



*Topic of the Issue:*  
**Entrepreneurship**

**National Research Centre Insight**  
*Producing Knowledge. Fostering Innovation*

● **Entrepreneurship:  
From ideas to the market**

● **Success stories  
of researchers  
and entrepreneurs**

● **With science, we innovate.  
Through entrepreneurship,  
we drive the economy**

● **National solutions  
in new and renewable energy**

● **Promising opportunities  
in the pharmaceutical  
and food industries**

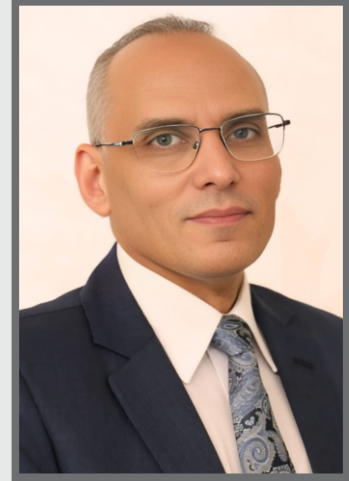
**Issue 6  
February 2026**



## Message from the President

### **In the Name of Allah, the Most Gracious, the Most Merciful**

As we present this new issue of the National Research Centre Insight, we do so with pride in the legacy of this distinguished institution and with renewed determination to advance its mission. For decades, the National Research Centre (NRC) has been a pillar of scientific excellence in Egypt, and we remain committed to strengthening the role of research in driving sustainable development and shaping a future worthy of our nation's aspirations.



In this occasion, I extend my sincere congratulations to His Excellency Professor Abdelaziz Hassanein Konsowa on his appointment as Minister of Higher Education and Scientific Research, reflecting the confidence of our wise political leadership. We look forward to working closely with His Excellency to advance Egypt's research and innovation toward wider horizons of impact and distinction. The NRC remains fully committed to supporting the State's vision of linking scientific research more effectively with industry, production, and the broader goals of national development.

As we approach the blessed month of Ramadan, I would like to extend my warmest wishes to all my colleagues, researchers, scholars, and staff members of the NRC. May it bring peace and blessings to you and your families, and may it return to our beloved Egypt and to the Arab and Islamic nations with goodness and blessings. May Allah accept our good deeds.

At the National Research Centre, we reaffirm our commitment to purposeful and dedicated work. We will continue to expand our scientific partnerships, both locally and nationally, and to prioritize applied research that addresses real challenges and supports Egypt's development plans. We firmly believe that scientific research is a cornerstone in building the New Republic and securing a sustainable future for generations to come.

May Allah grant us success in all that serves our nation  
Peace, mercy, and blessings of Allah be upon you.

**Professor Mamdouh Moawad**  
**President of the National Research Centre**

## Editorial Foreword

Each year, the blessed month of Ramadan arrives to bestow spiritual serenity and renewal of faith upon us. We pray that this holy month brings goodness and blessings to our beloved Egypt and to the Islamic world, and that we may all be guided to conscious fasting that unites spiritual clarity with physical well-being.



In this issue, we emphasize innovation and science-based entrepreneurship as a serious driver of national development. It is widely recognized that the strength of nations is measured not solely by their natural resources anymore, but by their ability to transform knowledge into added value, ideas into projects, and research into industrial and service applications that sustain the national economy. It has therefore become imperative for our research institutes to engage more deeply into multidisciplinary work and embrace a culture of entrepreneurship, encouraging researchers to explore ways of translating their findings into marketable products and technologies.

Accordingly, this issue features introductory articles from the institutes' deans and entrepreneurship committees' representatives, outlining their vision for fostering entrepreneurship within their respective fields. The articles elaborate ongoing efforts to stimulate innovation, build partnerships with the industrial sector, protect intellectual properties, and showcase successful research projects that have evolved into applications with tangible economic and societal impact.

With best wishes for a blessed Ramadan.

**Professor Khaled A. Shams**  
Editor-in-Chief

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## NRC at Work: Highlights and Activities

### Beginning of 2026: A Strategic Movement Strengthening the Development Path at the National Research Centre

During January and February 2026, the National Research Centre (NRC) witnessed intensive activities, including field visits, the signing of cooperation protocols, international partnerships and advancing digital transformation. These efforts reflect the NRC's objectives to improve research performance and align current projects with the needs of the State and Society.

#### Field Visits

##### • Inspection of Nubaria Farms

On January 12, 2026, Professor Mamdouh Moawad, President of the National Research Centre, conducted an inspection tour of the NRC's farms in the Nubaria region to monitor the workflow and assess performances. He was received by Professor Wafaa Abd El-Rahim, Dean of the Agricultural and Biological Research Institute and General Supervisor of the farm.

During the tour, he inspected livestock barns to review the breeding and production systems, and followed up on the development work in the poultry unit, emphasizing the importance of adhering to biosafety standards and preventive measures. He also examined fish farming ponds and listened to explanations regarding operational mechanisms and plans to improve production efficiency, stressing the application of modern technologies to enhance sustainability and maintain food security.

The inspection also covered the feed system through checking the warehouses and the feed factory, as well as the citrus and mango plantations, calf barns, and fruit greenhouses at the second farm. The tour concluded with a meeting with staff to discuss challenges and address their questions to ensure maximum benefit from research outputs and their practical application.



#### Events

##### Graduation of 250 Researchers in Artificial Intelligence Applications Training Program:

On January 13, 2026, Professor Moawad attended the closing ceremony of the specialized training program on Artificial Intelligence Applications in Scientific Research, “AI International Passport” (AIIP), implemented in cooperation with AMG Group. The program trained 250 researchers from various NRC departments, and the ceremony was attended by distinguished Egyptian and international academic guests.

In his speech, Professor Moawad emphasized that the program represents a strategic step toward integrating artificial intelligence technologies into scientific research, particularly following the launch of the NRC's Artificial Intelligence Centre. The program was delivered through four specialized training tracks, mounting up to 40 training hours over three months, and concluded with applied projects demonstrating the researchers' abilities to employ AI tools in their respective fields.



## NRC at Work: Highlights and Activities

### Governance Development and Institutional Performance Enhancement

#### • First Board Meeting of 2026

On January 28, 2026, the NRC held its first Board of Directors meeting of the year, chaired by Professor Moawad and attended by board members. The meeting reviewed progress of research plans, monitored joint projects with national entities, and discussed organizational and administrative topics related to research staff. Words of encouragement stressed the importance of continuing teamwork to achieve the goals of the new year.



### Cooperation Protocols

#### • Protocol with the Egyptian Engineers Syndicate

On February 2, 2026, Professor Moawad signed a cooperation protocol with Eng. Tarek El-Nabarawy, President of the Egyptian Engineers Syndicate, aimed at supporting applied scientific research and seeking technology transfer and localization. Dr. Moawad affirmed that this cooperation is a significant step toward linking research outputs with the needs of national industry and the labor market through training programs, joint scientific events and applied studies that contribute to industrial development.



#### • Protocol with Engineers for a Sustainable Egypt Initiative

On February 10, 2026, Professor Moawad signed a cooperation protocol with the “Engineers for a Sustainable Egypt” initiative to support scientific research, develop youth capacities, and promote innovation in scientific and technological fields. The cooperation includes organizing joint scientific events, conducting applied studies, and exchanging expertise to serve sustainable development priority goals and strengthen the role of civil society in supporting research.



## NRC at Work: Highlights and Activities

### Other Activities

#### • Reception of Birmingham University Delegation

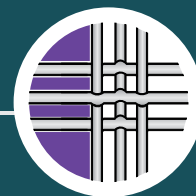
On February 1, 2026, Professor Moawad received a scientific delegation from the University of Birmingham, United Kingdom, led by Professor Philip Davies. The visit came as part of the joint Egyptian-British project “Design and Implementation of Low-Cost Water Treatment and Desalination Units” under the International Science Partnerships Fund (ISPF) program. Discussions focused on the project's progress status, and the development of innovative, cost-effective solutions to support water security. The delegation also toured NRC laboratories to get acquainted to the research capabilities relevant to the cooperation.

#### • Participation in the Egyptian-French Scientific Cooperation Day

On February 5, 2026, Professor Moawad participated in the Egyptian-French Scientific and Academic Cooperation Day in Paris. He held coordination meetings with several French research institutions to explore opportunities for joint research cooperation with new universities and research centres, and to identify priority topics of mutual interest. The discussions addressed mechanisms for implementing existing cooperation agreements between the NRC and French institutions, including Centre National de la Recherche Scientifique (CNRS), LERMAB at the École Nationale Supérieure des Technologies et Industries du Bois (ENSTIB-LER), and the Institute Charles Gerhardt Montpellier (ICGM).



These successive activities reflect the NRC's commitment to continuous development, openness to international partnerships, support for digital transformation, and maximizing the benefits of research and applied capabilities. This reinforces its role as a leading scientific institution serving society and supporting the state's plans for comprehensive and sustainable development.



