

About Us

Arab Biotechnology Network (ABN) based in Sharjah, UAE was established and sponsored by Arab Science and Technology Foundation (ASTF) as one of its networks aimed to increase awareness of biotechnology opportunities in the Arab world and how to grasp them in the minds of emerging Arabian biotechnologist's professionals in March 5, 2008 with the direction and advise of the Arabian biotechnologists participants in the workshop "Research, Development, and Innovation: Biotechnology in the Arab World" Amman, Jordan the Kempinski Hotel whom have contributed to its establishment, providing the first coordinated approach to biotechnology in the Arab World. With over 150 members from 40 organizations from different Arab countries, USA, and Europe, ABN is emerging now as one of the most promising biotechnology networks in Arab world. Membership is not limited to Arab-based geographical locations, universities, research institutions, or companies, but encompasses multi-disciplinary biotechnologies views and organizations with an interest in Arab's emerging biotechnology sector and doing business in, with or through Arab world with the particular emphasis on creating the appropriate forums for our members to meet potential investors, business partners and clients.

Mission Statement

ABN seeks to bring together biotechnologies experts from a diverse range of academic professional universities, research institutions, or companies relating to biotechnology, including the Agricultural, Health and Medical, Environment and Energy biotechnological sciences. It provides an autonomous forum for Arab scientists to discuss and explore interests and research opportunities in academia and in the corporate world of biotechnology and pharmaceuticals. ABN will represent the interests of its members to the universities, industries and private sectors and to those groups in the community that will determine the future of biotechnology in this region as well as decision makers.

ABN Goals

Given the current status of biotechnology in Arab world the ABN is focused on the following goals:

- ✚ Contribute to the growth and development of the local biotech community in the Arab countries.
- ✚ Serve as a vehicle and platform for scientists in the Arab countries to explore biotech and its valuable applications
- ✚ Bring together scientists from diverse disciplines and multiple academic institutions and industrials levels.
- ✚ Inspire scientists to launch innovations paths in biotech.

ABN Core Activities and Objectives

The core focus of ABN is to create effective business forums and communication networks that bring the Arab biotechnology sector together in order to:

- ✚ Share knowledge among members based on their collective experience.
- ✚ Debate key issues impacting on the future development of Arab's biotechnology sector.
- ✚ Involve national and international companies and technologies seeking investment to the venture capital and bio-partnering community.
- ✚ Provide opportunities to bring Arab's members together with other biotechnology clusters, both in the Arab world and outside Arab world.
- ✚ Promote education and training options in the various biotechnologies research and industry and provide guidance on know how and connections which enable scientist and entrepreneurs to succeed.
- ✚ Provide a key information portal on Arab's biotechnology sector through listings of the companies, institutions, investors and professional service members of the Network on the web site and within other reports.
- ✚ Capitalize on the critical mass of the Network to negotiate special rate deals with suppliers such as business intelligence providers, conference organizers, journal publishers and so on.
- ✚ Creation of intellectual property rights /technology/products.

Current Status

The ABN represents the interests of Arab biotechnologists members from a diverse range of disciplines related to biotechnology.

The ABN has been formally endorsed by ASTF, and has the support of dozens of leaders of the Arab countries in research and development and business community.

ABN Executive Management

Sabah A.A. Jassim, Ph.D, M.I.Biol.; C.I.Biol.
ABN- President

Prof. Jassim has over 20 years experience in the food and medical microbiology biotechnology and advanced bacteriophage biotechnology business arena and holds 10 international patents and over 90 scientific papers, reviews and chapters in books in the areas of rapid microbial detection, phage breeding technology and novel antimicrobial agent's for treatment of viral, bacterial and fungal infections. He was a former Faculty Research Fellow at the Nottingham University UK and Professor of Advanced Bacteriophage Biotechnology Guelph University, Canada. Prof. Jassim is currently head of Microbiology Department, Zayed Complex for Herbal Research and Traditional Medicine–UAE. As a research scientist and business entrepreneur, he has been principally responsible for developing innovative phage diagnostic tests. Prof. Jassim is the Chief Scientific Adviser for ASTF. Prof Jassim received several international rewards and funds for his research on phage biotechnology and camelid biotechnology. He received M.Sc. (Food Microbiology) from the Nottingham University UK and a Ph.D. (Medical and Pharmaceutical Microbiology) from Loughborough University of Technology UK.

