



LABORATORY OF CELL BIOLOGY AND MOLECULAR GENETICS



THE MOROCCAN ASSOCIATION OF BIOTECHNOLOGIES AND PROTECTION OF NATURAL RESOURCES AND LABORATORY OF PLANT BIOTECHNOLOGY AND LABORATORY OF CELL BIOLOGY AND MOLECULAR GENETICS, FACULTY OF SCIENCES, IBN ZOHR UNIVERSITY, AGADIR

THE FIFTH EDITION OF THE INTERNATIONAL CONGRESS: "MICROBIAL BIOTECHNOLOGIES FOR DEVELOPMENT" "MICROBIOD 5"

> **NOVEMBER 02-03, 2023** IN LAÂYOUNE CITY, MOROCCO







COORDINATION & CONTACT (MICROBIOD 5)

- Prof. FAGHIRE Mustapha and Prof. NEJMEDDINE Mohamed Faculty of Sciences, Ibn Zohr University Agadir, Morocco
- Prof. EL BIARI Khouzaima Faculty of Sciences, Abdelmalek Essaadi University, Tetouan Morocco





OBJECTIVES

- To overview and update the scientific research progress in the field of Microbial Biotechnologies and their applications.
- To promote the exchange of experiences and knowledge between national and international scientists and practitioners in the field of Microbial Biotechnologies.
- To inform and disseminate recommendations to the stakeholders, decision makers and private sector companies on the importance of Microbial Biotechnologies in the development of vital sectors especially the agro-industry, agriculture and the protection of the environment, human health, animal health, vaccination and recent advances in biotechnology.

CONGRES MAIN THEMES AND TOPICS

- Theme I: Microbial Biotechnology and Human Health: bioactive substances for medical biotherapy, innovative therapy.
- Theme II: Microbial Biotechnology and Animal Health: Control measures, Vaccination strategies.
- Theme III: Microbial Biotechnology and Environment: Treatments and processing of liquid and solid wastes.
- Theme IV: Microbial Biotechnology in Agriculture, Agri-Food and Bioindustry: Agri-Food and Agribusiness, Genetic improvement, Biopesticides, Plant-microbe interactions and Crop improvement, Biological control, Animal production, Food security.
- Theme V: Recent advances in Biotechnology and Plant Genomics, Genetics and Biotechnology.

ORGANIZING COMMITTEE

ABOURICHA Mostafa, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO AMRI Oukacha, Polydisciplinary Faculty, Ibn Zohr University, Taroudant, MOROCCO

ARJDAL El Hanafi, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

BARAKATE Mustapha, FSSM, Cadi Ayyad University, Marrakech, MOROCCO

BARBOUCHI Limame, Higher School of Technology of Laâyoune, MOROCCO

BELMOUDEN Ahmed, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

BENIDIRE Loubna, Higher School of Technology of Laâyoune, MOROCCO

BOUBRIK Fatima, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

BOUIZGARNE Brahim, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

CHOUHAM Said, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

EL BIARI Khouzaima, Faculty of Sciences, Abdelmalek Essaadi University, Tetouan, MOROCCO

EL FALAKI Jaouad, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

EL FELS Loubna, FSSM, Cadi Ayyad University, Marrakech, MOROCCO

EL GARRAOUI Oumaima, Cadi Ayyad University, Marrakech, MOROCCO

EL MEHRACH Khadija, Faculty of Applied Sciences, Ibn Zohr University, Ait Melloul, MOROCCO