## Textile Research and Technology Institute

### Foreword

#### Entrepreneurship: When Textiles Evolve from a Traditional Industry into a Platform for Innovation

Entrepreneurship is no longer an optional add-on to economic development plans; it has become one of their driving forces. In today's knowledge-based economies, the real value of research lies in its ability to move beyond papers and prototypes and take shape as products and services that make a difference in the marketplace. Within this shift, the textile sector holds a unique strategic potential. When scientific research, innovation, and entrepreneurial thinking operate within a connected, well-designed ecosystem, textiles can evolve from a conventional manufacturing field into a driver of meaningful and lasting transformation.

This conviction shapes the work of the Textile Research and Technology Institute. With a clear direction and a strong focus on results, the Institute has committed itself to turning expertise into tangible economic and developmental gains. It has built an integrated entrepreneurship ecosystem that includes:

- **Naseej Incubator**, a genuine starting point for entrepreneurs seeking to transform ideas into viable ventures.
- **The Innovative Textile Center (ITTC)**, the technological backbone that strengthens and advances the system.
- **The Textile Alliance**, a dynamic partnership model linking scientific research with industry and connecting the Institute to factories, companies, entrepreneurs, and investors.

The Institute also serves as a trusted advisory body for both entrepreneurs and manufacturers. Through its specialized units, central laboratories, and semi-industrial pilot facilities, it supports the improvement of product quality and production efficiency. Here, research is not confined to laboratories, it moves steadily toward the marketplace.

*Professor Tamer Hamouda: Professor at Spinning and Weaving Engineering Department, Executive Director of the Innovators Support Fund, Vice President of the Academy of Scientific Research and Technology for Innovation, Development and Marketing*



### Pioneers of Science

#### Professor Mona Mostafa Kamel

##### *Dyeing, Printing, and Auxiliaries Department*

Professor Mona Kamel is widely recognized as a leading figure in dye chemistry and dyeing technology. She earned her B.Sc., M.Sc., and Ph.D. from Cairo University and has held a series of senior leadership roles, including Head of the Dyeing, Printing and Intermediates Department; Head of the Textile Industries Research Division; Vice President of the Center for Research Projects Affairs; and Dean of the Girls' College in Hail, Kingdom of Saudi Arabia. Her scientific contributions reflect both depth and consistency; 127 published research papers, supervision of 26 postgraduate theses and dissertations, participation in 31 applied national and international research projects, and numerous scientific publications. Her work has earned wide recognition, most notably the Scientific Appreciation Award from the NRC, along with numerous shields and certificates of recognition from the NRC, the Academy of Scientific Research and Technology, the Girls' College in Hail, and the International Federation of Inventors' Associations (IFIA).





### Distinguished Scientists

#### **Prof. Hosam El-Din Zakaria El-Sayed**

##### *Proteinic and Man-made Fibers Department*

Professor Hosam El-Sayed obtained his Ph.D. through joint collaboration with the German Wool Research Institute, marking the beginning of a distinguished academic path. He went on to establish a specialized scientific school focused on materials derived from protein fibers and their diverse applications, an area in which he has built lasting expertise. Throughout his career, he has held several leadership positions, including Assistant President of the Center for Research Affairs, Assistant to the Vice President for Research Affairs, Head of the Protein and Synthetic Fibers Department, and Secretary of the Permanent Scientific Committee for Organic and Applied Chemistry. His scholarly record includes 115 published papers and three books, supervision of 12 postgraduate theses and dissertations, and Principal Investigator of numerous national and international research projects. Among his honors is the Scientific Appreciation Award from the National Research Centre.



### Activities and Events

#### **Announcement: The Tenth International Conference of the Textile Research and Technology Institute**

The Institute will host its Tenth International Conference at the National Research Centre from May 4–6, 2026, under the theme: *Innovative Approaches to Address Challenges in Textile Industries and Achieve Sustainable Development Goals.*

The conference will be held under the patronage of Professor Mamdouh Mouwad, President of the National Research Centre; and Professor Gina El-Feky, Acting President of the Academy of Scientific Research and Technology.

The event will bring together leading scientists, alongside representatives from academic and industrial institutions, to explore the latest research and technological advancements in the textile sector. Discussions will focus on pressing challenges such as climate change and resource efficiency, while emphasizing practical pathways toward sustainability and a circular economy. The conference aims to serve not only as a platform for presenting research, but as a space for dialogue, collaboration, and forward-looking solutions.

#### **Initiative of the Company of National Research Centre for Marketing Research Outputs**

Several Institute members participated in workshops organized by Ubuntu, a company specializing in marketing and consultancy, in collaboration with the Company of National Research Centre for Innovative Products. The initiative aims to commercialize research outputs and bridge the gap between laboratory results and market opportunities. The workshops introduced researchers to the fundamentals of preparing investment-ready product portfolios, helping them position their innovations as competitive opportunities capable of attracting investors and meeting real market demand.



## Textile Research and Technology Institute

### Activities and Events

#### Participation in the Local Manufacturing Deepening Exhibition

A number of Institute researchers took part in the Local Manufacturing Deepening Exhibition for Engineering Industries, January 22–24, 2026, where they showcased innovative textile products with clear industrial applications. The presented products were designed to address specific industry needs and offer practical, scalable solutions.

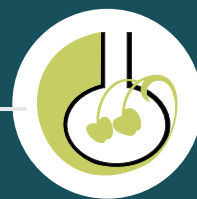
The exhibition was organized by the Chamber of Engineering Industries under the patronage of Lieutenant General Kamel El-Wazir, Deputy Prime Minister for Industrial Development and Minister of Industry and Transport. Through its participation, the Institute reaffirmed its commitment to aligning research excellence with the priorities of national industry, ensuring that innovation is not only developed in laboratories, but implemented where it matters most: on production lines and in competitive markets.



#### Exploring Avenues for Scientific Collaboration with Abu Dhabi University

At the request of Professor Hamdi Sheibani, Dean of the College of Engineering at Abu Dhabi University, a meeting was convened to explore opportunities for closer cooperation. Professor Mai Elbasel, Professor of Interior Design at Abu Dhabi University, met with Professor Samar Mohamed Sami Sharaf, Dean of the Textile Research and Technology Institute, together with Associate Professor Zeinab Abd El Mageid and Dr. Manar Yahia from the Clothing and Knitting Industrial Research Department. The discussions focused on strengthening academic ties, exchanging expertise, and opening new pathways for collaborative research between the two institutions.





## Foreword

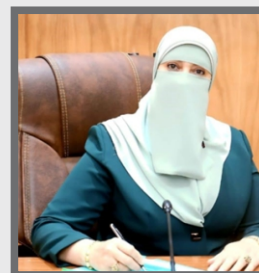
Under the leadership of the NRC's administration, the Food Industries and Nutrition Research Institute is taking decisive steps toward supporting food industries as a strategic pillar of the national economy. The role of this sector is no longer limited to food manufacturing and production; it has expanded significantly to include bolstering food security, advancing food preservation technologies, ensuring food safety, and maximizing the utilization of by-products to minimize waste, thereby achieving food sustainability.

Entrepreneurship in this vital sector embodies the spirit of innovation by developing high-value nutritional products from agricultural residues and creating safe, natural, and healthy alternatives to artificial flavours, preservatives, and other additives.

Within this framework, the Institute's Entrepreneurship Committee endeavours to commercialize applied products and patents for over 110 innovative food products. This is achieved through intensified field visits to factories and corporations, aimed at bridging the gap between research outcomes and industry, production, and marketing. Such efforts transform innovative concepts into pioneering commercial ventures that contribute to the advancement of the national economy.

Furthermore, a meeting was convened with the leadership of the Chamber of Food Industries and the Food Export Council to establish a joint cooperation protocol. This initiative aims to bolster avenues for collaboration and achieve fruitful integration.

We also endeavour to address the multifaceted challenges within the food sector based on robust scientific foundations. Our efforts include providing scientific and technical consultancy to factories and corporations, as well as to tourist establishments, hotels, restaurants, hospitals, and integrated healthcare facilities.



**Prof. Manal Ramadan**  
Dean of the Institute



## Foreword

Entrepreneurship in scientific research is a strategic approach aimed at utilizing research outputs to achieve innovative goals with competitive value, thus contributing to supporting sustainable development and building a strong knowledge-based economy. It begins with an idea or innovation and ends with a product or service that has a real impact, meets national needs, supports economic growth, and reaches the market as a startup or a final, marketable product.

Within the framework of the significant support provided by the Egyptian state to the entrepreneurship ecosystem, Law No. (23) of 2018 was issued concerning incentives for investment in scientific research. Based on this law, the National Research Centre (NRC) established two technology incubators to nurture entrepreneurial and innovative ideas and research outputs. Business incubators and accelerators are key support tools in the entrepreneurship ecosystem, providing technical, training, financial, and marketing support, as well as facilitating the application of artificial intelligence and modern science technologies in development and modernization processes. These incubators also serve as a major hub for innovation and entrepreneurship, contributing to the creation of new job opportunities, increased exports, and enhancing the NRC's contribution to building a knowledge-based economy.

From this perspective, the Pharmaceutical and Drug Industries Research Institute has focused on supporting this applied approach under the umbrella of the "Technological Incubator for Health and Pharmaceutical Products" at the NRC. A range of pharmaceutical preparations, nutritional supplements, and pharmaceutical raw materials have been produced, with the aim of establishing startups or manufacturing ready, marketable products. Most of the applicable proposals within the Institute were identified through the work of the Entrepreneurship Committee, particularly after the state recently launched, the "Startup Charter", for the first time in Egypt, which enhances the capabilities of startups and the entrepreneurial environment to achieve sustainable and accelerated economic growth based on competitiveness and knowledge.