Personal Card

Prof. Sabah A.A. Jassim	
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Agricultural Biotechnology

Atef Shoukry Sadik

ABN-Secretary

Prof. Sadik has excellent academic credentials and many fine personal traits. He is a prominent scientist and leader in Microbiology with many accomplishments that will significantly contribute to crop improvement in Egypt. He utilizes cutting edge technology to solve basic food production problems. The production of transgenic plants (e.g. Banana, citrus, sugarcane, watermelon, melon, squash) that are resistant to known viruses is a vital tool to improve productivity of some of the major crops in Egypt His contributions are well documented in the literature and conferences that he regularly attends to present his work and keep current in the field. The impact of his work on producing virus resistant varieties will be evident on local and national levels. He is a teacher scholar who teaches several undergraduate and graduate courses in his areas of expertise to prepare the future generation of Egyptian scientists. He is an excellent role model for the students and future agricultural leaders in his country. He is a leader and team player, who collaborates with his colleagues on and freely shares his knowledge and expertise with his students (over 33 masters and PhD students). He serves on several local, national and international committees. His leadership and dedication are evident in his commitment to education and research. He gets along well with his colleagues and supervisors. He is always sought for advice and help by his students and co-workers. Prof. Sadik is equally committed to his family, where high moral standards, integrity, kindness and education are the guiding principals and priorities for his four children.

Personal Card

Prof. Atef Shoukry Sadik	
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Ph.D.	Agric. Microbiol. (Agric. Virology). Ain Shams University, Egypt 1994

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Health and Medical Biotechnology
Badiaa Lyoussi

Prof. Lyoussi has a good experience over 20 years in the physiopathology and pharmacology of natural products from medicinal plants. She had more than 60 scientific publications, and chapters in books in the area of acute and chronic toxicity of plants used in traditional medicine, ethnopharmacology and management of several pathologies like diabetes, obesity, hypertension, metabolic syndrome by medicinal plants and supplements, assays of natural products in animals model (SHR rats, mice, rabbit) and in vitro experiments for cardiovascular pathologies and discovery of antimicrobial agent's by endemic Moroccan plants. She is director of research of unit valorization of medicinal plants; she is responsible for Master formation on pharmacology and environmental Health, Director of Doctoral formation and president deputy of Arab Union of pharmacology. She is referee of many international journals in the area of medicinal plants research. She is member of 10 international societies. She had been member of executive committee of International Union of Pharmacology. She received funds from France, Belgium, TWAS and European projects. She is the head of Physiology-Pharmacology and Environmental Health Laboratory. She received a Doctorate from France and a second doctorate from Belgium.

Personal Card	
Prof. Badiaa Lyoussi	
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Environmental Biotechnology

Hanan Issa. Malkawi

Professor Hanan I. Malkawi has several scientific contributions in research and development specifically in the area of biotechnology and its applications in microbiology and molecular biology, environmental, agriculture, health and nanobiotechnology. She has several published papers in peer reviewed scientific journals. Also as a faculty member she is teaching several courses related to biotechnology. She managed several scientific research projects funded by national and international organizations. She held several administrative positions: Assistant dean of faculty of science and Vice-Dean of faculty of science at Yarmouk University. Currently she is the Director of UNESCO Chair of desert studies and desertification control at Yarmouk University. She obtained many awards. In the area of Environmental Biotechnology: she is studying the diversity of microbial communities thriving in harsh Jordanian environments and their biotechnological potentials: such as

- a- Culture-dependent and culture-independent approaches to study the Bacterial and Archaeal diversity from Jordanian hot springs.
- b- Isolation, Molecular and Biochemical Characterization of Oil Degrading Bacteria from Contaminated Soil at the Jordanian Oil Refinery.

Also in the area of Water and food quality:

- a- Fast Detection of Human Enteric Pathogens (Viruses and Bacteria) in Water Resources from Jordan Using Polymerase Chain Reaction (PCR).
- b- Survival and accumulation of microorganisms in soils irrigated with secondary treated wastewater.
- c- Molecular identification of Salmonella isolates from poultry and meat products in Jordan.