EL MOUMNI Hasan, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO ELAKIL Soumaya, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO ELOUIZGANI Hassan, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO ELYAQOUTI Mustapha, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO FAGHIRE Mustapha, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO FAHMI Fadma, Higher School of Technology of Laâyoune, MOROCCO FGHIRE Rachid, Faculty of Sciences, University of Chouaib Doukkali, El Jadida, MOROCCO GALLOULI El Mahjoub, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO HATIMI Abdelhakim, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO KASSIDI Farid, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO KHOUYA Khadija, Agronomy and Veterinary Institute Hassan II, Aït Melloul, MOROCCO LAHROUNI Majida, FSSM, Cadi Ayyad University, Marrakech, MOROCCO LAMAOUI MOUNA, Polydisciplinary faculty - Sultan Moulay Slimane University, MOROCCO LEMKHENTE Zohra, Faculty of Medicine and Pharmacy, Ibn Zohr University, Agadir, MOROCCO LOUNIS Hakima, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO MEZRIOUI Nour-eddine, FSSM, Cadi Ayyad University, Marrakech, MOROCCO MOUKRIM Abdellatif, Faculty of Sciences, Abdelmalek Essaadi University, Tetouan, MOROCCO NEJMEDDINE Mohamed, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO OUDRA Brahim, FSSM, Cadi Ayyad University, Marrakech, MOROCCO OUFDOU Khalid, FSSM, Cadi Ayyad University, Marrakech, MOROCCO RAHILI Larbi, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO RAKLAMI Anas, Mohammed 6 Polytechnic University – Ben Guerir, MOROCCO RGUIBI IDRISSI Hamid, Higher School of Technology of Laâyoune, MOROCCO RHERISSI Bouchra, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO SADAOUI Ilham, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO SADKI Issam, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO TAHROUCH Saaida, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO TALBI Abdessalam, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO TAOUFIQ Khadijattou, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO YACOUBI KHEBIZA Mohammed, FSSM, Cadi Ayyad University, Marrakech, MOROCCO

SCIENTIFIC COMMITTEE

ABBAOUI Sanae, Faculty of Medicine and Pharmacy, Ibn Zohr University, Agadir, MOROCCO ABOUNASR Mohamed, Faculty of Sciences Ben M'sik, University Hassan II, Casablanca, MOROCCO ACHOUAK Wafa, Institut de Biosciences et Biotechnologies d'Aix-Marseille (ex-IBEB), FRANCE ACHTAK HAfid, Polydisciplinary faculty, Cadi Ayyad University, MOROCCO ADDI Hasna, Higher School of Technology of Laâyoune, MOROCCO

```
AIN EL HOUT Fatem Zahra, Faculty of Applied Sciences, Ibn Zohr University, Ait Melloul, MOROCCO
AIT ALLA Aïcha, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ALFEDDY Mohamed Najib, Regional Center of Agricultural Research of Marrakech, INRA, Morocco
AMRI Oukacha, Polydisciplinary faculty, Ibn Zohr University, Taroudant, MOROCCO
AOURIR Mohamed, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ARJDAL El Hanafi, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
BARAKATE Mustapha, FSSM, Cadi Ayyad University, Marrakech, MOROCCO
BARGAZ Adnane, Mohammed 6 Polytechnic University - OCP Group, MOROCCO
BELCADI-HALOUI Rahma, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
BELMOUDEN Ahmed, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
BENIDIRE Loubna, Higher School of Technology of Laâyoune, MOROCCO
BOUBRIK Fatima, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
BOUIZGAREN Abdelaziz, Regional Center of Agricultural Research of Marrakech, INRA, Morocco
BOUIZGARNE Brahim, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
BOUKCIM Hassan, Valorhiz, Parc Scientifique Agropolis III, Montferrier sur Lez, FRANCE
BOURLET Thomas, Faculty of Medicine, Jean Monnet University Saint-Etienne, FRANCE
CHAHBOUNE Rajae, FMP, Abdelmalek Essaadi University, Tanger, MOROCCO
CHAKHCHAR Abdelghani, Ecole Normale Supérieure, Cadi Avyad University, Marrakech, MOROCCO
CHOUHAM Said, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
CLERMONT-DAUPHIN Cathy, Institute of Research for Development, FRANCE
DARIO FERNÁNDEZ ZOPPINO, Faculty of Health Sciences, University of Burgos, SPAIN
DREVON Jean-Jacques, National Institute for Agriculture, Food, and Environment (INRAE), FRANCE
EL BIARI Khouzaima, Faculty of Sciences, Abdelmalek Essaadi University, Tetouan, MOROCCO
EL FALAKI Jaouad, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
EL FELS Loubna, FSSM, Cadi Ayyad University, Marrakech, MOROCCO
EL GARRAOUI Oumaima, Cadi Ayyad University, Marrakech, MOROCCO
EL MEHRACH Khadija, Faculty of Applied Sciences, Ibn Zohr University, Ait Melloul, MOROCCO
EL MOUMNI Hasan, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ELAKIL Soumava, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ELAOUAD Hanan, Faculty of Sciences Ben M'sik, University Hassan II, Casablanca, MOROCCO
ELHILALI Fatiha, Faculty of Medicine and Pharmacy, Laayoune, MOROCCO
ELOUIZGANI Hassan, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ELYAOOUTI Mustapha, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
ENNAJI Moulay Mustapha, Univ. Hassan II, Mohammedia, MOROCCO
ENOUF Vincent, Institut Pasteur, Paris, FRANCE
FAGHIRE Mustapha, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
FAHMI Fadma, Higher School of Technology of Laâyoune, MOROCCO
FGHIRE Rachid, Faculty of Sciences, University of Chouaib Doukkali, El Jadida, MOROCCO
GALLOULI El Mahjoub, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO
HAFID Jamal, Faculty of Sciences and Techniques, Marrakech, MOROCCO
HAFIDI Mohamed, FSSM, Cadi Ayyad University, Marrakech, MOROCCO
```