*Professor Nagwa Mohamed Issa Ammar  
Department of Pharmacognosy*



### Pioneers of Science

#### **Professor Elsayed Abo El-Fotouh Omar**

##### *Department of Medicinal and Aromatic Plants*

Professor Elsayed Abo El-Fotouh Omar is one of the most prominent Arab scientists in the field of medicinal and aromatic plants. He combined academic excellence with administrative leadership and contributed significantly to the development of scientific research and its industrial applications. He graduated from the Faculty of Agriculture, Cairo University in 1973, obtained his Master's degree in 1980, and then earned his PhD from Japan in 1988. He held several leadership positions, most notably as Head of the Pharmaceutical and Drug Industries Division (2005–2011) and Head of the Research Staff Club (2009–2015). He has received numerous awards and honors, including the State Award for Scientific Appreciation in 2015 and the Order of Sciences and Arts in 2017. He has supervised more than 50 dissertations and published over 130 scientific papers. He was also the Principal Investigator for the ten-volume Egyptian Encyclopedia of Wild Medicinal Plants. He currently heads the project to establish the Egyptian National Gene and Seed Bank, supporting the preservation of genetic resources and enhancing biosecurity and agricultural security. He remains a prominent scientific figure serving scientific research and sustainable development.



### Distinguished Scientists

#### **Dr. Ahmed Hamed Hassan Eldesoky**

##### *Department of Pharmacognosy*

Dr. Ahmed Eldesoky graduated from the Faculty of Pharmacy, Cairo University, with highest honors and received his Master of Science degree in Pharmaceutical Sciences from the same university. He earned his PhD from Kumamoto University in Japan through a MEXT scholarship. He has published dozens of scientific papers and participated in numerous international conferences in Egypt and Japan. He has also contributed chapters to scientific books published by international publishing houses, including Springer and Apple Academic Press. He received the Scientific Excellence Award from the National Research Centre (2025), the Research Staff Club Award (2024), and the Kumamoto University Alumni Award (2022), in addition to a Takeda Science Foundation Fellowship and a TWAS Fellowship, as well as two research grants from the Japan Society for the Promotion of Science (JSPS). He possesses extensive experience in teaching pharmacology through his teaching assignments at several public and private universities, in addition to supervising graduate students. He also serves on the editorial board of the BMC Complementary Medicine and Therapies Journal and is a member of several scientific societies in Egypt and Japan.





## Chemical Industries Research Institute

### Foreword

In chemical industries, entrepreneurship is recognized as one of the primary factors to support innovation and promote the competitiveness of the national economy. This is due to the fact that it is dedicated to the development of industrially applicable, sustainable, and innovative products and production processes, which in turn generate economic benefits and contribute to environmental preservation. The fields of entrepreneurship in chemical industries include many vital sectors, such as paints, cosmetics, fertilizers, and specialty chemicals industries. Moreover, there are promising opportunities in the fields of plastic recycling and production of renewable energy materials. Success in this field requires careful planning, strict adherence to occupational safety and health regulations, and the development of solid supply chains, with a focus on sustainability as a key pillar to ensuring future growth.



**Prof. Ahmed M. Youssef**  
Dean of the Institute

### Fields of Opportunity for Chemical Industries Entrepreneurship

- **Agricultural chemicals:** organic and chemical fertilizers, as well as pesticides.
- **Specialty chemicals:** paints and dyes, adhesives, construction chemicals, and renewable energy materials.
- **Sustainable chemicals:** plastic recycling, the production of cellulose derivatives from agricultural waste, and the development of environmentally friendly packaging materials.

Among the most important factors for the success of entrepreneurship in chemical industries are the development of new products, the improvements in chemical formulations, the search for alternative raw materials, and the application of more efficient and sustainable production techniques, which contribute to maximizing added value and enhancing local manufacturing.

### Activities and Events

#### Conclusion of the Seventh Scientific Conference of the Chemical Industries Research Institute

The Seventh Scientific Conference of the Chemical Industries Research Institute represented an important scientific and practical platform for presenting the most recent research outputs and technological innovations that can be applied in industry. Accordingly, the conference contributed to the advancement of local manufacturing and to the achievement of sustainable development goals. The conference sessions addressed several key topics, including chemical industries, advanced materials, energy, environment, and green technology, with a focus on technology transfer and localization, as well as strengthening collaboration between research institutions and the industrial sector.



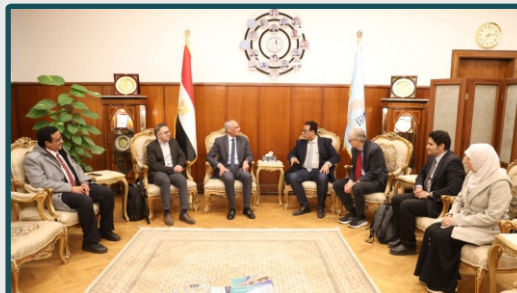
The Seventh Scientific Conference of the Chemical Industries Research Institute was held on December, 28 and 29, 2025 at the National Research Centre (NRC), under the patronage of Professor Mohamed Ayman Ashour, then-Minister of Higher Education and Scientific Research, and Professor Mamdouh Moawad, President of the NRC. The conference was also attended by Dr. Sayed Meshaal, Former Minister of Military Production, and Professor Sherif El-Gebali, President of the Egyptian Chamber of Chemical Industries, along with representatives from several national companies, including Kapci Paints, Eagle Chemicals, Pachin Paints, Sofi Top Plastics, and Nawah Scientific, as well as a select group of senior scientists and researchers from the NRC. The participants in the conference emphasized the pivotal role of scientific research in supporting the state's plans for comprehensive development, in alignment with Egypt's Vision 2030.



### Activities and Events

#### Exploring Collaboration Between Egypt and England

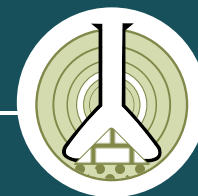
Professor Mamdouh Moawad, President of the NRC, welcomed a delegation from the University of Birmingham, including Professor Philip Davies and Professor Soroosh Sharifi, on February 1, 2026, as part of the efforts to strengthen international scientific and academic research collaborations. Dr. Hossam El Nazer, the Principal Investigator of the Egyptian-British cooperation project, and Dr. Yasser Mahmoud, the Co-Principal Investigator attended the meeting, as did several members of the project research team. Professor Moawad emphasized that this meeting provided an important opportunity to explore ways of collaboration between Egypt, represented by the NRC as the largest research institution in the Middle East, and England, which would improve the exchange of expertise and the development of joint scientific research between the two countries.



#### Cooperation between the Chemical Industries Research Institute and the Egyptian Chamber of Chemical Industries to meet the industry needs

The Egyptian Chamber of Chemical Industries and the NRC signed a cooperation protocol with the goal of linking scientific research outputs with the chemical industry and ensuring that the industry development and technical problem-solving needs are met by converting them into research points to be addressed through master and doctoral theses at the NRC. This cooperation comes within the framework of supporting the deepening of the local industry and solving technical problems for industrial products. Moreover, the Chamber would benefit from applied research projects, which represents a strategic step towards building an applied research system based on real-world factory problems. This cooperation also helps to improve production efficiency, promote product quality, support innovation, and reduce cost, all of which have a direct impact on maximizing added value and increasing Egyptian exports.





## Advanced Materials Technology and Mineral Resources Research Institute

### Foreword

The National Research Centre (NRC) is committed to supporting innovation and entrepreneurship, as well as transforming scientific knowledge into innovative products that help reduce reliance on imports, in accordance with the national strategy to deepen local manufacturing. In this context, the NRC is hosting a large exhibition at its branch in 6th of October City to showcase innovative products that can be industrially applied in a variety of strategic sectors, including pharmaceuticals, chemicals, advanced materials, energy, and food.



The Advanced Materials Technology and Mineral Resources Research Institute is participating in this exhibition with a distinguished range of innovative products developed by a select group of the Institute's researchers, through the optimal utilization of local raw materials and industrial waste, with the goal of providing effective alternatives to imported materials. These products include grinding stones, glassy ceramics, moisture-resistant gypsum, insulating construction materials, slow-release fertilizers, activated charcoal, glass coatings, and corrosion inhibitors.

**Prof. Sherif Zain Al-Abidin**  
Acting Dean of the Institute

### Pioneers of Science

#### Professor Ahmed Medhat Shams El-Din

Professor Ahmed Shams El-Din is regarded as one of Egypt's and the Arab world's leading pioneers in electrochemistry and metal corrosion research. He founded a distinguished scientific school and contributed to the establishment of the Electrochemistry Laboratory. He received his PhD in Science from Cairo University in 1966, and from Ain Shams University in 1979. He also received numerous local and international awards for his outstanding scientific contributions, including the Nile Prize, the State Appreciation Award, the Order of Sciences and Arts of the First Class, and the Order of the Republic. He also received numerous scholarships and fellowships, performed numerous scientific visits, supervised dozens of theses, dissertations, and applied projects, and published over 156 scientific papers in prestigious international journals.