Personal Card

Prof. Hanan I. Malkawi (PhD)

Nationality Jordanian

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Energy Biotechnology

Awni Khatib

B. Sc. in Pre- medicine from Utah State University-USA 1978. M Sc Utah State University in Chemistry 1981. PhD from the University of Florida in Chemistry 1985 . Fulbright visiting scholar at the University of Oklahoma Energy Center 1988-89. Conducted research in German Universities (Konstanze 1990, Oldenburg 1995) on bio-gas. Supervised graduate students at Oslo and Granada and Palestinian Universities. Participated in many international forums a relevant one is 'Energy in the 90's at Salzburg-Austria'. Built a biogas station from olive mill waste water with a 5M3 UASB reactor. Worked as: Dean for the Faculty of Science- Hebron University 1989- 1995 ; Vice President for Planning and Development 1995-97; Vice President for Academic Affairs 1997-2000. Currently visiting Professor at the University of California. Conducts research in cooperation with Oslo University-Norway, Wageningen University-The Netherlands , Granada and valladolid Universities-Spain, National Research center-Egypt and the Royal Scientific Society-Jordan. Received awards from: Ryoichi Sosakama Young Leaders Award-Japan 1992. American Association for the Advancement of science Young Scientist Award 1979. Hisham Hijawi foundation Applied Research Award 1999. Became Associate Professor 1995 published more than fifteen research papers in reputable international periodicals and tens of articles.

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Prof. Awni Khatib	
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Media, Training and Conferences

Hanaa Hasan

Dr. Hanaa Hasan has B.Sc. from Tishreen University in 1993. High studies Diploma in plant protection field in 1994. M.Sc from Aleppo University in cooperation with the International Center for Agricultural Research in the Dry Areas (ICARDA) in 2000, Ph.D in molecular biology from Hannover University –Germany in 2005. She has several scientific contributions, especially in the molecular virology, biotechnology and plant protection field. She has a good experience with molecular biotechnology. She worked many years in General Commission for Scientific Agricultural Research (GCSAR) and ICARDA. She is currently a biotechnology expert and consultant in the Arabic Center for Studies of Arid zones and Dry lands–ACSAD (Arab organization) working within the framework of the league of Arab states. She participated in different international conferences and scientific meetings.

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Dr. Hanaa Hasan	
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ABN Consortiums and Activities

Agricultural Biotechnology				
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Prof. Atef Sadik	(Coordinator)		Egypt	atef_sadik@yahoo.com
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Prof. Hussein Migdadi			Jordan	hussmigd@yahoo.com
Dr. Wafaa Choumane			Syria	w.choumane@cgiar.org
Dr. Huda Haouas			Tunisia	Haouas_h@yahoo.com

Activities:

Plant Production and Agricultural Systems

- ✚ Production of plant cultivars with high quality and productivities,
- ✚ Development of industrial agricultural technology,
- ✚ Introduce new agricultural systems adopted with the current conditions.

Animal husbandry, Poultry and Fish Production

Use of biotechnology to obtain the highest productivities based on the local and international standards, in a trail to make the protein gap narrow as we can.

Soil and Microbiology Research

- ✚ Improving soil quality and increasing crop productivities using bio-fertilizers,
- ✚ Development of soil characters (e.g. dissolving the sulfur, phosphorus),
- ✚ Bioremediation of heavy metals from waste water,
- ✚ Production of highly efficient multifunctional bio-fertilizers for improving sustainability of agricultural production in the Arab world,
- ✚ Development of compost production and its evaluation for agricultural uses,
- ✚ Improving crop yield and quality using bio-gation technique *via* drip irrigation system under drought ecosystem conditions,
- ✚ Biological control of plant pathogens.

Genetic Engineering Application

- ✚ Production of plant cultivars tolerant to abiotic stresses (Drought, salt, heat),
- ✚ Production of plant cultivars resistant to biotic stresses (Viruses, fungi, nematodes),
- ✚ Production of bio-pesticides or bio-substances with high safe degree on human and environment.

Biopharming

The production of pharmaceuticals such as: edible vaccines and antibodies in plants or domestic animals.

