculdade de Ciências da Saúde, Universidade da Beira Interior, Covilhã, PT ; 3) Faculdade de Ciências Sociais e Humanas, Universidade da Beira Interior, Covilhã, PT

3.2 REDOX REGULATION OF BREAST CANCER PROGRESSION: INSIGHTS FROM SOD MIMICS

Nuno Saraiva<sup>1</sup>; Ana S Flório<sup>2</sup>; João G Costa<sup>1</sup>; Ines Batinic-Haberle<sup>3</sup>; Matilde Castro<sup>2</sup>; Nuno G Oliveira<sup>2</sup>; Ana S Fernandes<sup>1</sup>

1) CBIOS, Universidade Lusófona Research Center for Biosciences & Health Technologies, Lisboa, PT; 2) Research Institute for Medicines (iMed.Ulisboa), Faculty of Pharmacy, Universidade de Lisboa, PT; 3) Department of Radiation Oncology, Duke University Medical School, Durham, NC, USA

3.3 EFFECTS OF ASTAXANTHIN SUPPLEMENTATION ON OVALBUMIN-INDUCED EXPERIMENTAL ASTHMA MODEL IN RATS

Hasan İker Coban; Muaz Belviranlı, Nilsel Okudan

*Department of Physiology Faculty of Medicine, Selcuk University, Konya, Turkey*

3.4 OVEREXPRESSION OF THE GOLGI PROTEIN HGAAP INCREASES CELL SURVIVAL UPON PROLONGED TIME IN CULTURE

Nuno Almeida<sup>1</sup>; Marta Martins<sup>1</sup>; Marisa Nicolai<sup>1</sup>; Carlos Palmeira<sup>2</sup>; Geoffrey L. Smith<sup>3</sup>; Ana S. Fernandes<sup>1</sup>; Nuno Saraiva<sup>1</sup>

1) CBIOS, Universidade Lusófona Research Center for Biosciences & Health Technologies, Lisboa, PT; 2) Center for Neurosciences and Cell Biology, University of Coimbra, Coimbra, PT; 3) Department of Pathology, University of Cambridge, Cambridge, CB2 1QP, UK

10:15 Coffee break and visit to Posters

11:00 **Theme 4 By way of the Skin**

**Moderator:** **Catarina F. Rosado**, Group Leader (Drug Delivery Systems) Research Center for Biosciences and Health Technologies (CBIOS), Lisboa, Portugal

**Keynote Speaker: Joachim Fluhr**, Charité - Universitätsmedizin Berlin, Klinik für Dermatologie, Venerologie und Allergologie, Berlin, Germany

11:30 Podium Presentations

4.1 PRELIMINARY EVALUATION OF NON-CONVENTIONAL CONDUCTIVE MATERIALS FOR ELECTRODERMAL ACTIVITY DATA ACQUISITION

António Banganho<sup>1,2</sup>; Hugo Silva<sup>1</sup>; Marcelino Santos<sup>2,3</sup>

1) IT – Instituto de Telecomunicações, Lisboa, PT; 2) Instituto Superior Técnico, Lisboa, PT; 3) INESC-ID, Lisboa, PT

4.2 3D REPRESENTATION OF SKIN VISCOELASTICITY

Henrique Silva<sup>1</sup>; Francisco Rego<sup>2</sup>; Catarina Rosado<sup>1</sup>; Luis Monteiro Rodrigues<sup>1</sup>

1) Universidade Lusófona, School of Health Sc & Technologies, CBIOS (Research Center for Biosciences and Health Technologies), Lisboa, PT; 2) Universidade de Lisboa, Instituto Superior Técnico, Institute for Systems and Robotics (ISR), Lisboa, PT

4.3 HYDROGEL CONTAINING CHITOSAN-COATED PLGA NANOPARTICLES FOR TOPICAL DELIVERY OF INSULIN

Patrícia Filipe<sup>1,2</sup>; Ana S. Macedo<sup>1,3</sup>; Catarina Rosado<sup>1</sup>; Pedro Fonte<sup>1,3,4</sup>

1) CBIOS - Universidade Lusófona Research Center for Biosciences & Health Technologies, Lisboa, PT; 2) Department of Biomedical Sciences, University of Alcalá, Madrid, ESP; 3) LAQV, REQUIMTE, Department of Chemical Sciences—Applied Chemistry Lab, Faculty of Pharmacy, University of Porto, Porto, PT; 4) iBB-Institute for Bioengineering and Biosciences, Department of Bioengineering, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, PT

