



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



# 3<sup>er</sup> WORKSHOP INTERNATIONAL GMOSENSOR

**PROTEIN-BASED VS.  
DNA-BASED STRATEGIES**  
for GMO detection

**29-30 JULY 2015**

**UNRC  
RIO CUARTO - CÓRDOBA  
ARGENTINA**

## ORGANIZATION



## PARTNERS



## SUPPORTERS





## **Management Committee**

### **1 – Cristina Delerue-Matos, PhD (P1)**

(Instituto Superior de Engenharia do Porto, ISEP, Porto, Portugal)

### **2 – Isabel Mafra, PhD (P2)**

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(Centro Nacional Patagónico, CENPAT, Puerto Madryn, Argentina)

### **10 – Patricia Molina, PhD (P10)**

(Universidad Nacional de Rio Cuarto, Rio Cuarto, Argentina)

## **Project Assistants**

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### **Maria Fátima Barroso, PhD (P1)**

(Instituto Superior de Engenharia do Porto, ISEP, Porto, Portugal)



## **Local Organizing Committee**

Chairperson:

**Dra. Patricia G. Molina, (P10)**

(Grupo de Sistemas Organizados, Departamento de Química, Facultad de Ciencias Exactas Físicoquímicas y Naturales, Universidad Nacional de Río Cuarto, Río Cuarto, Córdoba, Argentina)

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**Lic. Cristian Lepori**

**Lic. Airam Cobo Solis**

**Lic. Marcos Farías**

**Lic. Soledad Orellano**

**Lic. Soledad Stagnoli**

**Lic. Jesica Otarola**

**Lic. Valeria Girardi**

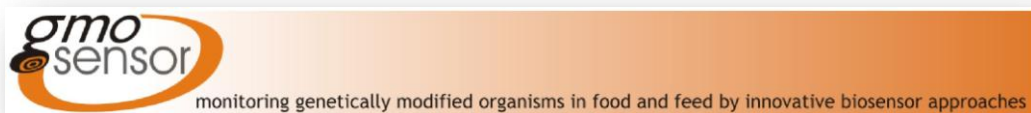
**Lic. Matías Crosio**



## PRESENTATION

### ***Monitoring Genetically Modified Organisms in Food and Feed by Innovative Biosensor Approaches (GMOsensor)***

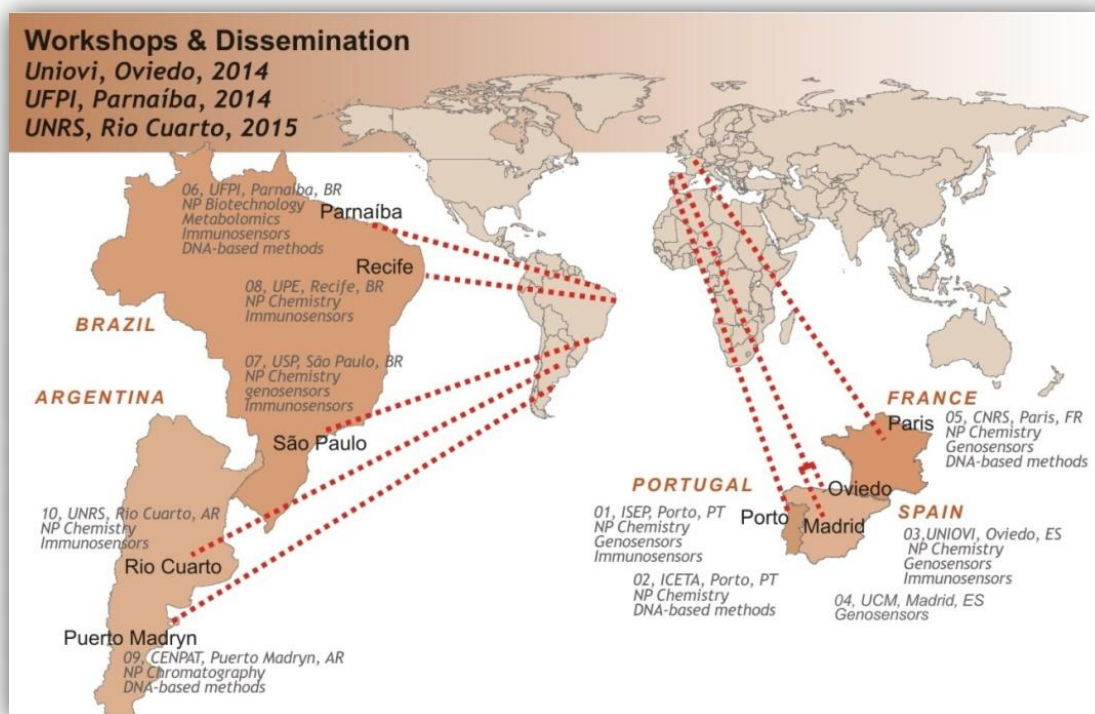
The European Project GMOsensor framed within FP7-PEOPLE-2013-IRSES is aimed at advancing on nanobiosensor devices to assess the presence of GMO in food and feed products. In 2013, a global area of 175 Mha was used to cultivate transgenic crops. Portugal and Spain cultivated around 1.05 Mha of transgenic 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 eighteen months of research work on the GMOsensor project, and knowledge exchange between European and South America countries, the third Workshop will be held at Universidad Nacional de Rio Cuarto (UNRC), organized by the Organized Systems research group (GSO). This public Workshop entitled "Protein-based vs. DNA-based strategies for GMO detection" 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.