Plants Tissue Culture Techniques

Different techniques in plant tissue culture are conducted.

Health and Medical Biotechnology				
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Prof. Badiaa Lyoussi (Coordinator)			Morocco	lyoussi@gmail.com
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Pr Monder Jaziri			Belgium	jaziri@ulb.ac.be
Pr Ettayebi Mohamed			USA	moettayebi@yahoo.com
Dr Ahmed hamid			UK	Hamid.Ahmed@riversidecollege.ac.uk

Activities:

Human Genetics

The expanding knowledge of medical genetics and its impact on the clinical laboratory are presented and applied to the field of laboratory medicine and its role in patient diagnosis.

Advanced Microbiology and Immunology

One of our aims is to develop an appreciation of recent advances in the biology of the immune system and in particular to the amazing camel immune system "camelid IgG" and how these relate to defense against infectious disease to gain an understanding of the pathological mechanisms of microorganisms and how those mechanisms evolve.

Bacteriophage Therapy






Phage therapy is one of the viable alternatives to antibiotics, being developed for clinical use in the 21st century by many research groups in Europe, US and recently in some part of the Arab world. Phage therapy has many applications in human medicine as well as dentistry, veterinary science and agriculture.

Medicinal Plants

Medicinal plants are the most important source of life saving drugs for the majority of the world's population. The biotechnological tools are important to select, multiply and conserve the critical genotypes of medicinal plants. Modern approaches to determining the medicinal properties of plants involve collaborative efforts that can include ethnobotanists, anthropologists, pharmaceutical chemists, and physicians. Many modern medicines had their origin in medicinal plants. Examples include aspirin from willow bark (*Salix spp.*), digitalis from foxglove (*Digitalis purpurea*), and vinblastine from Madagascar periwinkle (*Vinca rosea*) for the treatment of childhood leukemia. Our consortium is involved in advanced phytochemical and biological screening program of medicinal plants used in traditional medicine in the Arab world to develop novel phyto-products with high quality control

Food, Nutrition and Health

Research activity within this group includes:

-  Human Bioscience,
-  Human Health,
-  Human Nutrition,
-  Dietetics,
-  Nutraceutical,

- ✚ Food Safety,
- ✚ Food Quality.

Environment Biotechnology		
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Dr. Eissa Ibrahim El Gaali	Sudan	elgaali@hotmail.com

Activities:

Environmental Biotechnology (EB) is applied to and used to study the natural environment and to harness biological process for commercial uses and exploitation. The International Society for EB defines EB as "the development, use and regulation of biological systems for remediation of contaminated environments (land, air, water), and for environment-friendly processes (green manufacturing technologies and sustainable development)".

This will involve formulation of integrated joint project proposals for multi locations in the Arab world and activities workshops 'training teaching courses', exchange scientific visits, joint supervision on graduate students that deal with advanced technologies based on biological systems to improve efficiency and reduce or utilize waste to benefit a wide range of industries and the environment., such as biofilm prevention and dispersal, rapid in-field microbial detection and control and bioprocesses such as bioremediation and industrial wastewater treatment, Biodiversity Conservation, Microbial Desulphurization of Fossil Fuels and Biogas, Biosensor for Detection of Pesticide Residues, Biosurfactants from Wastes, Bioscrubber' for Removal of Odors from Industrial Emissions and ecosystems.

Our main aim is to bridge the gap between basic research in the EB and industrial applications and commercialization for instance:

- ✚ Searching for new biotech enzymes that enable the production of ethanol from corn and cellulosic biomass. Bioethanol from cellulose generates eight to ten times more net energy than that

required for its production. One gallon of cellulosic ethanol can replace 30 gallons of imported oil.

- ✚ Textile mills may potentially reduce water consumption by as much as 30 to 50 percent through the use of EB.
- ✚ Biodegradable bioplastics could reduce plastics in the waste stream by up to 80 percent. If all plastics were made from biobased polylactic acid, oil consumption used in the manufacturing process would fall by 90 to 145 million barrels per year.
- ✚ EB process changes in the nutraceutical and pharmaceutical sector during production of riboflavin (vitamin B2) can reduce associated carbon dioxide emissions by 80 percent and water pollution by 67 percent. Changes in the production of the antibiotic cephalixin reduce carbon dioxide emissions by 50 percent, energy demand by 20 percent, and water usage by 75 percent.
- ✚ EB processes in paper manufacturing could cut toxic sludge waste volumes and paper-bleaching energy requirements by 40 percent.

