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A Tribute to Prof. Ahmed Mostageer: A Pioneer in Animal Genetics and a Bridge Between Science and Society

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REVIEW ARTICLE

Background: Professor Ahmed Mostageer exemplified the rare fusion of scientific excellence and literary creativity, addressing the cultural and developmental needs of Egypt and the Arab world. His career responded to the growing demand for public scientific literacy and interdisciplinary engagement. **Aim:** This study aims to explore Professor Mostageer's dual legacy in science and literature, highlighting his pioneering role in bridging biotechnology with cultural communication. **Methodology:** The paper employs a qualitative review of Mostageer's scientific publications, literary works, and biographical records. It analyzes his contributions in animal genetics, genetic engineering, and scientific translation within their socio-cultural context. **Results:** The study reveals that Mostageer played a critical role in enhancing agricultural and livestock productivity through innovative genetic techniques. He also advanced public understanding of science by integrating poetic and translational approaches, fostering a culture of knowledge accessibility. **Conclusion:** Professor Mostageer's legacy underscores the transformative potential of integrating science and literature to meet societal challenges. His life's work remains a model for future scholars seeking to combine scientific rigor with cultural outreach.

Keywords: Ahmed Mostageer, animal genetics, biotechnology, interdisciplinary science, scientific communication, Arabic literature

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INTRODUCTION

Dr. Ahmed Mostageer's life exemplifies the power of integrating science and art to address societal challenges and inspire intellectual growth. As both a biologist and poet, he seamlessly merged rigorous scientific inquiry with the beauty of poetic expression. This paper examines Mostageer's significant contributions to science and literature, exploring how his dual pursuits enriched both fields and cemented his legacy as a leading figure in Egypt and the Arab world.

Early Life and Education: Born on December 1, 1934, in El Salha, Dekernes, Dakahlia, Dr. Mostageer's journey into the world of science began with a bachelor's degree in agriculture from Cairo University in 1954. His pursuit of knowledge led him to further studies, earning a Master's in Poultry Science from the same institution in 1958. He continued his academic journey at the University of Edinburgh, obtaining a Diploma in Animal Genetics and a PhD in the same field in 1961 and 1963, respectively (Mostageer, 2025).

Academic and Professional Career

Academic Appointments: Dr. Mostageer's academic career flourished at Cairo University, where he progressed through the ranks, serving as a Lecturer (1964), Assistant Professor (1971), and Professor (1974) in the Faculty of Agriculture. His dedication to research and teaching led to his appointment as Dean of the Faculty of Agriculture from 1986 to 1995. Throughout his career, he remained committed to advancing knowledge, earning the title of Full Professor at Cairo University in 1995 (Mostageer, 2025).

Contributions to Agricultural Science: Through his research, Mostageer significantly advanced agricultural productivity in Egypt and the Arab world. His innovations in genetic engineering, including sperm-mediated gene transfer and protoplast fusion for salt-tolerant plant hybrids, revolutionized agricultural practices. His work addressed pressing challenges like food security, water scarcity, and climate adaptation.

Recognition and Honors: Dr. Mostageer's contributions to science and society have been widely recognized. He received numerous accolades, including the State Incentive Award for Agricultural Sciences (1974), the Order of Science and Arts (First Class, 1974 and 1996), the Best Scientific Translation Award (1993), and the Scientific Creativity Award (1995), (Mostageer, 2025).

Research Contributions and Innovations

Professor Ahmed Mostageer's research significantly impacted the field of agricultural genetics in Egypt, focusing on the development and application of genetic technologies to enhance crop and livestock productivity. Based at Cairo University and collaborating with national and international institutions, his work bridged theoretical concepts with practical applications to address Egypt's specific agricultural challenges.

Biotechnology and Genetic Engineering: Mostageer was a pioneer in genetic engineering in agriculture, exploring methods to improve crop resistance to pests and diseases. His innovative approaches included marker-assisted selection and transgenic technologies, providing new avenues for developing resilient crop varieties. This research increased yields and reduced reliance on chemical pesticides, promoting sustainable agricultural practices.

- **Crop Improvement:** Mostageer's research focused on developing pest- and disease-resistant crop varieties using marker-assisted selection and transgenic technologies.
- **Sustainable Practices:** His work significantly contributed to sustainable agricultural practices by reducing reliance on chemical pesticides.
- **Specific Applications:** He conducted research on crossbreeding local Egyptian cattle (Baladi) with European breeds to improve milk and meat yields (Mostageer, et al., 1980, Mostageer, et al., 1982) and introduced salt- and drought-tolerant crop varieties through protoplast fusion techniques (Mostageer & Elshihy, 2003).

Animal Production and Genetic Enhancement: In animal production, Mostageer researched genetic improvement strategies for livestock, focusing on enhancing traits like growth rate, milk production, and disease resistance through selective breeding and genetic modification. He developed innovative gene transfer techniques to enhance livestock production.

