Wednesday 6th June

09.00 – 09.20 – Welcome and Introduction

09.20 – 11.00 – Session 1: Drug Testing and Signal Transduction

1.1 – 09.20 – 09:50 **Invited Talk - Title to be announced**

Prof. Charlie Keese
Applied biophysics, Troy, NJ, USA

1.2 – 09:50 – 10.10 **Increased Throughput in GPCR Screening using Impedance Assays: Inspiration from Organ Studies**

J.A. Stolwijk; C. Kade; M. Skiba and J. Wegener

Universität Regensburg, Regensburg (Germany)

1.3 – 10.10 – 10.30 **Chlorpromazine disrupts structural integrity of cell membranes in HepaRG cells and initiates a pro-inflammatory response**

K. Morgan[1], N. Martucci[2], A. Kozlowska[1], W. Gamal[3], F. Brzeszczynka[1], K. Samuel[4], P. Treskes[1], P. Hayes[1], L. Nelson[1], P. Bagnaninchi[2], J. Brzeszczynska[1] and J. Plevris[1]

[1]Hepatology Laboratory, University of Edinburgh, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom; [2]MRC Centre for Regenerative Medicine 5 Little France Drive, Edinburgh EH16 4UU; [3]School of Electronic Engineering and Computer Science, Bangor University, Dean Street, Bangor, Gwynedd, LL57 1UT [4]Scottish National Blood Transfusion Service, Advanced Therapeutic,s The Jack Copland Centre, 52 Research Avenue North, Edinburgh

1.4 – 10.30 – 10.50 **Time-resolved Response Profiles of GPCR Activation: Combining Two Independent Impedance-Based Approaches**

C. Kade[1]; J. Stolwijk[1]; S. Michaelis[2] and J. Wegener[1,2]

[1]Universität Regensburg, Regensburg (Germany)
[2]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

10.50 – 11.20 Coffee break

11.20 – 12.30 – Session 2: Cell Death and Toxicity 1

2.1 – 11.20 – 11.50 **Invited Talk: Prof. Wen Jiang**

Title TBA

School of Medicine, Cardiff University, Cardiff, UK.

2.2 – 11.50 – 12.10 **Real-Time monitoring of Equid alphaherpesviruses infectivity in equine dermal cell based on impedance measurements: effects of aciclovir and ganciclovir treatments**

C. Thieulent [1,2], E. Hue [1,2], C. Fortier [1,2], P. Suzanne [3] , S. Zientara [4] , H. Munier-Lehmann [5] , A. Hans[6] , P-H. Pitel [1] , P.-O Vidalain [7] and S. Pronost [1,2]

[1] LABÉO, 1 route de Rosel, 14280 Saint-Contest, France
[2] Normandie Univ, Unicaen, BIOTARGEN, 3 rue Nelson Mandela, 14280 Saint-Contest, France
[3] Centre d'Etudes et de Recherche sur le Médicament de Normandie, 14000 Caen, France
[4] Anses, Université Paris-Est, Laboratoire de Santé Animale, UMR 1161 Virologie, 94700 MaisonsAlfort, France
[5] Institut Pasteur, Unité de Chimie et Biocatalyse, 75015 Paris, France
[6] Anses, Laboratoire de pathologie équine de Dozulé, Unité de virologie, 14430 Dozulé, France
[7] CNRS UMR 8601, Université Paris Descartes, 75006 Paris, France

2.3 – 12.10 – 12.30 **Discrimination between Normal and Cancerous Cells using ECIS and Artificial Intelligence Techniques.**

F.E. Giana; F.J. Bonetto and M.I. Bellotti

Instituto Balseiro, UNC/CNEA, San Carlos de Bariloche (Argentina)

12.30 – 14.00 Lunch

14.00 – 15.00 – Session 2: Cell Death and Toxicity 2

2.4 – 14.00 – 14.20 **Selection of probiotics and prebiotics against *Clostridium difficile* using an *in vitro* intestinal model based on impedance real time monitoring**

Lorena Valdés-Varela, Miguel Gueimonde and Patricia Ruas-Madiedo

Instituto de Productos Lácteos de Asturias-Consejo Superior de Investigaciones Científicas (IPLA-CSIC: Dairy Research Institute-Spanish National Research Council), Villaviciosa, Asturias, Spain,

2.5 – 14.20 – 14.40 **Cells in Contact to Carbon Dots: A label-free, impedance-based and multidimensional approach**

