monitoring genetically modified organisms in food and feed by innovative biosensor approaches

WORKSHOP INTERNATIONAL

BIOSENSORS & BIOTECHNOLOGY

2nd Workshop GMOsensor

Proteomics and Nanobiosensors: A new concept for GMO assessment

Parnaíba, 5-7 December 2014

PROGRAM

http://www.isep.ipp.pt/gmosensor/ - GMOSensor Home – II Workshop International

Management Committee

1 – Cristina Delerue-Matos, PhD (P1)

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2 – Isabel Mafra, PhD (P2)

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10 – Patrícia Molina, PhD (P10)

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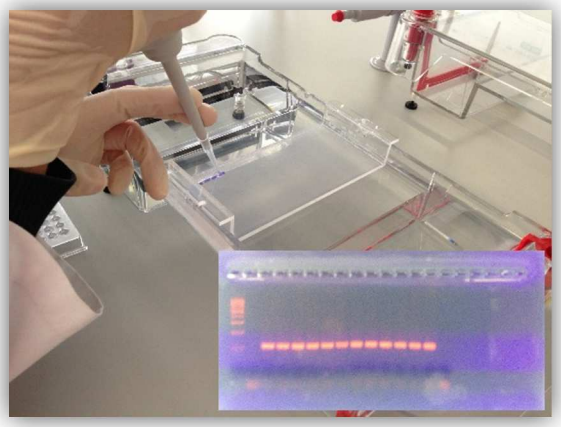

Project Assistants

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Local Organizing Committee

Chairperson:

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PRESENTATION

Monitoring Genetically Modified Organisms in Food and Feed by Innovative Biosensor Approaches (GMOSensor)

The European Project GMOSensor framed within FP7-PEOPLE-2013-IRSES is aimed at advancing on **nanobiosensor devices** to assess the presence of GMO in food and feed products. In 2013, a global area of 175 Mha was used to cultivate transgenic crops. Portugal and Spain cultivated around 1.05 Mha of transgenic maize crops, whereas in Brazil and Argentina (second and third, respectively, bigger producers worldwide) around 64.7 Mha of transgenic soybean, maize and cotton were produced. To protect consumers, food and feed labelling legislation is in force in the EU and other countries such as Brazil. The verification of compliance demands reliable and accurate GMO detection methods, but also high throughput tools able to rapidly assess the actual prevalence of transgenic material in food and feed. Considering this issue, 46 researchers from worldwide (Portugal, Spain, France, Argentina and Brazil) are devoted to develop innovative devices to detect and quantify maize and soy genetically modified in food and feed. After fifteen months of research work on the GMOsensor project, and knowledge exchange between European and South America countries, the second Workshop will be held at Universidade Federal do Piauí (UFPI), organized by the Biodiversity and Biotechnology research group (Biotec/UFPI). This public Workshop entitled "*Proteomics and Nanobiosensors*: *A new concept for GMO assessment*" brings together researchers from different nationalities, backgrounds and disciplines to jointly discuss the latest developments in new and emerging fields on proteomics and nanobiosensors. The Workshop will promote free discussion and exchange of information concerning proteomics (study of proteins, their structures and functions) and nanobiosensors (geno- and immunosensors), and aims to consolidate long-term networks between participants.

The Consortium

The GMOSensor consortium includes the following educational and research entities from Europe and South America.

P1. Instituto Superior de Engenharia do Porto, ISEP, Porto, Portugal

P2. Instituto de Ciências e Tecnologias Agrarias e Agro-Alimentares, ICETA, Porto, Portugal

P3. Universidad de Oviedo, Oviedo, Spain

P4. Universidad Complutense de Madrid, Madrid, Spain

P5. Université de Paris Diderot/CNRS, Paris, France

P6. Núcleo de Pesquisa em Biodiversidade e Biotecnologia, Biotec, Universidade Federal do Piauí, UFPI, Parnaíba, Piauí, Brazil

P7. Universidade de São Carlos, São Carlos, São Paulo, Brazil

P8. Universidade Federal de Pernambuco, Recife, Pernambuco, Brazil

P9. Centro Nacional Patagónico, CEMPAT, Puerto Madryn, Argentina

P10. Universidad Nacional de Rio Cuarto, Rio Cuarto, Argentina

PROGRAMME

All sessions will be held in the "*Campus* Ministro Reis Velloso" da Universidade Federal do Piauí, Parnaíba, Piauí, Brazil.