Energy Biotechnology		
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Activities:

Energy Biotechnology (EB) Alternative energy generation through biotechnology(18 million m³ of bioethanol were produced in 2006-USA from starch-rich corn kernels) by using enzyme contact and/or steeping in dry- and wet-milling plants followed by yeast fermentation. Industrial bio-ethanol from sugar cane is an alternative option. However, energy biotechnology is now focusing on lignocellulosic feed-stocks made of a tertiary structure of cellulose, hemicellulose,

exposing the feedstock to a mixture of purified enzymes to hydrolyze hemicellulose and cellulose to five- and six-carbon sugars. Biofuels based on either Carbon or Hydrogen would be the theme of the very near future because of the limited oil resources.

EB is all biotechnologies related to the production of energy and energy sources through biotechnological means. The chapter mission would be to facilitate the joint work and cooperation between academicians, research institutions and industry to build pilots and do research in the following areas:

- ✚ Genetic engineering approaches to improve bio-ethanol production from grains,
- ✚ Microbiology of synthesis gas fermentation for bio-fuel production,
- ✚ Mixed culture biotechnology for bio-energy production,
- ✚ Anaerobic fermentation of glycerol's as a path to economic viability for the bio-fuels industry,
- ✚ Bio-production of butanol from biomass (genes to bioreactors), and finally,
- ✚ Enzyme-based bio-fuel cells.

Media, Training and Conferences				
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Dr. Emad M. Thiab			UAE	emadthiab@yahoo.co.uk

Activities:

- ✚ Dedicated to educating entrepreneurs, researchers and the public about the promise and challenges of biotechnology,
- ✚ Creating a base of understanding and awareness about biotechnology among entrepreneurs and researchers –and building the next generation of leaders in various fields of biotechnology,

- # Working to educate the public through partnerships with local and regional, industries, universities, institutes and research centers to support the achievements of biotechnology in the Arab world,
- # Focusing on active support for researchers and students to pursue studies, training, and careers in biotechnology,
- # Associating Arab biotechnologists in the universities and research centers with regional and international biotechnology research organizations through organizing conferences, workshops and meetings to create novel harmonizing scientific environment,
- # Acting as a bridge between the private and public sectors and biotechnologists for developing links between interested parties,
- # Link the ancient Arabian biotechnological applications with the present modern biotechnology,
- # Encouraging studies on discovering the biotechnology heritage of Arab civilization and their reflections onto the ethical principles and values of the mankind history,
- # Arranging scientific activities (conferences, workshops, seminars, periodicals) on critical issues which are very important to the region such as; salinity and drought tolerance, shortage of water, desertification, human viral diseases, plant and animal diseases, to share and exchange information, knowledge and experience gained in advanced techniques. And also to contribute to solve the pressing problems of development in our region,
- # Working to find mechanisms to assist Arabic countries in strengthening their scientific and technological capabilities, which can be achieved through the following two methods:
 1. Finding institutions in the region that have experience in a specific area of biotechnology to share their experience with those that have not yet achieved in that particular area, by supporting them to organize such training programs,
 2. Conducting training programs with the help of very experienced international institutions.
- # Identifying and facilitating the sharing of experts available in the region, by promoting interaction between the scientific and technological communities in the Arabic countries to enable visits of scientists and technologists through organizing exchange scientific visits as well as through a regional roster of experts,
- # To organize a scientific conference to gather all the scientists and decision makers in the relevant institutions to build up an Arabic common framework to facilitate the regulation of modern biotechnology with particular emphasis on genetically modified organisms.