P. Pütz[1], M. Lemberger[1] and J. Wegener[1,2]

[1]Universität Regensburg, Regensburg (Germany)
[2]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

2.6 – 14.40 – 15.00 **Nanoparticle toxicity: cytotoxic and sub-cytotoxic measurements using xCELLigence real time cell analysis**

S. Boitano[1,2], M. McCorkel[3], C.L. Sherwood[1], N.G. Borrero[1,2], Chao Zeng[4], Chi Huynh Nguyen[4], J.A. Field[4], F. Shadman[4] and R. Sierra-Alvarez[4]

[1]Asthma and Airway Disease Research Center, [2]Department of Physiology, [3]Department of Biomedical Engineering, [4]Department of Chemical and Environmental Engineering, University of Arizona (USA).

15.00 – 15.30 Coffee break

15.30 – 16.30 – Session 2: Cell Death and Toxicity 3

2.7 – 15.30 – 15.50 **Monitoring the Toxicity of Bisphenol A using Multiple Impedance-Based Cellular Assays**

M. Zinkl[1]; L. Sauer[1], S. Azzam[1] and J. Wegener[1,2]

[1]Universität Regensburg, Regensburg (Germany)
[2]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

2.8 – 15.50 – 16.10 **Cell Monitoring using impedance and impedance spectra for high content toxicity and cell proliferation screening**

Krisztina Juhasz[1,2], Elena Dragicevic[1], Oliver Reinhardt[3], Michael Skiba[4], Leo Doer[1], Matthias Beckler[1], Sonja Stölzle-Feix[1], Frauke Alves[3,5], Niels Fertig[1]

[1]Nanion Technologies, Munich, Germany; [2]Institute for Nanoelectronics, Technische Universität München, Germany; [3]Translational Molecular Imaging Group, MPI of Experimental Medicine, Göttingen, Germany, [4]Institute of Analytical Chemistry, Chemo- and Biosensors, Faculty of Chemistry and Pharmacy, University of Regensburg, Regensburg, Germany, [5]Clinic of Hematology and Medical Oncology, University Medical Center Göttingen, 37075 Göttingen, Germany.

2.9 – 16.10 – 16.30 **Impedance Analysis of Waterborne Parasite Infectivity**

V. Senez; A. Vlandas and J. Follet

IEMN, University of Lille, Lille (France)

16.30 – 18.00 Reception

Thursday 7th June

09.00 – 10.10 – Session 3: Novel Assays, Analysis and Technologies 1

3.1 – 09.00 – 09.30 **Invited Talk: Professor Robitzki**

Impedance Spectroscopy in Microfluidic Devices for a Significant Enhanced Cell Monitoring in a Live Mode

A.A. Robitzki; H.G. Jahnke; F.D. Zitzmann and D. Seidel

Leipzig University, Centre for Biotechnology and Biomedicine (Germany)

3.2 – 09.30 – 09.50 **Impedance Analysis of Adherent Cells Cultured on Various Sizes of Electrodes**

Yi-Ting Lai, Jun-Chih Lo, Yu-Han Hung, Chun-Min Lo

National Yang-Ming University, Taipei (Taiwan)

3.3 – 09.50 – 10.10

Impedance Analysis of Heterogeneous Cell Populations: Impact on Data Analysis and Modeling

M. Skiba[1,2]; J. Wegener[1,3]

[1]Universität Regensburg, Regensburg (Germany)
[2]GRK1910, Universität Regensburg, Regensburg (Germany), Universität Erlangen, Erlangen, (Germany)
[3]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

10.10 – 10.30 Coffee break

10.30 – 11.20 – Session 3: Novel Assays, Analysis and Technologies 2

3.4 – 10.30 – 11.00 **Invited Talk: Dr. Dan Spencer**

Single cell impedance spectroscopy: theory and applications in healthcare

Electronics and Computer science, University of Southampton, Southampton, UK

3.5 – 11.00 – 11.20 **Transparent organic transistors for ECIS with single cell resolution**

S. Ingebrandt[1,2,3]; F. Hempel[2,3] and J. K. Y. Law[2,3]

[1] RWTH Aachen University, Aachen (Germany)
[2] University of Applied Sciences Kaiserslautern, Zweibrücken (Germany)
[3] RAM Group DE GmbH, Zweibrücken (Germany)

11.20 – 11.30: Short break

11.30 – 12.30: Session 4: 3D Cell Culture and Tissue Models

4.1 – 11.30 – 11.50 **Towards 3D impedance-based cellular assays with Electrical impedance tomography**