FRIDAY, 5 DECEMBER

Mini Courses

08h00 – 12h00

Room 1. Electrochemical Biosensors

Maria Jesús Lobo, PhD. (Un. Oviedo, Oviedo, Spain)

Room 2. Advances in Genosensor Research

Fátima Barroso, PhD (ISEP, Porto, Portugal)

Joilsom Ramos Jesus, PhD (PNPD, CAPES, Biotec/UFPI)

Room 3. Molecular Biology Applications Biomarkers

Isabel Mafra, PhD (ICETA, Porto, Portugal)

Joana Costa, PhD (ICETA, Porto, Portugal)

Room 4. Nanoparticles: From Theory to Application

Durcilene Silva (Biotec, UFPI, Parnaíba, Brazil)

***Observation:** Mini courses will have visits to thematic laboratories.

FRIDAY, 5 DECEMBER

Session I – Project Presentation

18h00 – 20h00

Open Ceremony

19h00 – 19h30 – **Monitoring Genetically Modified Organisms in Food and Feed by Innovative Biosensor Approaches (GMOSensor): Results and challenges**

Dr. Cristina Delerue Matos (REQUIMTE, ISEP, Porto, Portugal)

19h30 – 20h00 – **Proteomics and Nanobiosensors: A new concept for GMO assessment and the importance of the research network**

Dr. José Roberto de Souza de Almeida Leite (Biotec/UFPI, Parnaíba, PI, Brazil)

SATURDAY, 6 DECEMBER

Session II - Oral Presentations

09h00 – 09h30. **ELECTROCHEMICAL IMPEDIMETRIC IMMUNOSENSOR BASED ON MODIFIED INDIUM TIN OXIDE ELECTRODES FOR DETECTION OF CRY1AB PROTEIN IN GENETICALLY MODIFIED MAIZE**

M.Sc. Maria Cristina Castro Freitas (REQUIMTE, ISEP, Porto, Portugal; Physics Institute of São Carlos, USP, São Carlos, SP, Brazil)

09h30 – 10h00 – **THEORETICAL PREDICTION OF CRY1AB16 PEPTIDES AS MOLECULAR MARKERS FOR THE DETECTION OF GENETICALLY MODIFIED MAIZE USING BIOSENSORS**

M.Sc. Andreia Rodrigues (REQUIMTE, ISEP, Porto, Portugal; BIOTEC/UFPI, Parnaíba, PI, Brazil)

10h00 – 10h30 – Coffee Break

10h30 – 11h00 – **EXTENSIVE *IN SILICO* EVALUATION OF CP4-EPSPS PEPTIDES AS POTENTIAL BIOMARKERS OF TRANSGENIC SOYBEAN**

Dr. Joana Costa (CENPAT-CONICET, Centro Nacional Patagónico, Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina; Portugal; ICETA, Porto, Portugal).

11h00 – 11h30 – **DNA BARCODING AS A NEW TOOL FOR PLANT FOOD AUTHENTICATION: THE CASE OF SAFFRON (*CROCUS SATIVUS* L.)**

M.Sc. Caterina Villa (ICETA, Porto, Portugal; REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal)

11h30 – 12h00 – **DEVELOPMENT AND APPLICATION OF SPECIES-SPECIFIC PCR ASSAYS TO DETECT AND QUANTIFY HORSE MEAT ADULTERATION IN FOODS**

M.Sc. Liliana Meira (ICETA, Porto, Portugal; REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal)