### Distinguished Scientists

#### Professor Mahmoud Farag Zawrah

Professor Mahmoud Zawrah has received numerous regional and state awards, as well as awards from the NRC and other organizations. He was the Executive Director of the Science, Technology, and Innovation Funding Authority (STDF), a technical expert for 11 years, and a member of numerous national committees. He also chaired the Board of Directors of the Center of Excellence and the Refractories, Ceramics and Building Materials Department. He was the Executive Director of Pharos University's Research Projects Unit, and is a certified environmental consultant for the Ministry of the Environment and Misr El Kheir Foundation.





## Advanced Materials Technology and Mineral Resources Research Institute

### Activities and Events

- Professor **Mohamed Hashim** led a research team in the Inorganic Chemistry Department, who successfully prepared manganese dioxide in an eco-friendly and high-yield manner using reducing agents derived from plants or fruits. This method was economical, reducing production costs by half. Manganese dioxide is economically significant because it is used in a variety of applications, such as secondary lithium batteries and secondary zinc batteries, as an electrode in capacitors, as a catalyst in many industries, and as a sorbent for the removal of toxic heavy metals from industrial wastewater.
- On January 15, 2026, the Physical Chemistry Department organized an awareness caravan to El Nasr for Rubber Products (Naroben) in Qalyubia Governorate to raise awareness and assist in verifying the implementation of occupational health and safety procedures for workers.
- On February 11, 2026, a group from the Glass Research Department visited the Pharaohs Glass Products Factory in Sadat City to discuss the problems that are facing the factory and to work on developing and improving the production process.

### Units and Services

The Consultations and Analysis Unit provided scientific consultations and technical support to a number of companies in a variety of fields, including metal corrosion resistance in industrial facilities, evaluation of chemical additives for petroleum companies, marble and granite testing, geomechanical and thermal tests, as well as the Glass Analysis and Consultation Unit services.

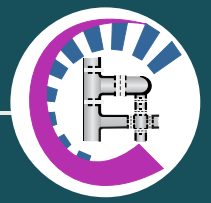
### Collaboration with Industry

One of the Institute's primary areas of focus is innovation and development in the inorganic chemical industries. For more than thirty years, fruitful cooperation in the field of intermediate chemicals and fertilizers has been achieved through ongoing partnerships with El-Nasr Pharmaceutical Chemicals Company, Misr Chemical Industries Company, and Egyptian Copper Works Company, with the goal of maximizing the benefit from industrial waste.

There are also many projects, with economic returns, that were signed with production sectors. Current collaboration includes joint projects with Abu Zaabal Fertilizer & Chemical Company, as well as providing consultations and feasibility studies for different projects.



*Professor Adly Hana  
Inorganic Chemistry Department*

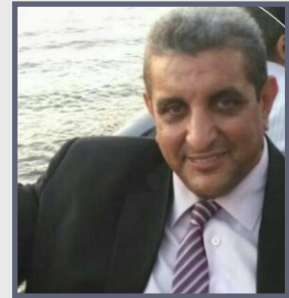


### Foreword

Entrepreneurship is increasingly regarded as a fundamental pillar in supporting and advancing the local manufacturing system, especially within the engineering industries sector, which is one of the most important drivers of economic growth and sustainable development. In this context, the Exhibition for Deepening the Local Industrialization of Engineering Industries, organized by the Chamber of Engineering Industries, serves as an effective platform bringing together scientific research, technological innovation and entrepreneurial initiatives.

It has become imperative to encourage entrepreneurs to adopt innovative engineering solutions as part of the efforts to nativize technology, reduce dependence on imports, strengthen local supply chains, create new employment opportunities and develop national competencies. This exhibition truly affirms the need for integrating the efforts of research institutions, the industrial sector and business incubators in order to boost an innovative culture and build a knowledge-based economy founded on sustainable local production.

It is worth noting that the Institute of Engineering and Renewable Energy Research at the National Research Centre (NRC) possesses extensive expertise in reverse engineering, an effective tool for solving challenges in local industry and conforming it to meet the needs of the national market.



**Prof. Ahmed Khedr**  
Acting Dean of the Institute

### Pioneers of Science

#### **Professor Mohamed Adel El-Gammal**

*Emeritus Professor, Department of Civil Engineering*

Professor El-Gammal founded the Department of Civil Engineering at the Institute. He chaired the Department from 2001 to 2005 before serving as Head of the Division from 2005 to 2008. He worked as Advisor for Engineering Affairs to the President of the Academy of Scientific Research and Technology (ASRT) from 2008 to 2010, and has held the same role for the President of the NRC since 2015. He supervised numerous master's and doctoral theses and dissertations in various engineering fields, and contributed to the establishment of integrated buildings at the NRC, while chairing the committee overseeing the construction of the medical services complex. In addition, he participated in many scientific projects through supervision and follow-up, serving as General Supervisor of the Engineering Administration at the ASRT.



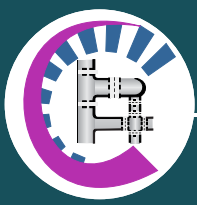
### Distinguished Scientists

#### **Professor Hamdy Hassan El-Ghitani**

*Department of Solar Energy Engineering*

Professor El-Ghitani has nearly 40 years of academic and professional experience in mechanical engineering and renewable energy. He is also a certified consulting engineer in solar energy (Reg. No. 3/1370). He earned his doctorate in solar energy systems from Tohoku University in Japan in 2000. Then, he chaired the Solar Energy Department at the NRC from 2011 to 2020 and later, served as the Dean of the Institute from 2020 to 2023.





## Activities and Events

### The Role of Scientific Research in Deepening Local Industrialization

The National Research Centre (NRC), represented by the Engineering and Renewable Energy Research Institute together with several engineering-related institutes, participated in the Exhibition for Deepening the Local Industrialization of Engineering Industries. The event was organized by the Chamber of Engineering Industries under the patronage of Lieutenant General Kamel El-Wazir, the Deputy Prime Minister and Minister of Transportation, Industry and Trade.

The exhibition took place from January 22 to 24, 2026, at the Cairo International Convention Center. The NRC's booth showcased a distinguished collection of innovative engineering products manufactured entirely by NRC researchers, reflecting the capabilities of scientific research in meeting the requirements of the national industry, and delivering 100% locally produced solutions. The exhibits included renewable energy systems, water treatment devices, industrial and textile applications technologies. Most notably were solar heaters, dryers and cookers, eco-friendly desalination and cooling systems, solar-powered ice makers, ceramic membranes and filters for water treatment, nanotechnology-based products to improve energy efficiency and

concrete performance, in addition to innovative technologies in textiles, agriculture and sustainable transportation. All of these products are planned to be marketed through the Company of National Research Centre for Innovative Products, to maximize the economic return from research outputs.



### New Professional Research Collaboration, Bridging Science and Industry

In line with the efforts to strengthen cooperation between research and professional organizations, and to encourage research with industrial applications, Eng. Tarek El-Nabarawy, President of the Egyptian Engineers Syndicate and the Arab Engineers Union, signed a cooperation protocol with Professor Mamdouh Moawad, President of the NRC. The protocol aims to exchange training programs and support innovation and sustainable development.

Its objectives include transferring and nativizing technology, implementing joint applied research projects serving production and service sectors, preparing specialized training programs for engineers within the NRC's laboratories, organize joint workshops and scientific conferences, and promoting scientific publishing and knowledge exchange.

Both parties affirmed that this cooperation represents a great practical step toward linking scientific research with the labor market, transforming research outputs into applied solutions that support national projects, enhance engineering competencies, and strengthen the national economy. Following the signing, commemorative shields were exchanged, and Eng. El-Nabarawy toured the NRC's exhibition booth.



## Medical Research and Clinical Studies Institute

### Foreword

I am pleased to participate in this distinguished issue, which comes at a crucial time as the world witnesses a shift in the concept of scientific research, from producing knowledge to transforming its outputs into products and applications with economic and social viability. This aligns with the National Research Center's (NRC) vision and its role in supporting innovation and sustainable development.

Entrepreneurship has emerged as a strategic path to maximizing the benefits of scientific research, particularly in the medical field. At the Institute of Medical Research and Clinical Studies, we believe that the researcher is the cornerstone of the innovation system, and that supporting them with entrepreneurial tools is a national responsibility. The Institute's future plan includes expanding the transformation of research findings into medical products, establishing specialized training programs in entrepreneurship, and supporting marketable projects. This will contribute to nativizing technology, improving healthcare services, reducing reliance on imports, and opening new horizons for investment in the medical field. In conclusion, I extend my sincere thanks and appreciation to the NRC's management and all researchers who support the journey of innovation and entrepreneurship. We look forward to continuing our efforts to produce products that serve the nation and its citizens, and to place Egyptian scientific research in its rightful position.