Hancong Wu[1], Yunjie Yang[1], Pierre O Bagnaninchi[2] and Jiabin Jia[1]

[1]School of Engineering, University of Edinburgh (United Kingdom)
[2]MRC Centre for Regenerative Medicine, University of Edinburgh (United Kingdom)

4.2 – 11.50 – 12.10 **Monitoring of 3D Cell Cultures Using Conducting Polymer Scaffolds**

C. Pitsalidis;[1] M. Ferro; [2] I. d. Agua;[2] C-M. Moysidou;[1] A. Hama; [2] S. Inal;[3] R.M Owens[1]

[1] Department of Chemical Engineering and Biotechnology, University of Cambridge, Philippa Fawcett Drive, Cambridge CB3 0AS, United Kingdom
[2] Department of Bioelectronics Ecole Nationale Supérieure des Mines CMP-EMSE Gardanne 13541, France
[3] Biological and Environmental Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Kingdom of Saudi Arabia

4.3 – 12.10 – 12.30 **Flexible Microelectrode Array (Flex-MEA) Design for Micro-Bioimpedance Tomography of *Rhodococcus erythropolis***

N. Jamil, Y. Yang, L.P. Basanta, E. Blair, S. Dimartino, J. Jia and S. Smith

School of Engineering, The University of Edinburgh (United Kingdom)

12.30 – 14.00 Lunch

14.00 – 15.30 – Session 5: Migration, Wounding and Chemotaxis

5.1 – 14.00 – 14.30: **Invited Talk: Prof. Laszlo Kohidai**

Impedance-based analysis as a dedicated technique to characterize efficacy of novel antitumour compounds

L. Kőhidai[1]; E. Lajkó[1]; L. Dókus[2]; O. Láng[1]; T. Jernei[3]; A. Takács[1]; P. Bárány[3]; K.N. Enyedi[2]; Zs. Németh[3]; A. Csámpai[3], É. Pállinger[1] and G. Mező[2,3]

[1]Semmelweis University, Budapest (Hungary); [2]MTA-ELTE Research Group of Peptide Chemistry, Budapest, (Hungary); [3]Eötvös Loránd University, Budapest, (Hungary)

5.2 – 14.30 – 14.50 **Electric Cell-substrate Impedance Sensing (ECIS) as a method to test marine bioactive compounds in wound healing**

R.C. Félix[1]; S. Letsiou[2]; L.Anjos[1]; H.L. Gomes[3,4] and D.M.Power[1]

[1] Comparative Endocrinology and Integrative Biology, Centre of Marine Sciences, Universidade do Algarve, Faro (Portugal)
[2] Biochemistry laboratory, APIVITA SA, Athens (Greece)
[3] Faculdade de Ciências e Tecnologia, Universidade do Algarve, Faro (Portugal)
[4] Instituto de Telecomunicações, Lisboa (Portugal)

5.3 – 14.50 – 15.10 **Connectivity and reorganization of cardiomyocytes and fibroblasts in co-cultures**

L. Turco, F. Cavallini and M. Tarantola

Laboratory for Fluid Dynamics, Pattern Formation and Biocomplexity,
Max Planck Institute for Dynamics and Self-organization (MPIDS),
Am Fassberg 17, Goettingen 37077, Germany

5.4 – 15.10 – 15.30 **Impedance-based Characterization of pH-dependent Cell Behavior**

L. Sauer[1], R. Meier[2] and J. Wegener[1,3]

[1]Universität Regensburg, Regensburg (Germany)
[2]PreSens
[3]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

15.30 – 16.00 Coffee

16.00 – 17.10 – Session 6: Tissue Barrier and Filter Based Assays

6.1 – 16.00 – 16.30: Invited Talk: Prof. Peter Hordijk

The push and pull of endothelial integrity is balanced by Cdc42 and RhoB GTPases

J. Amado-Azevedo, M. Pronk, I.Kovacevic, V.W. van Hinsbergh and PL Hordijk

Department of Physiology, Institute for Cardiovascular Research, VU University Medical Center, Amsterdam, The Netherland

6.2 – 16.30 – 16.50 **Investigating blue light illumination on human retinal pigment epithelial cell lines and its potential to model AMD in vitro**

Ege Ozkaya[1,2], Baljean Dhillon[1], Pierre Bagnaninchi[2]

1. Centre for Clinical Brain Sciences, The University of Edinburgh, EH16 4SB, United Kingdom;
2. MRC Centre for Regenerative Medicine, The University of Edinburgh, EH16 4UU, United Kingdom.