## 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 Agrárias 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, CENPAT, Puerto Madryn, Argentina
- P10.** Universidad Nacional de Rio Cuarto, Rio Cuarto, Argentina





## III WORKSHOP GMOsensor – Universidad Nacional de Río Cuarto Río Cuarto, Córdoba, Argentina | July 29-30, 2015

### PROGRAMME

All sessions will be held in the “Sala de la Fundación OSDE” Room in Constitución 1043, Río Cuarto, Córdoba, Argentina

#### WEDNESDAY, JULY 29

#### Session I Group presentation

9:30-10:00 **Accreditation**

10:00-10:30 **Opening and Presentation of the Project**

*Fatima Barroso, (ISEP, Porto, Portugal) and Noemí de los Santos Alvarez (UniOvi, Oviedo, España)*

10:30-11:00 **P10 Group presentation**

*N. Mariano Correa, (UNRC, Argentina)*

11:00-11:30 **Coffee break**

11:30-12:00 **Comparison of different platforms for the electrochemical genosensors development**

*M. Fatima Barroso (ISEP, Portugal)*

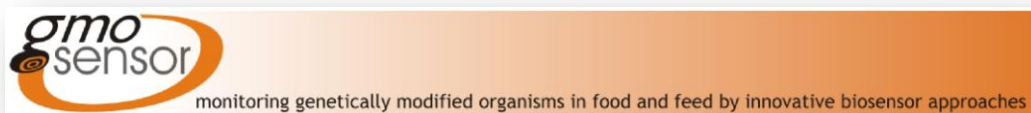
12:00-12:30 **Superparamagnetic core-shell nanoparticles synthesis and their use as electrochemical platform for the screening of genetically modified organisms**

*Emmanuel Odella, M. Fátima Barroso, N. de-los-Santos-Álvarez, C. Pereira, C. Freire, N. Mariano Correa, Patricia G. Molina, C. Delerue-Matos (REQUIMTE, Portugal)*

12:30-14:00 **Lunch**

#### Session II Oral presentations





**14:30-15:00 A plackett–burman design for optimization of the analytical variables on the development of a genoassay for the transgenic soybean detection**

*J. Ramos-Jesus, M. Fátima Barroso, Luis M.S. Silva, C. Pereira, C. Freire, N. de-los-Santos-Álvarez, José Roberto S.A. Leite, C. Delerue-Matos*

**15:00-15:30 Discussion and reasonable doubt on the principle of substantial equivalence of foods derived from GMOs vs Non-GMOs**

*Ignacio A. Origlia (UNRC, Argentina)*

**15:30-16:00 Incidence of the use of genetically modified organisms on the quality of bee products and on apis mellifera distribution.**

*F. D'Éramo, P. Melegatti<sup>1</sup>, N. Pereyra<sup>1</sup>, L.M. León Gallón, M. Moressi, J.M. Marioli (UNRC, Argentina)*

**16:00-16:30 Coffee break**

**16:30-17:00 The use of vesicles into the design of electrochemical sensors**

*Fernando Moyano, P G. Molina, N. M. Correa, (UNRC, Argentina)*

**17:00-17:30 Nanoparticle-mediated amplification for electrochemical detection of DNA in GMO monitoring.**

*J.S. Flórez-Tabares, E. Albuerne-Suárez, J. Onofre, J. Ribeiro Dos Santos Junior, D. da Silva, R. Miranda Castro, N. de los Santos Álvarez, P. Molina, M. J. Lobo-Castañón (UniOvi, España)*

**THURSDAY, JULY 30**

**Session III Oral presentations**

**9:30-10:00 Nature-inspired DNA amplification strategies combined with electrochemical genosensors for on-site screening of GM crops**

*S. Moura-Melo,<sup>b</sup> R. Miranda-Castro, N. de-los-Santos-Álvarez, A.J. Miranda-Ordieres, J. Ribeiro Dos Santos Junior, R. A. da Silva Fonseca, M. J. Lobo-Castañón (UniOvi, España)*

**10:00-10:30 Aptamers as alternative receptors for transgenic proteins: expanding the analytical tool box for GMO detection**

*N. de-los-Santos-Álvarez, R. Miranda-Castro, A.J. Miranda-Ordieres, M.J. Lobo-Castañón (UniOvi, España)*

**10:30-11:00 Coffee break**



**11:00-11:30 Development of an electrochemical nanomagneto genoassay for the maize endogenous HMGA gene detection**

*Juliana Sousa, M. Fátima Barroso, J. Ramos-Jesus, C. Pereira, C. Freire, N. de-los-Santos-Álvarez, R. Fonseca, C. Delerue-Matos, J. Ribeiro Junior (ISEP, Portugal)*

**11:30-12:00 Development of new analytical tools for GMO detection: obtention of antibodies for an electrochemical immunosensor**

*M. Farias, S. Stagnoli, M. A. Luna, A. Niebylski, M. Marani, N. M. Correa, P. G. Molina (UNRC, Argentina)*

**12:00-12:30 Ionic Liquids in soft confinement. Creating alternative green organized systems**

*R.D. Falcone, F. Moyano, P. Molina, N.M. Correa, J.J. Silber (UNRC, Argentina)*

**12:30-14:30 Lunch**

**Session V Perspectives and future work**

**14:30-18:00 Meeting of the group manager GMOsensor - Open discussion on the working plans for the next months**