Activities of ABN Members by Research Area and Location

Research activities	Organizations involved in biotechnology research	
Disciplines	Scientist Names	Countries
Bacteriophage biotechnologies	Prof. Sabah Jassim	UAE
	Dr. Ahmed Sahib	Malaysia
	Dr. Zeiad Moussa	Egypt
	Badawy Othman	Egypt
Phyto-biotechnology & natural drug discovery	Prof. Sabah Jassim	UAE
	Prof. Badiaa Lyoussi	Morocco
Anti-microbial drug development	Prof. Sabah Jassim	UAE
Rapid microbial detection methods	Prof. Sabah Jassim	UAE
Microbial bioluminescences	Prof. Sabah Jassim	UAE
Microbial enzymes & biotechnology	Prof. Sabah Jassim	UAE
	Prof. Rawia Gamal	Egypt
	Prof. M. El-Haddad	Egypt
Microbial bio-safety & bio-security	Prof. Sabah Jassim	UAE
Fungal biotechnology in agricultural, food, & environmental	Prof. Sabah Jassim	UAE
	El-Shahaat Ramadan	Egypt
Camelid biotechnology	Prof. Sabah Jassim	UAE
	Dr. Messaoud Ramdani	Algeria
Desert sands & biotechnology	Prof. Sabah Jassim	UAE
Transgenic plants expressing salt tolerance genes	Prof. Atef Sadik	Egypt
	Mr. Attia Omar	Egypt
	Mr. Ismail Ahmed	Egypt
	Mr. El-Dessoky Salman	Egypt
	Mr. Hosam Zakaria	Egypt
Production of polyclonal antibodies	Prof. Atef Sadik	Egypt
	Dr. Mohamed I. Salama	Egypt
	Dr. Hanan Nour El-Din	Egypt
Isolation and identification of actinomycetes	Prof. Yuossif Hamdi	Egypt
	Prof. Sonya Hussein	Egypt
	Prof. Hasan Abdel-Fattah	Egypt
Bio-control of economic insects & fungi	Prof. Sabah Jassim	UAE
	Dr. Khader S. Abu Foul	UAE
	Prof. Sonya Hussein	Egypt
	Dr. Salah Mostafa	Egypt
	Dr. Gamal Othman	Egypt
	Dr. Mahmoud Tawfik	Egypt
Prof. Ahmed Mosa	Egypt	

Production of biofertilizers & ectomycorrhizae	Prof. Mohamed Al-Haddad	Egypt
	Prof. Shawky Selim	Egypt
	Prof. Mohamed Safwat	Egypt
	Dr. Mona Zayed	Egypt
Production of biodegradable plastic	Dr. Taha Khodair	Egypt
Biodegradation of polycyclic aromatic hydrocarbons	Prof. Shawky Selim	Egypt
Production of microbial antibiotics	Prof. Mahmoud Zaki	Egypt
	Prof. El-Sayed Saleh	Egypt
	Prof. Sonya Hussein	Egypt
	Prof. Sabah Jassim	UAE
Production of ELISA kits	Prof. Atef Sadik	Egypt
	Dr. Mohamed I. Salama	Egypt
	Dr. Hanan Nour El-Din	Egypt
Production of virus-free plant materials	Prof. Mohamed Emam	Egypt
	Prof. Khaled El-Dougdoug	Egypt
	Prof. Ahmed Shalaby	Egypt
	Dr. Lamis chalak	Lebanon
Determination of DNA fingerprinting of plants	Dr. Taha Hussein	Egypt
Production of vaccines	Prof. Mamdouh Hussein	Egypt
Bioremediation of heavy metals	Prof. Shawky Selim	Egypt
	Prof. Sonya hussein	Egypt
Biodegradation of pesticides	Prof. Sonya Hussein	Egypt
	Prof. Ahmed rahal	Egypt
Nitrogen fixation	Prof. Yuossif Hamdi	Egypt
	Prof. Shawky Selim	Egypt
	Prof. Hassan Abdel-Fattah	Egypt
	Prof. Mohamed Safwat	Egypt
	Prof. Nabil Omar	Egypt
	Dr. Ahmed Abdel-Wahab	Egypt
Nanobiotechnology: using nanoparticles for detection of microbial pathogens in water, food and clinical samples	Prof. Hanan Malkawi	Jordan
DNA fingerprinting of crop plants and microorganisms	Prof. Hanan Malkawi	Jordan
Microbial-Plant interaction	Prof. Hanan Malkawi	Jordan
Biotechnological applications of microorganisms adapting in harsh environment	Prof. Hanan Malkawi	Jordan
Grand total	29	53
		6