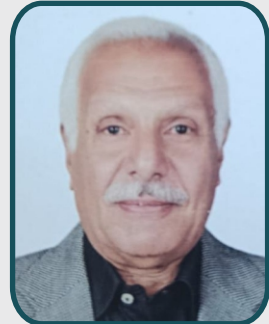


**Prof. Abeer M. Nour El-Din**  
Dean of the Institute

### Pioneers of Science

#### Professor Osama Ahmed El-Shabrawi

Professor Osama El-Shabrawi is a leading scientist in the field of pharmacology and toxicology, and an Emeritus Professor at the National Research Centre. His scientific career spans more than five decades, during which he held senior leadership positions at the NRC, including Head of the Medical Research Division, Supervision of the Medical Services and Experimental Animal Units, and serving as Vice President of NRC for Research Affairs, in addition to his role on Promotion and Research Ethics Committees. He has made influential research contributions in experimental pharmacology, toxicology, medicinal plant studies, and climate therapy, and has dozens of internationally published research papers. He has also contributed to the development of generations of researchers through his supervision of numerous master's and doctoral theses and dissertations, and his international scientific participation in supporting research collaboration and technology transfer.



### Distinguished Scientists

#### Assistant Professor Hani Shehata

Assistant Professor Hani Shehata is the Head of the Department of Dermatology and Venereology and Head of the Laser Dermatology Unit at the National Research Centre. He holds a Bachelor of Medicine and Surgery with honors, and a Master's and Doctorate in Dermatology and Venereology from Kasr El Aini University. He has outstanding experience in cosmetic and laser skin treatments, participated in local and international conferences, and has an active professional media presence.



### Activities and Events

The Institute of Medical Research and Clinical Studies continues its journey in knowledge production and capacity building. Its scientific departments are witnessing a series of research activities and professional initiatives that reflect the Institute's commitment to achieving excellence both locally and internationally.

#### **Research, Leadership, and Empowerment**

In a significant research achievement, Professor Rasha Ezzat and her research team in the Pharmacology Department presented a study demonstrating the protective effect of both royal jelly and echinacea against kidney and liver damage resulting from the use of common antibiotics prescribed in treating bacterial and viral respiratory infections. The study explained that these natural substances primarily work by reducing the oxidative stress caused by antibiotics.

#### **Accurate Diagnosis and Knowledge Sharing**

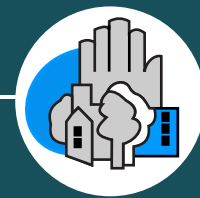
In a significant diagnostic contribution, Dr. Ahmed Soliman Ahmed from the Pathology Department conducted research using the Department's advanced image analysis device to assess hepatitis patients with unprecedented accuracy. This enables the diagnosis of early cases before they progress to complete cirrhosis, which positively impacts treatment opportunities and improves healthcare outcomes.

#### **A Specialized Workshop on Artificial Intelligence**

The Department of Biological Anthropology organized a specialized workshop entitled: "Beyond Prediction: Generative Artificial Intelligence as a Catalyst for Scientific Research Discovery." The workshop discussed the role of generative artificial intelligence not only in prediction but also as a catalyst for new research discoveries, reflecting a strategic direction towards adopting modern technologies in the scientific research process.

#### **A Podcast to Introduce Clinic Services**

In an effort to disseminate knowledge and reach the community, the Department of Pediatrics produced a podcast to introduce the services offered by the pediatric clinics within the Center of Excellence for Medical Research. This initiative aims to clarify the nature of the diagnostic and therapeutic services provided and enhance confidence in their quality.

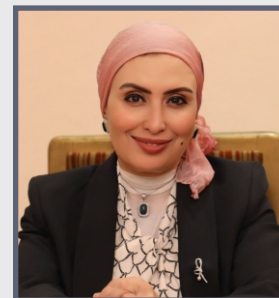


## Foreword

### Environmental Entrepreneurship as a Strategic Trajectory for Transforming Scientific Research into Sustainable Development: From Lab to Impact

In a world characterized by accelerating environmental and climate challenges, scientific research is no longer the final destination; rather, it has become the true point of departure. Guided by this paradigm, the Environment and Climate Change Research Institute adopts environmental entrepreneurship as a strategic mandate. This approach contributes to transforming knowledge into added value and translating research outputs into practical, scalable solutions.

This strategic orientation encompasses a wide spectrum of initiatives, ranging from the development of advanced water treatment units, waste recycling systems, and the manufacture of high-value fodder from natural resources, to the innovation of air quality monitoring devices, sophisticated filtration systems, rapid diagnostic tools, and vaccines. Through these concerted efforts, the Institute reaffirms that innovation, when coupled with decisive action, becomes a primary catalyst for sustainable development, community service, and the construction of a more secure and resilient future.



**Prof. Fagr Abdel-Gawad**  
Dean of the Institute

## Pioneers of Science

### Professor Ahmed Moursy

Professor Ahmed Moursy is recognized as one of the prominent scientific figures in the field of environmental sciences. He attained the rank of Professor in 1983, the same year he was honored with the Academy of Scientific Research and Technology (ASRT) Award for Best Scientist in Environmental Research, in recognition of his outstanding scholarly contributions. His professional trajectory is distinguished by high-level leadership roles within the NRC, where he served as Head of the Water Pollution Research Department (1992–1995) and chaired the Environmental Research Division across two tenures (1983–1986 and 1996–1999). His influence further extended to the formulation of national environmental policies through his role as Advisor to the Minister of Petroleum for Environmental Protection. Alongside his administrative and advisory achievements, he has played a vital academic role in mentoring and developing generations of scientific talent.



## Distinguished Scientists

### Professor Emad Kamaledin Radwan

Professor Emad Kamaledin Radwan focuses his research on the development of advanced materials for treating drinking water, municipal sewage, and industrial wastewater. Driven by the excellence of his scientific contributions, he has earned the confidence of numerous funding agencies, securing grants for several research projects from the Academy of Scientific Research and Technology (ASRT) and the Science and Technology Development Funding Authority (STDF). Furthermore, in recognition of his scholarly merit, he was honored with the National Research Centre's Scientific Encouragement Award in Environmental Sciences.





### Activities and Events

#### **Civil Defense Training: Risk Prevention and Emergency Response Protocols**

As part of the Environment and Climate Change Research Institute's commitment to enhancing the capacity of its research staff and fostering a culture of Occupational Health and Safety (OHS), a specialized training session was conducted on January 19, 2026. The program, which focused on risk prevention methodologies and emergency response strategies, was organized in collaboration with the Civil Defense office at the NRC.

The training, led by Mr. Mamdouh Hamida, was attended by a distinguished assembly of researchers across various academic ranks. The curriculum addressed the fundamental principles of workplace risk prevention and established mechanisms for rapid, safe responses to emergencies, with a primary focus on fire safety. The sessions also included practical demonstrations on the proper operation of various types of fire extinguishers, aimed at heightening institutional readiness and ensuring a secure working environment.

Furthermore, the program qualified researchers in professional behavioral protocols during hazardous situations and systematic laboratory evacuation procedures. These measures are designed to safeguard lives, minimize potential losses, and ensure comprehensive personnel readiness across diverse emergency scenarios.



#### **Participation in the Children's University Training Programs**

Within the framework of the Environment and Climate Change Research Institute's engagement with the Children's University initiatives, several of the Institute's researchers participated in delivering specialized training and educational programs. This participation stems from the NRC's commitment to its social responsibility in instilling a culture of scientific research, fostering its link to community service, and contributing to the capacity building of children and youth.

A distinguished group of researchers from various departments across the Institute conducted these sessions, which addressed vital environmental themes including; energy and environmental resources, ecosystems, sustainability concepts, and recycling. The programs utilized a simplified, interactive approach designed to increase environmental awareness among the younger generation and stimulate scientific inquiry. Participating staff from the Institute included; Professor Gehan Moubarz Mahdy, Associate Professor Noha Mohamed Sabry, Dr. Safaa Atef El-Gendy and Dr. Elham Mostafa.





## Human Genetics and Genome Research Institute

### Foreword

Entrepreneurship in human genetics and genomics represents a modern and exciting field, opening up vast horizons for innovation and advancement in the health and medical sectors. Pioneers in this field are developing advanced technologies for genome analysis and editing, enabling unprecedented opportunities for treating genetic diseases and improving public health.

In this context, the Institute of Human Genetics and Genome Research plays a pivotal role in diagnosing genetic diseases by conducting various analyses and tests necessary to confirm diagnoses, using the latest equipment and technologies available globally. The Institute also provides counseling, guidance, and both physical and psychological support to patients and their families.

The Institute's role extends beyond service and diagnosis to include a crucial aspect: developing alternative treatments and locally manufactured laboratory diagnostic tools that can be used as substitutes for imported supplies. This contributes to reducing reliance on imports and supporting the national economy. Among the most prominent of these efforts is working on enzyme replacement therapy for patients with mucopolysaccharidosis, in addition to developing and producing fluorescent probes used to detect invisible chromosomal abnormalities using a light microscope, with the aim of manufacturing them locally to meet market needs.

The role of the Human Genetics and Genome Research Institute in entrepreneurship and medical innovation, and in collaborating with the industrial sector to bridge the import gap, is no less important than its research and service roles. The integration of these roles is the optimal way to serve patients and support the scientific research system and the national economy.

Entrepreneurship in this field requires close cooperation between scientists, physicians, engineers, and businesspeople, as this collaborative work enables a genuine breakthrough in healthcare and improves the quality of life for millions.