6.3 – 16.50 – 17.10

Chronic high glucose exposure induces cellular dysfunction in Endothelial Colony Forming Cells

Christina L. O'Neill, Lydia Eeles, Alan W. Stitt, Reinhold J. Medina

Centre for Experimental Medicine, Queen's University Belfast. N. Ireland.

17.10 – 19.00 – Free time before conference dinner

Friday 8th June

09.00 – 10.10 – Session 7: Novel Assays, Analysis and Technologies 3

7.1 – 09.00 – 09.30 **Invited Talk: Dr. Agnes Tixier-Mita**

Title to be announced

Toshi Lab, Research Centre for Advanced Science and Technology, The University of Tokyo, Tokyo, Japan

7.2 – 09.30 – 09.50 **Expanding the information depth of impedance based assays by using piezoelectric growth substrates**

S. Ruckdäschel[1]; J. Wegener[1,2]

[1]Universität Regensburg, Regensburg (Germany)
[2]Fraunhofer EMFT, Division Cell-Based Sensors, Regensburg (Germany)

7.3 – 09.50 – 10.10 **Optical Imaging of Electrical Impedance using Surface Plasmon Resonance Sensors**

S.A. Abayzeed and C.W. See

Optics and Photonics Research Group, University of Nottingham, Nottingham (UK)

10.10 – 10.40 Coffee Break

10.40 – 11.30 – Session 7: Novel Assays, Analysis and Technologies 4

7.4 – 10.40 – 11.10 **Invited Talk: Dr. Steffi Krause**

Light-addressable potentiometric sensors for cell imaging applications

Steffi Krause, Dewen Zhang, Fan Wu, Jian Wang

School of Engineering and Materials Science, Queen Mary University of London

7.5 – 11.10 – 11.30 **'Instant ECIS': A concept for storing frozen cells on electrode surfaces for instant use**

S. Michaelis[1] and J. Wegener[1, 2]

[1] Fraunhofer EMFT, Fraunhofer Research Institution for Microsystems and Solid State Technologies, Regensburg (Germany), [2] Institute of Analytical Chemistry, Chemo- and Biosensors, University of Regensburg, Regensburg (Germany)

11.30 – 13.30 – Poster Session/Exhibition and Lunch

13.30 – 14.40 – Session 8: IBCA for Regenerative Medicine 1

8.1 – 13.30 – 14.00 **Invited Talk: Prof. David Hay**

Title to be announced

Scottish centre for regenerative medicine
Edinburgh, UK

8.2 – 14.00 – 14.20 **A novel highly parallelized multimodal bioelectronic real time High Content Screening platform for hiPSC derived 2D and 3D cardiomyocyte cultures**

H.G. Jahnke; S. Fleischer; A.A. Robitzki

Leipzig University, Centre for Biotechnology and Biomedicine (Germany)

8.3 – 14.20 – 14.40 **Optimized Multilevel Discrete Wavelet Transform Analysis for Mitochondrial Respiration Regulation of Human Mesenchymal Stem Cells**

T.H. Tung; Y.W. Lee; S. Gomez and C.M. Lo

Department of Biomedical Engineering, National Yang-Ming University, Taipei (Taiwan)

8.4 14:40 – 15: 00 **TBA**

15.00 – 15.20 Coffee

15.20 – 16.30 – Session 8: IBCA for Regenerative Medicine 2

8.4 – 15.20 – 15.50 **Invited Talk: Dr. Yama Abassi**

Development of Real-Time Potency Assays for Cellular Therapies and Regenerative Medicine Using Impedance Technology

Yama A. Abassi, Xiaoyu Zhang, Biao Xi, Diana Guimet and Can Jin

ACEA Biosciences, San Diego, California

8.5 – 15.50 – 16.10 **Use of cross-linked polypeptide multilayer-coated electrodes to monitor osteogenic differentiation of human dental pulp stem cells**

C.-M. Lo and Y.-H. Hung

Department of Biomedical Engineering, National Yang-Ming University, Taipei (Taiwan)

8.6 – 16.10 – 16.30 **Characterisation of *in-vitro* Cardiac Cell Models for Preclinical Assessment of Oncology Drug-Induced Cardiotoxicity**

C. De Santis; JH. Gill

Northern Institute for Cancer Research, Newcastle University, UK

16.30 – Conference close.