12h00 – 14h00 – Break

Session III - Oral Presentations

14h00 – 14h30 – **SCREENING TRANSGENIC SOYBEAN IN FOODSTUFFS BY THE DETECTION OF THE 35S PROMOTOR**

M.Sc. Alexandra Plácido (ICETA, Porto, Portugal; REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal)

14h30 – 15h00 – **DETECTION AND QUANTIFICATION OF ROUNDUP READY SOYBEAN IN FOOD BY CONVENTIONAL AND REAL-TIME POLYMERASE CHAIN REACTION**

M.Sc. Liliana Grazina (ICETA, Porto, Portugal; REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal)

15h00 – 15h30 – **PIEZOELECTRIC IMMUNOSENSOR: THEORY AND APPLICATIONS**

Dr. Joilson Ramos de Jesus (Biotec/UFPI, Campus Parnaíba, Parnaíba, Brazil)

15h30 – 16h00 – **ACTINOMYCETES FROM AMAZON REGION: BIOGENIC SYNTHESIS OF SILVER NANOPARTICLES AND BIOTECHNOLOGICAL APPLICATIONS**

M.Sc. Nelly Vinhote (PhD Student of Biotechnology, Universidade Federal do Amazonas, UFAM, Manaus, Brazil)

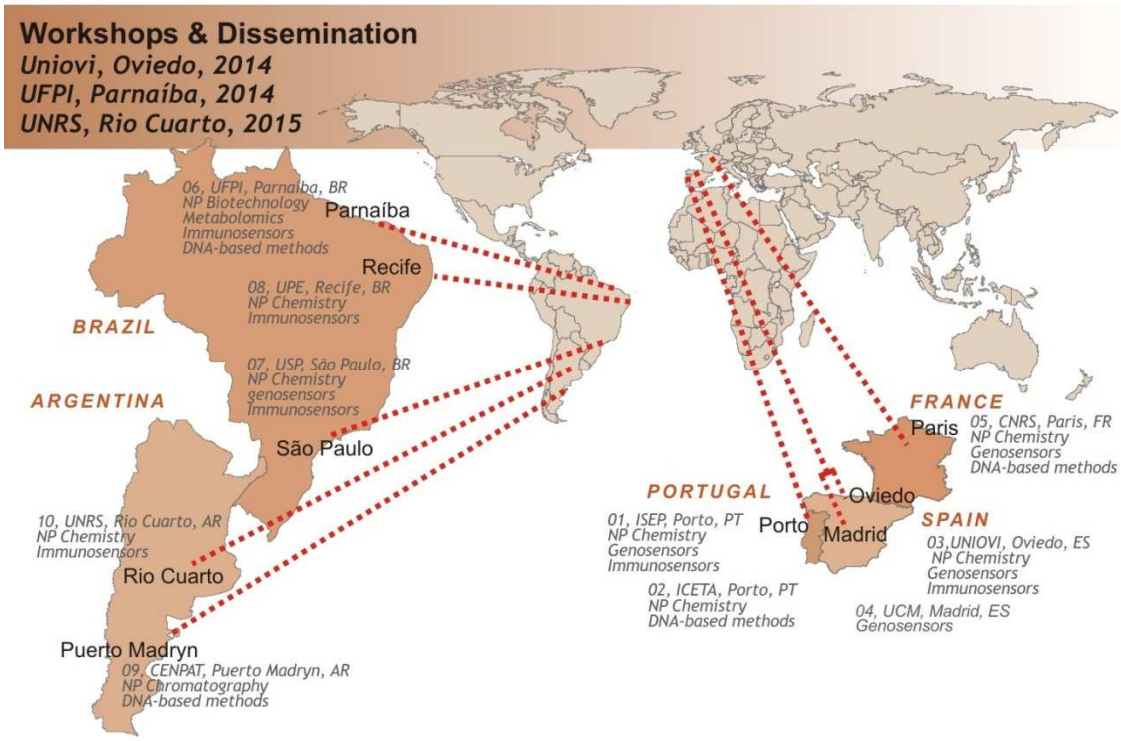
16h00 – 16h30 – Coffee break

16h30 – 17h00 – **ATOMIC FORCE MICROSCOPY (AFM) AND NANOBIOTECHNOLOGY IN NORTHEASTERN BRAZIL**

M.Sc. Patrick Quelemes (Núcleo de Pesquisa em Biodiversidade e Biotecnologia, Biotec, Campus de Parnaíba, UFPI, Piauí, Brazil)