**Prof. Hesham Kayed**  
Dean of the Institute

### Pioneers of Science

#### **Professor Yehia Zakaria Gad**

Professor Yehia Zakaria Gad is one of the most prominent Egyptian scientists in the fields of medical molecular genetics and paleogenetics. He currently serves as an Emeritus Professor in the Department of Medical Molecular Genetics at the Institute, and also holds the position of Scientific Supervisor of the Ancient DNA Laboratory at the National Museum of Egyptian Civilization. He is internationally recognized for his pioneering contributions to molecular Egyptology, where he uses ancient DNA analysis to solve many historical and medical mysteries related to ancient Egypt.

Among his most notable achievements is the use of DNA and genetic fingerprinting techniques in the analysis of royal mummies, which has added a new scientific dimension to the study of ancient Egyptian civilization.





### Distinguished Scientists

#### Assistant Professor Zeinab Youssef Abdallah

##### *Acting Head of the Biochemical Genetics Department*

We highlight Dr. Zeinab Youssef Abdallah, Assistant Professor and Acting Head of the Biochemical Genetics Department at the Institute of Human Genetics and Genome Research. A graduate of the Faculty of Science, she then joined the NRC, where she was among the Department's first researchers upon its establishment. Her Master's thesis focused on studying amino acids in newborns using relatively rudimentary techniques at the time. She received a scholarship to pursue her PhD at the University of San Diego, California, USA, under a joint supervision program with Cairo University. During her doctoral studies, Dr. Zeinab continued her research in diagnosing metabolic disorders related to amino acids using the latest laboratory techniques. She then returned to Egypt to share her scientific expertise, contributing to the well-being of thousands of children in the country.



### Activities and Events

The Institute of Human Genetics and Genome Research participated in a workshop entitled “Artificial Intelligence in Biomedicine and Dentistry: Diagnostic Challenges”, where a number of researchers from the Institute gave scientific lectures that addressed the role of artificial intelligence in diagnosing many genetic diseases, with the participation of researchers from the departments of Medical Molecular Genetics, Biochemical Genetics, and Molecular Genetics and Enzymology.

### Units and Services

#### Services Provided at the Hereditary Muscle Diseases Clinic

The Hereditary Muscle Diseases Clinic, at the Center of Excellence for Medical Research, NRC, offers a comprehensive package of specialized medical and diagnostic services, targeting various age groups of both genders, in accordance with the latest scientific standards. These services include:

- Clinical examination and diagnosis of muscle weakness and difficulties with movement and walking, whether accompanied by muscle atrophy or not, at all age levels, from newborns through children and adults to the elderly.
- Determining the specific laboratory tests and analyses related to muscle diseases for each individual case, which effectively contributes to diagnosing the type of muscle weakness and accurately determining its degree and severity.
- Providing genetic counseling to family members with a history of hereditary muscle diseases, as well as to those planning to marry, with the aim of reducing the transmission of genetic diseases and achieving community prevention.
- Specialized scientific explanation of the results of genetic analyses and tests, and explaining the impact of the detected genetic changes and their relationship to the severity and progression of the disease.
- Regular medical follow-up of the progression of muscle weakness and atrophy in patients, along with monitoring the functions of the respiratory system, heart and swallowing muscles, which may be affected in some specific types of muscle weakness and atrophy diseases.

## Oral and Dental Research Institute

### Foreword

Entrepreneurship in the field of oral and dental medicine combines scientific expertise with strategic management. Understanding market demands and keeping pace with modern developments are fundamental pillars for achieving success, built on a balanced integration of professional ethics and the optimal use of advanced technologies. All of this contributes to achieving the desired excellence, with a focus on innovation as the primary driver of creativity, a goal pursued by both institutions and individuals.

Within the framework of the national and scientific role undertaken by the National Research Centre (NRC), and under the generous patronage of Professor Mamdouh Moawad, President of the NRC, the Institute organized a number of prominent scientific symposia, most notably: The first scientific symposium entitled: "Dentistry: Diagnostic Challenges – AI in Biomedicine," in cooperation with the Medical Research and Clinical Studies Institute. Another scientific symposium entitled: "Translating Science into Business," which aims to link scientific research with practical application.



**Prof. Amany Ramadan**  
Dean of the Institute

### Pioneers of Science

#### Professor Magda Ismail Ramzy

One of the most prominent professors at the Oral and Dental Research Institute, she graduated from the Faculty of Dentistry, Cairo University in 1977, and obtained her Master's degree from Cairo University in 1994. She then earned her PhD from the United States in 2000, where her dissertation focused on oral and dental malformations in patients with intellectual disabilities (Fragile-X). Dr. Ramzy has supervised numerous Master's and Doctoral theses and Dissertations, participated in a large number of research projects, and published her research in prestigious international journals. She was the Head of the Oral and Dental Research Department in 2007, and then the Head of the Prosthodontics Department from 2009 to 2015. She has been a member of the Permanent Promotions Committee since 2010. She received the Ideal Mother Award for 2025 in recognition of her scientific and social contributions.



### Distinguished Scientists

#### Dr. Hanaa Mahmoud ElGamily

A distinguished young role model, she earned her Master's and Doctorate degrees in Conservative Dentistry from Ain Shams University. She has received several innovation awards, including a Certificate of Excellence from the NRC in 2014. She holds two Egyptian patents (2019 and 2024) in the field of using probiotics in dental care products. Her research focuses on developing dental products for the prevention of tooth decay, thus contributing to raising the level of oral and dental healthcare.





### Activities and Events

- The Institute organized its first scientific symposium entitled: "Dentistry: Diagnostic Challenges – AI in Biomedicine" in cooperation with the Medical Research and Clinical Studies Institute, in addition to another scientific symposium entitled: "Translating Science into Business," with the aim of linking scientific research with practical application and promoting a culture of innovation and entrepreneurship in the field of oral and dental medicine.
- In support of innovation and the dissemination of science and technology culture, the Institute also organized a scientific seminar entitled: "The Importance of Artificial Intelligence and Technology and their Role in Building the Future." This seminar reflects the NRC's commitment to keeping pace with the rapid advancements in artificial intelligence and modern technology, and their pivotal role in building a knowledge-based and innovation-driven future. The seminar was presented by Engineer Ibrahim El-Komy, a specialist in artificial intelligence and robotics engineering. He discussed the latest applications of artificial intelligence and their impact on: developing education, supporting scientific research, and preparing future generations for the demands of the digital future.
  - ◇The event was attended by students from Roboto School and their parents, and included an awards ceremony honoring outstanding students, encouraging young people and future leaders to excel in science and creativity.
  - ◇This seminar underscores the National Research Centre's commitment to its leading role in nurturing innovators, supporting emerging talents, and fostering collaboration between research and educational institutions, based on the belief that investment in science and technology is the cornerstone of building a sustainable future.



## Agricultural and Biological Research Institute

### Foreword

#### **Agricultural Innovations: The Lead of Development Towards Enhancing National Income and a Sustainable Economy**

Agriculture is the cornerstone of achieving food security and the strategic driver for reducing imports and opening export opportunities, thus supporting the national economy and enhancing its competitiveness. In this context, the Agricultural and Biological Research Institute at the National Research Centre (NRC) presents a distinguished package of research outputs that have reached the highest level of technology readiness (TRL 9), confirming their readiness for large-scale application and production.

These outputs include bio-fertilizers in the form of inoculums, such as NitroFix and MS-13, which contribute to reducing costs and increasing productivity, in addition to clean farming technologies, such as "Cleaner Mango" and "Clean Wheat," for pest control using safe biological methods. The institute has also developed innovative solutions to address climate change, including compounds for treating salinity, "Chitonerk," and a frost-fighting agent, in addition to value-added products such as the plant-based gelatin alternative "Spiroglu."



**Prof. Wafaa Abd El-Rahim**  
Dean of the Institute

### Pioneers of Science

#### **Professor Farouk Kamel El Baz**

*Professor of Plant Biochemistry, Former Vice President of the National Research Centre for Technical Affairs.*

Professor El Baz was ranked among the top 2% researchers worldwide in 2022 and 2023, in recognition of his distinguished scientific contributions. He has received numerous prestigious awards, including the National Research Centre's Scientific Encouragement Award (1976), the National Research Centre's Scientific Appreciation Award (2007), and the State Appreciation Award in Advanced Technological Sciences (2008). His scientific career culminated in receiving the Nile Award in Advanced Technological Sciences in 2023, in addition to several gold medals and honorary shields. He registered four pharmaceutical compounds extracted from microalgae between 2020 and 2024 with the Egyptian Drug Authority and the National Food Safety Authority, and holds a registered patent. He also played a pivotal role in establishing the NRC's agricultural research station in Nubaria, the first applied research farm, spanning 145 acres.



### Distinguished Scientists

#### **Associate Professor Sami Ibrahim Mohamed Ali**

*Department of Plant Biochemistry, Agricultural and Biological Research Institute*

Dr. Sami Ibrahim Ali received his Master's and PhD degrees from the Faculty of Science, Cairo University. He also received a Prawn training grant and a Fulbright postdoctoral fellowship at the University of Michigan in the United States. He participated as part of a research team in developing several microalgae products and received the Scientific Research Excellence Award, in the field of agricultural sciences and their technological applications, from the Research Staff Club in 2025, in recognition of his distinguished research contributions.