#### 4.4 DEVELOPMENT OF RUTIN-LOADED HYBRID NANOPARTICLES FOR WOUND HEALING

Ana Júlio<sup>1,2</sup>; Rita Caparica<sup>1,2</sup>; Sofia A. Costa Lima<sup>3</sup>; Ana Sofia Fernandes<sup>1</sup>; Catarina Rosado<sup>1</sup>; Duarte M. F. Prazeres<sup>4</sup>; Salette Reis<sup>3</sup>; Tânia Santos De Almeida<sup>1,5</sup>; Pedro Fonte<sup>1,3,4,5</sup>

1) CBIOS - Universidade Lusófona Research Center for Biosciences & Health Technologies, Lisboa, PT; 2) Department of Biomedical Sciences, University of Alcalá, Madrid, ESP; 3) LAQV, REQUIMTE, Department of Chemical Sciences—Applied Chemistry Lab, Faculty of Pharmacy, University of Porto, PT; 4) iBB-Institute for Bioengineering and Biosciences, Department of Bioengineering, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, PT; 5) Shared senior authorship

12:15 Snack and visit to Posters

#### 14:00 Theme 5 Physiological Informatics

**Moderator:** **Antero Abrunhosa**, Director of ICNAS (Institute for Nuclear Sciences Applied to Health) U Coimbra

**Keynote Speaker:** **Hugo Silva**, IT-IST, U Lisboa

14:30 Podium Presentations

##### 5.1 AUTOMATIC CLASSIFICATION OF PHYSIOLOGICAL SIGNALS MODALITIES

Patrícia Bota<sup>1,2</sup>; Ana Fred<sup>1,2</sup>; João Valente<sup>3</sup>; Hugo Silva<sup>1</sup>

1) Instituto Superior Técnico, Instituto de Telecomunicações; 2) Department of Bioengineering, Instituto Superior Técnico; 3) Instituto Politécnico de Castelo Branco

##### 5.2 LIGHT-TISSUE INTERACTION AND MICROCIRCULATION PERFUSION ASSESSMENT – WHAT'S NEW?

Henrique Silva<sup>1,3</sup>; Hugo Ferreira<sup>2</sup>; Rafaela Francisco<sup>3</sup>; Alain-Pierre Gadeau<sup>4</sup>; Luis Monteiro Rodrigues<sup>1,3</sup>

1) Biosciences and Health Technologies, Lisboa, Portugal; 2) Universidade de Lisboa, Faculty of Sciences, IBEB Institute Bioph Biomed Engineering, Lisboa, Portugal; 3) Universidade de Lisboa, Faculty of Pharmacy, Pharmacol. Sc Depart - Lisboa, Portugal; 4) U Bordeaux & INSERM, U1034, Adaptation cardiovasculaire à l'ischémie, Pessac, France

##### 5.3 DETECTION OF APNEA IN RESPIRATORY SIGNALS

Mariana Abreu<sup>1</sup>; Ana Fred<sup>1,2</sup>; João Valente<sup>3</sup>; Hugo Silva<sup>1</sup>

Instituto Superior Técnico, Instituto de Telecomunicações; 2) Instituto Superior Técnico, Departamento de Bioengenharia; 3) Instituto Politécnico de Castelo Branco, Escola Superior de Saúde, Portugal

##### 5.4 ANXIETY DESTROYER: A VIDEOGAME WITH NEUROFEEDBACK FOR TACKLING ANXIETY

Pedro Pestana Da Silva; Hugo A. Ferreira

IBEB Instituto de Biofísica e Engenharia Biomédica, Faculdade Ciências da Universidade de Lisboa, Portugal

15:15 Coffee break and visit to Posters

**“What does the future hold for physiology?”**

Moderators: **Luís Monteiro Rodrigues, Hugo Ferreira, and João Gregório**

Participants: **Mara de Sousa Freitas**

President of the Health Ethics Committee, Catholic University of Portugal; Advisor Technical Consultancy at the National Council of Ethics for the Life Sciences – CNECV

**Jorge Garcia Seoane**

Chairman of the Spanish Society of Physiological Sciences (SECF), Full Professor of Physiology (Universidade Complutense Madrid)

**Ricardo A. Afonso**

President of the Portuguese Society of Laboratory Animal Sciences & NOVA Medical School | Faculdade de Ciências Médicas da Universidade Nova de Lisboa

**Octavian Postolache**

Director of Science and Information Technology, Ph.D. Program in ISCTE-IUL; Senior Researcher and Director of Instituto de Telecomunicações IT-IUL

18:00  Prizes

Best Innovative Research

Best Poster Award

Conclusion Remarks

Closing Cocktail Refreshment

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