HAMADI Fatima, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO HAMDALI Hanane, University Sultan Moulay Slimane, Beni Mellal, MORROCO HAOUDI Abdelali, King Saud Bin Abdulaziz University for Health Sciences, SAUDI ARABIA HATIMI Abdelhakim, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO HOUSTI Fatima, Faculty of Sciences, Moulay Ismail University, Meknes, MOROCCO KASSEM Moulay Abdelmajid (Majid), Fayetteville State University, NC, USA KASSIDI Farid, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO KHOUYA Khadija, Agronomy and Veterinary Institute Hassan II, Aït Melloul, MOROCCO KRIRIM Said, Higher School of Technology of Guelmim, MOROCCO LAHROUNI Majida, FSSM, Cadi Ayyad University, Marrakech, MOROCCO LAMAOUI Mouna, Polydisciplinary Faculty, Sultan Moulay Slimane University, MOROCCO LEMKHENTE Zohra, Faculty of Medicine and Pharmacy, Ibn Zohr University, Agadir, MOROCCO LEQUERE Antoine, Institute of Research for Development, FRANCE LOOMAN Souad, Faculty of Medicine and Pharmacy, Cadi Ayyad University, Marrakech, MOROCCO LOUNIS Hakima, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO MAGDI TAWFIK Abdelhamid, National Research Center, Cairo, EGYPT MAYAD El Hassan, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO MEDDICH Abdelilah, FSSM, Cadi Avyad University, Marrakech, MOROCCO MEKSEM Khalid, Southern Illinois University at Carbondale Carbondale, USA MENDEZ ESPINOZA Ana Maria, Instituto de Investigaciones Agropecuarias CRI-Remehue, CHILE MEZRIOUI Nour-eddine, FSSM, Cadi Ayvad University, Marrakech, MOROCCO MIR Youssef, Faculty of Medicine and Pharmacy, Ibn Zohr University, Agadir, MOROCCO MOUKRIM Abdellatif, Faculty of Sciences, Abdelmalek Essaadi University, Tetouan, MOROCCO NEJMEDDINE Mohamed, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO NMILA Rachid, Faculty of Sciences, University of Chouaib Doukkali, El Jadida, MOROCCO OUDRA Brahim, FSSM, Cadi Ayyad University, Marrakech, MOROCCO OUFDOU Khalid, FSSM, Cadi Avvad University, Marrakech, MOROCCO OUHDOUCH Yedir, FSSM, Cadi Ayvad University, Marrakech, MOROCCO OUKARROUM Abdallah, Mohammed 6 Polytechnic University, MOROCCO PAJUELO Eloísa, Faculty of Pharmacy, University of Seville., Sevilla, SPAIN. PEIX Alvaro, IRNA of Salamanca, Spanish National Research Council (CSIC), SPAIN RAHILI Larbi, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO RAKLAMI Anas, Mohammed 6 Polytechnic University –Ben Guerir, MOROCCO RAMÍREZ-GUALITO, Karla. Centro de Nanociencias, Micro y Nanotecnología. Mexico city, MEXICO. RCHID Halima, Faculty of Sciences, University of Chouaib Doukkali, El Jadida, MOROCCO RGUIBI IDRISSI Hamid, Higher School of Technology of Laâvoune, MOROCCO RHERISSI Bouchra, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO SABA Courage Kosi Setsoafia, University for Development Studies, Tamale, GHANA SABBAHI Rachid, , Higher School of Technology of Laâyoune, MOROCCO SADAOUI Ilham, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