17h00 – 17h30 – **ELECTROCHEMICAL DETERMINATION OF TESTOSTERONE USING NANOSTRUCTURED MICROELECTRODES**

M.Sc. Diana Cruz (REQUIMTE, ISEP, Porto, Portugal; Dpto. Química, CCN, UFPI, Teresina, Brazil)



SUNDAY, 7 DECEMBER

Session II - Oral Conferences

08h30 – 09h00 – **ELECTROCHEMICAL GENOSENSOR FOR GMO SCREENING OF FOOD AND FEED: DETECTION OF 35S PROMOTER**

Dr. Maria Jesús Lobo Castañóna (Dpto. Química Física y Analítica, Universidad de Oviedo, Oviedo, Spain)

09h00 – 09h30 – **SURFACE DECORATION OF VESICLES WITH GOLD NANOPARTICLES AS LABEL FOR DEVELOPMENT OF IMMUNOSENSORS FOR TRANSGENIC DETECTION**

Dr. Maria Fátima (REQUIMTE, Instituto Superior de Engenharia do Porto, Rua Dr. António Bernardino de Almeida, 431, 4200-072 Porto, Portugal)

09h30 – 10h00 – **CHALLENGES IN DETECTING GENETICALLY MODIFIED ORGANISMS IN FOODS**

Dr. Isabel Mafra (REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal)

10h00 – 10h30 – Coffee break

10h30 – 11h00 – **STRATEGIES FOR THE SYNTHESIS OF PEPTIDES APPLIED BIOTECHNOLOGY**

Dr. Mariela Marani (CENPAT-CONICET, Centro Nacional Patagónico, Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina)

11h00 – 11h30 – **VESICLES AS A SIGNAL AMPLIFIER FOR THE DETECTION OF GMO**

Dr. Patricia G. Molina (Dpto. Química, Fac. Cs. Exactas FcoQcas y Nat., U.N.R.C, Rio Cuarto, Argentina)

11h30 – 12h00 – **ELECTROCHEMICAL DETECTION IN VITRO AND ELECTRON TRANSFER MECHANISM OF TESTOSTERONE USING A MODIFIED ELECTRODE WITH A COBALT OXIDE FILM**

Dr. José Ribeiro Santos Júnior (Dpto. Química, Universidade Federal do Piauí, Teresina, Piauí, Brazil)

Dr. Rosana Fonsesa (UFPE, Recife, Brazil)

12h00 – 14h00 – Lunch

14h30 – 15h00 – **NANOBIOTECHONLOGY AND NATURAL PRODUCTS**

Dr. Durcilene Silva (Biotec/UFPI, Campus Ministro Reis Velloso, Parnaíba, Brazil)

15h00 – 15h30 – **THE USE OF MOLECULAR MARKERS FOR STUDIES IN GENETIC VARIABILITY AND PLANT CONSERVATION**

Dr. Ivanilza Andrade (Biotec/UFPI, Campus Ministro Reis Velloso, Parnaíba, Brazil)

15h30 – 16h00 - **NANOBIOTECHNOLOGY AND HIGH RESOLUTION IMAGING**

Dr. Peter Eaton (REQUIMTE, Department of Chemistry, Faculty of Sciences, University of Porto, Portugal; Pesquisador Visitante Especial (PVE)/CNPq Biotec/UFPI)

16h00 – 16h30 – Coffee Break

16h30 – 18h00 – **MEETING OF THE GROUP MANAGER GMOSENSOR and STRATEGIES AND DISCUSSIONS OF UPCOMING WORKSHOP**

Rio Cuarto City, Argentina. "*III Workshop GMOSensor*"

ORGANIZATION

PARTNERS

SUPPORTERS