## Activities and Events

### **Inspection Tour by the President of the National Research Centre to the Farms in Nubaria:**

Professor Mamdouh Moawad, President of the National Research Centre, conducted an inspection tour on January 12, 2026, to monitor the progress of work and assess performance rates at the NRC's farms in the Nubaria region. He was accompanied by a group of deans from research institutes and leaders of the NRC. They were received by Professor Wafaa Abdel-Rahim, Dean of the Agricultural and Biological Research Institute and General Supervisor of the farm.



The tour included several key sites at Al-Israa Farm. He inspected the livestock and poultry barns, which had recently undergone renovation and upgrades in accordance with biosecurity standards. He reviewed the breeding and production conditions. He also inspected the fish farming ponds and listened to explanations from members of the farm's research staff regarding operational mechanisms and key technical observations. He emphasized the importance of implementing the latest fish farming technologies to increase production efficiency, enhance sustainability, and support the food security system.

Professor Moawad also visited the feed storage facilities and the feed mill, where he reviewed the storage and production system. He stressed the need to adhere to quality and storage safety standards to meet the needs of the farm's livestock and poultry production projects.

The tour also included an inspection of the second farm, which includes citrus and mango trees, as well as a visit to the calf barn and fruit greenhouses, where they monitored the work progress, growth rates, and production. During the visit, Professor Moawad held a meeting with the heads of the institutes and farm staff, listening to their observations and requests. Several challenges related to resource provision, infrastructure, and marketing mechanisms were discussed.

At the end of the tour, Professor Moawad expressed his satisfaction with the development and improvement he witnessed at the NRC's two farms in Nubaria, and the remarkable progress achieved in infrastructure and production. He emphasized that these efforts reflect the integration of scientific research with practical application, contributing to maximizing the utilization of available resources and supporting the State's development plans.

Additionally, Professor Wafaa Abdel-Rahim, Dean of the Agricultural and Biological Research Institute, participated on January 15, 2026, in the second meeting of the National Epidemiology Committee at the Academy of Scientific Research and Technology, to develop the Committee's strategic plan for the next three years. The meeting resulted in agreement on the basic principles, vision, and objectives.



## Veterinary Research Institute

### Foreword

#### Investing in Minds

Entrepreneurship in scientific research has become a strategic necessity. At its core lies the transformation of patents and research ideas into innovative products and high-value start-ups that bridge academia and industry. It is where discovery meets application, and where research begins to generate measurable economic and social return. This ecosystem rests on three essential pillars: a truly innovative idea, the initiative to pursue it, and a sustainable financial model capable of carrying it forward.

Within this vision, national initiatives such as “Alliance and Development” and “the Egypt Research Network” play a pivotal role in narrowing the gap between discovery and application. By protecting intellectual property and supporting the commercialization of research outputs, these efforts strengthen the foundations of a knowledge-based economy, one that empowers viable ideas and carries them forward into meaningful societal impact. Investing in minds, in this context, is a deliberate commitment to turning potential into progress and knowledge into lasting impact.



*Professor Nagwa Sayed Mohamed Atta  
Rapporteur of the Institute's Entrepreneurship Committee*

### Pioneers of Science

#### Professor Nabila Shaker Mohamed Degheidy

Professor Nabila Shaker Degheidy stands among Egypt's distinguished pioneers in internal medicine, infectious diseases, and parasitology. Since September 1991, she served as Professor in the Department of Parasitology and Animal Diseases at the National Research Centre (NRC), where she also held several prominent leadership positions. She chaired the Department of Parasitology and Animal Diseases (2002–2005) and subsequently headed the Veterinary Research Division at the NRC with the rank of Dean (2005–2006). Her scientific contributions were both extensive and impactful. She supervised more than 35 master's and doctoral theses and dissertations, and published dozens of peer-reviewed papers in leading national and international journals spanning animal diseases, parasitology, and public health. At an early stage in her career, she was awarded the State Encouragement Prize in Agricultural and Biological Sciences in 1991.

Beyond the laboratory, Dr. Degheidy demonstrated unwavering commitment to public service. Since 2006, she headed the NRC's Avian Influenza Emergency Committee and led the Veterinary Services Unit dedicated to improving animal health and disease prevention. Her expertise extended internationally through scientific missions and conferences in the United Kingdom, Italy, Austria, and South Africa. Professor Degheidy's legacy is not measured solely in titles or publications, but in the generations of researchers she mentored and the scientific integrity she embodied. Her passing marks the loss of a scholar and a mentor whose impact remains deeply felt. May she rest in peace.



**Distinguished Scientists**

**Dr. Ali Mohamed Gheithas**

*Department of Poultry Diseases*

Dr. Ali Mohamed Gheithas is among the accomplished researchers of the Poultry Diseases Department at the National Research Centre. He earned his PhD through joint supervision with Auburn University, USA. His expertise centers on genetically engineered vaccine development and molecular diagnostics, and he has authored nearly 15 publications in reputable international journals. Actively engaged in research projects, veterinary outreach convoys, and academic supervision, Dr. Gheithas represents a promising generation of scientists, who skillfully connect laboratory precision with real-world agricultural and community needs.



**Activities and Events**

**Artificial Intelligence in Scientific Research and Sustainable Aquaculture**

- **Artificial Intelligence:** On January 27, 2026, the Department of Parasitology organized a workshop entitled Presentation Skills: AI Tools for Presentation to enhance researchers' proficiency in using PowerPoint 365 and designing scientific posters.
- **Aquaculture Sustainability:** On January 14, 2026, Professor El-Khatib Yousry Gaafar participated in the workshop Integrated Aquaculture Systems (IAS): A Way Toward Sustainability, organized in collaboration with the Academy of Scientific Research and Technology, and Faculty of Science at Assiut University. His lecture highlighted the role of integrated aquaculture systems in achieving environmentally and economically sustainable production.



**Community Responsibility**

**Diagnostic and Therapeutic Veterinary Convoys**

- **Ismailia:** The Department of Parasitology organized a convoy to Ezbet El-Antabliya to diagnose and treat epidemic diseases.
- **Giza:** The Department of Poultry Diseases conducted outreach convoys to El-Badrashin and Nahia, offering breeders technical consultation and therapeutic support.

These initiatives reflect a model of research that remains closely tied to community needs.





## Veterinary Research Institute

### Academic Excellence and International Collaboration

- **Capacity Building in Africa:** In partnership with the Ministry of Water Resources, Ugandan professionals received training in aquaculture techniques delivered by Professor Hossam Hassan Abbas and Professor El-Khatib Yousry.
- **Theses and Dissertations:**
  - ◊ PhD defense of Researcher Mohamed Ramadan at the Faculty of Veterinary Medicine, Benha University, entitled Molecular Studies on Parasites and Their Vectors.
  - ◊ PhD defense of Researcher Walaa Abdullah at the Faculty of Veterinary Medicine, Kafr Elsheikh University, entitled Development and Evaluation of a Nanoparticle-Supported ELISA for the Diagnosis of Subclinical Mastitis Caused by Staphylococcus aureus Compared to Conventional Techniques.
  - ◊ Institute members also participated in thesis evaluation committees at Ain Shams University.
- **Workshops:** Institute members participated in advanced workshops on molecular drug design (Molecular Docking) and bacterial identification using 16S rRNA sequencing.



### Media Engagement and Public Outreach

Throughout January 2026, Institute scientists maintained an active media presence, promoting veterinary awareness and scientific guidance across television, radio, and digital platforms.

Notable contributions included:

- **Stray Dog Campaign:** Participation by Professor Ahmed Allam (Cairo Channel, January 5), Dr. Mohamed Abdel Moghny (Voice of the Arabs Radio, January 16), Professor Mohamed Karam (Egyptian Satellite Channel, January 19), and Professor Nesreen Allam (Ministry of Higher Education website).
- **Biodiversity Outreach:** Professor El-Khatib Yousry presented episodes on the remarkable biology of starfish and jellyfish in the program “Nations Like You” (January 28).



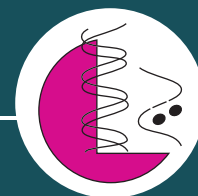
### Honors and Scientific Awards

Professor Ahmed Gaafar Hegazy was recognized among the Top 100 Arab Personalities of 2025 and awarded an Honorary Doctorate in Human Rights in 2026. In tribute to his distinguished career, the National Research Centre has established an annual award in his name in the fields of immunology and complementary medicine.



### International Publications: (Scopus-Indexed)

Further affirming its global research presence, the Institute published an applied study in BMC Veterinary Research examining the acaricidal activity of nano-oils against the brown dog tick. The publication not only advances veterinary parasitology but also reinforces the Institute's growing international visibility in high-impact scientific research.



## Biotechnology Research Institute

### Foreword

The Plant Biotechnology Department at the Biotechnology Research Institute is one of the leading research departments in the field of applied scientific research. It was established in 1989 and contributes significantly to the development of modern technologies that support sustainable agriculture and food security through applied scientific research. The Department's vision is to achieve development through innovation and knowledge, which aligns with Egypt's Vision 2030 and the National Science and Technology Strategy. The Department focuses on using tissue culture techniques, molecular techniques, and genetic engineering to improve crops, increase their productivity, enhance their resistance to drought and salinity, and also preserve the genetic resources of plants with economic and medicinal value. The Department has also achieved notable accomplishments in producing important pharmaceutical compounds from plant cell cultures, such as the antidepressant compound hypericin from St. John's Wort and anticancer agents (vincristine and vinblastine) from the Vinca plant. The Department comprises specialized research staff and maintains local and international scientific partnerships, serving as an effective model for connecting scientific research to societal needs.