SADKI Issam, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

SADQI Mourad, Center for Cellular and Biomolecular Machines (CCBM) and School of Bioengineering,

University of California Merced, USA

SCORZONI Liliana, Universidade de Guarulhos, Univeritas UNG, BRASIL

SIFI Bouaziz, National Institution of agriculture education and engineering research, TUNISIA

TAHROUCH Saaida, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

TALBI Abdessalam, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

TANTAWY Ahmed, Faculty of Agriculture, Cairo University, Giza, EGYPT

TAOUFIQ Khadijattou, Faculty of Sciences, Ibn Zohr University, Agadir, MOROCCO

WARDA Karima, Faculty of Medicine and Pharmacy, Cadi Ayyad University, Marrakech, MOROCCO

GUIDELINES TO AUTHORS

The authors are invited to fill the registration form and submit the abstract using the Template available at the conference web site.

The Abstract and Registration form should be sent to:microbiod5@gmail.com, no later than October 10, 2023.

Please indicate "Abstract" in the subject of your message. The file title of your abstractshould be noted as follow: "First Author_etal._Topic_number_Oral-or-Poster". The communication can be presented in English or French, however, the Power Point slides should be in English. The Posters have also to be written in English.

KEY DATES

- September 30, 2023 : Abstract submission deadline
- October 05, 2023: Acceptance notification
- October 10, 2023: Normal registration fees
- November 02-03, 2023: MICROBIOD 5 Congress

REGISTRATION FEES *

For International participants:

Registration status	Normal registration fee	Late registration fee	
Dates	October 10, 2023	After October 10, 2023	
Teaching-Researchers	140 € (1550 DH)	155 € (1720 DH)	
Students	85 € (940 DH)	110 € (1220 DH)	
Professionals	155 € (1720 DH)	180 € (2000 DH)	
Accompanyingpersons	80 € (890 DH)	90 € (1000 DH)	
Exhibition stand	300 € (3330 DH)	330 € (3660 DH)	

For Moroccanparticipants:

Registration status	Normal registration fee Late registration fee		
Dates	October 10, 2023	After October 10, 2023	
Teaching-Researchers	900 DH	1100 DH	
Students	400 DH	600 DH	
Professionals	1300 DH	1700 DH	
Accompanyingpersons	500 DH	600 DH	
Exhibition stand	2500 DH	3000 DH	

* The registration fees cover the participation to the congress, the publication cost of CD or the book of abstracts, Welcome Cocktail, Coffee breaks and Lunches. Accompanying persons are entitled to the same except the congress documents.

N.B.: The accommodation is not included in registration fees.

The payment of registration fees will be done after receiving the acceptance letter (after approval of abstracts by the Scientific Committee), by bank transfer to the account of the Association MICROBIONA (please see the conference web site: www.uca.ma/microbiona)

Account Name: Association MICROBIONA

Account Number, BMCI Bank Marrakech My Abdellah:

Banque	Ville	Numéro de compte	RIB	Devise	Code Swift
MA013	450	1000000000038578	73	MAD	BMCIMAMC

B.M.C.I. Bank, Marrakech My Abdellah Avenue Prince My Abdellah Im AHLAM II, 40 000 Marrakech

P.S.:

- Please specify your name and mention: "Registration Fees, Association MICROBIONA". After the operation, receipt of payment should be scanned and sent as attached file by e-mail to: microbiod5@gmail.com
- Participants must pay any transaction charges required by the bank.
- The students should provide a written administrative proof that they are registered in an university or in a school.
- Please see the conference website for any other information: http://www.ucam.ac.ma/microbiona