*Professor Moemen Hanafy  
Head of Plant Biotechnology Department*

### Pioneers of Science

#### **Professor Mamdouh Yahya Kamel**

Professor Mamdouh Yahya Kamel (1933–1992) was one of the pioneers of biochemistry at the National Research Centre. He founded and led the Molecular Biology Department. He was among the pioneers who helped lay a solid scientific foundation for applied scientific research. He also founded a prestigious scientific school that trained generations of researchers. He was distinguished by his extensive knowledge of enzymes technology and their industrial production. He was the Principal Investigator of a large number of local and international research projects, which improved the National Research Centre's scientific standing. He was also an active member of several scientific associations and organizations in Egypt and abroad. In recognition of his outstanding contributions, he received the NRC's Award for Scientific Appreciation in 1991, making his name a prominent mark in the history of scientific research.





### Distinguished Scientists

#### Dr. Ahmed Eid Zohair

Dr. Ahmed Zohair is a Researcher in the Genetics and Cytology Department at the Biotechnology Research Institute who holds a PhD from the Karlsruhe Institute of Technology (KIT) in Germany. Dr. Zohair's research focuses on microbial biotechnology with an emphasis on applied research. His scientific interests include designing and developing optimized microbial systems, synthetic biology, biomaterials, and microfluidic systems, as well as applying these technologies to find sustainable biological solutions to environmental and industrial challenges and connecting them to societal needs. He participated in the Capital Business Incubator Program, which was part of the Academy of Scientific Research and Technology's national Intelqaq program for business incubators, because he believed in the value of technology transfer. He also participated in organizing the joint summer school for entrepreneurship, which was a collaboration between the National Research Centre, Zewail University, and the Karlsruhe Institute of Technology. This summer school brought together participants from Egypt and Germany with the aim of empowering researchers and entrepreneurs to transform scientific innovation into scalable projects. Moreover, he was among the winners of the Capital Business Incubator from the Academy of Scientific Research and Technology. He also received the Best Poster Award at the Annual Arab-Asian Conference on Biotechnology, which was held during November 2025 at the Bibliotheca Alexandrina.

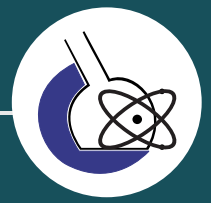


### Activities and Events

- Participation in the Agyal Initiative by training more than 70 university students and teaching assistants from Misr University for Technology, Badr University, and Mansoura University through two workshops that were held in the Microbial Biotechnology Department:
  - ◊ “Master Cell Culture and Molecular Genotyping” workshop, January, 25-27, 2026, Professor Noha Gamal El-Deen as the Principal Investigator.
  - ◊ “Metabolomics and Molecular Networking Approach for Exploring Wound Healing Activity in an Insulin-Resistant Model: Anti-diabetic Activity of Probiotics and Medicinal Plants” workshop, January, 26-28, 2026, Professor Noha El-Sayed Ibrahim as the Principal Investigator.
  - ◊ Participation in teaching a 3-month international bioinformatics course entitled; "Introduction to Bioinformatics Course" through the National Research Centre's Training Center “Designing a Molecular Dynamic Simulation App” Program.



- Publishing a book chapter entitled; “Unlocking the Epigenetic Landscape of Colorectal Cancer: A Step Toward Epigenetics to Precision” in the book series “Subcellular Biochemistry”, 2026, volume 114, pp. 183–236.
- Organizing a medical caravan to Al-Adwa village, Maghagha Center, Minya Governorate.
- Promotions: Two members of the research staff were promoted to Associate Professor and two were promoted to Professor.



## Physics Research Institute

### Foreword

The Physics Research Institute continues to uphold its pioneering role as a fundamental scientific pillar of the National Research Centre, delivering basic and applied research that keeps pace with global advancements across various physics disciplines. The Institute is dedicated to fostering scientific innovation and bridging the gap between research and the needs of society and industry, thereby contributing to sustainable development.

Furthermore, we are committed to empowering young researchers and strengthening local and international collaborations, driven by the conviction that scientific research is the primary catalyst for progress. This issue serves to reflect our Institute's distinguished heritage, its research endeavors, and the exemplary contributions of our esteemed scientists and researchers.



**Prof. Amr Abdel-Ghani**  
Dean of the Institute

### Pioneers of Science

#### Professor Kamal Nasr Abdel Nour

Professor Kamal Abdel Nour is a distinguished figure in the field of physics at the National Research Centre, boasting a prolific career of scientific contributions and achievements. He earned his Bachelor's and Master's degrees in Physics and Chemistry, followed by a PhD in Experimental Physics from Cairo University, in addition to a prestigious research tenure at Princeton University, USA. His research focus on microwave absorption in liquids and polymers, investigating molecular behavior to optimize material properties. Throughout his career, he has held numerous academic and research positions and participated in international conferences worldwide, significantly enriching the scientific landscape both locally and internationally.



### Distinguished Scientists

#### Dr. Hanan Abdel Zaher Abdel Wahab

Dr. Hanan Abdel Wahab has served as a researcher in the Solid State Physics Department since 2019. Her expertise involves synthesizing solid materials and thin films, specifically oxides, utilizing the sol-gel technique for diverse sensor applications. In 2025, she was honored with the Professor Yehia Abdel Latif Fahmy Award for Nano-research and its Applications.





## Activities and Events

### Distinguished Scientific Presence at the 4<sup>th</sup> Nanoscience Symposium

A prestigious delegation of scientists from the Physics Research Institute participated in the proceedings of the 4th Nanoscience Symposium, held at Galala University. The Institute was represented by a distinguished group of experts, including: Professor Amr Mohamed Abdelghani, Professor Roshdy Saudi, Professor Diaa Atta, Professor Safaa Khalil, Professor Abdelrazek Badir, Professor Mai Bakir, Professor Abdelrahman Antar and Dr. Noha Gweily. This high-level participation underscores the Institute's pioneering role and its ongoing commitment to the advancement and support of cutting-edge research in the field of nanoscience. By engaging with such specialized academic forums, the Institute continues to solidify its position as a primary driver of scientific innovation and development.



### International Engagement at Helwan University's Scientific Conference

Professor Ali Okasha and Professor Amr Mohamed Abdelghani participated in the 3rd International Scientific Conference of Helwan University. The conference served as a platform to discuss the latest research developments and scientific applications across a diverse range of disciplines.

### Scientific Recognition in the Field of Artificial Intelligence

In an achievement that highlights research excellence, Associate Professor Mostafa El-Nazer was honored and awarded the title of "AI Ambassador" by the National Telecommunications Institute (NTI). The recognition took place during a major ceremony held at the NTI headquarters in Knowledge City, located in the New Administrative Capital.



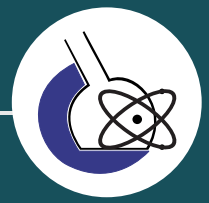
### Specialized Workshops Supporting Research and Innovation

Professor Mai Bakir participated in a specialized workshop on Quantum Computing and Machine Learning, organized by the Academy of Scientific Research and Technology (ASRT) in collaboration with the Joint Institute for Nuclear Research (JINR) in Dubna, Russia.

Furthermore, Professor Abdullah Shaltout took part in a workshop dedicated to Scientific Research and Innovation across Materials Industries.

The Microwave Physics and Dielectrics Department also organized a technical workshop entitled "Dielectric Spectroscopy as a Dynamic Mechanism." The sessions featured keynote presentations by Professor Mohamed El Nasharty, Associate Professor Ahmed Labib and Associate Professor Mona Amin





## Physics Research Institute

### Activities and Events

#### Theoretical Physics and Future Perspectives Workshop

The Department of Theoretical Physics convened a pivotal workshop entitled "The Role of Theoretical Physics in the Future of Applied Sciences." The event featured keynote presentations by Professor Jihad Abu Al-Ata, Professor Safwan Saleh Abdel-Mawla, Professor Ali Wheida and Professor Mostafa El-Nazer.



#### Empowering Young Researchers and Advancing Scientific Excellence

The Institute participated in the 14th Young Researchers Forum at the Faculty of Science, Mansoura University, as part of its ongoing commitment to supporting and developing emerging research talent. Furthermore, three members of the Institute successfully completed the sixth cycle of the "AI Ambassadors" program, organized by the "Engineers for Sustainable Egypt" Association in collaboration with the National Telecommunications Institute (NTI) and the Ministry of Communications and Information Technology (MCIT). The participants included: Professor Diaa Atta, Professor Abdel Rahman Antar and Dr. Noha Gweily.







**33 El Buhouth St., - Dokki- Giza - Egypt**  
**Tel.: (+202) 33371362 - 433 - 615 - 933 - 499**  
**Fax: (+202) 33370931**  
**[www.nrc.sci.eg](http://www.nrc.sci.eg)**