- **Livestock Improvement:** Mostageer's studies focused on enhancing traits such as growth rate, milk production, and disease resistance through selective breeding and genetic modification.
- **Adaptation to Climate:** He analyzed heat tolerance in local poultry breeds, aiding their adaptation to Egypt's climatic conditions.
- **Sustainable Farming:** He promoted sustainable farming practices that balanced productivity with environmental conservation.
- **Genetic Diversity:** Professor Mostageer conducted research on biochemical polymorphism in Egyptian Baladi cattle and other breeds, utilizing data on milk proteins, blood proteins, and blood groups to assess genetic diversity and relationships between breeds (Mostageer, et al., 1974, Mostageer, et al., 1981, Graml, et al., 1986, Mostageer, et al., 1987, Mostageer, et al., 2010). This work had a lasting impact on the efficiency of livestock production systems in Egypt, contributing to food security and economic stability.

Poultry Breeding: Mostageer's research explored egg production in poultry, including genetic and phenotypic parameters of egg weight, egg production traits, and the influence of different factors on egg quality. He investigated heat tolerance in poultry breeds, particularly those indigenous to warm regions, using techniques like RAPD-PCR analysis to assess genetic diversity and identify potential markers for heat tolerance.

- **Egg Production:** His research explored various aspects of egg production in poultry, including genetic and phenotypic parameters of egg weight and egg production traits.
- **Heat Tolerance:** He investigated heat tolerance in poultry breeds, particularly those indigenous to warm regions, utilizing techniques like RAPD-PCR analysis.
- **Gene Transfer:** Professor Mostageer conducted pioneering research on sperm-mediated gene transfer in poultry, investigating the efficacy of sperm as vectors for gene delivery and its impact on sperm viability.

Addressing Agricultural Challenges in Egypt: Through his research, Mostageer addressed critical agricultural challenges specific to Egypt, such as water scarcity, soil salinity, and the impacts of climate change. His innovative solutions included developing drought-resistant crop varieties and implementing sustainable farming practices that leverage genetic advancements. This work benefited local farmers and positioned Egypt as a leader in agricultural research within the Arab world (Mostageer & Elshihy, 2003).

Collaboration and Knowledge Transfer: Mostageer's commitment to collaboration is evident in his establishment of partnerships with international research institutions. These collaborations facilitated knowledge transfer and the exchange of best practices, enhancing the scientific community's ability to tackle pressing agricultural issues. He often participated in workshops and conferences, sharing his insights and fostering innovation among emerging scientists (Mostageer, 2025).

Animal Production and Genetic Enhancement (Revisited): Mostageer's research on selective breeding and genetic modification improved livestock traits such as growth rate, milk production, and disease resistance, enhancing Egypt's livestock production systems. Professor Ahmed Mostageer conducted significant research in animal genetics while affiliated with Cairo University and other institutions, including the Technical University of Munich (Mostageer, 1978, Mostageer, et al. 1978, Obeidah, et al., 1978, Obeidah, et al., 1974).

Key Publications and Research Methodology: Mostageer's contributions are documented in influential publications that have informed academic and practical aspects of agricultural genetics. Notable works include studies on the genetics of local crop varieties and their adaptability to changing climatic conditions. His publications often served as foundational texts for students and researchers, fostering a deeper understanding of genetic principles in agriculture.

Professor Mostageer employed various research methodologies, including:

- **Experimental studies**: Conducting controlled experiments to evaluate the performance of different breeds and crosses.
- **Genetic analyses**: Utilizing statistical and genetic models to estimate heritability, genetic correlations, and other genetic parameters.
- **Molecular genetics techniques**: Employing techniques like RAPD-PCR analysis to assess genetic diversity and identify genetic markers.

Further Investigation: This review provides a framework for understanding Professor Mostageer's research contributions based on available publications. Further investigation is necessary for a more comprehensive and accurate assessment, including:

- **Reviewing his complete publication list**: Identifying all his published research articles in scientific journals.
- **Analyzing his research publications**: Conducting a detailed analysis of his research methodologies, findings, and their impact on the field.
- **Consulting with colleagues and former students**: Gathering insights from researchers who collaborated with or were mentored by Professor Mostageer.

Scientific and Literary Contributions

Professor Ahmed Mostageer was a distinguished scholar whose intellectual pursuits transcended disciplinary boundaries. He made significant contributions to animal genetics, literature, and scientific communication. This section explores his multifaceted scholarly contributions, encompassing his scientific research, his prolific literary output, and his dedicated efforts to bridge the gap between science and the public.

Scientific Scholarship: Dr. Mostageer's academic journey was characterized by remarkable intellectual engagement. As a renowned scientist, he conducted groundbreaking research in animal genetics, authoring seminal works such as "Introduction to Animal Science" and "Genetic Improvement of Farm Animals." Recognizing the importance of scientific literacy, he translated influential works by renowned scientists and philosophers, including "The Double Helix" and "Silent Spring," into Arabic. This invaluable contribution enriched the Arab world's intellectual landscape by introducing groundbreaking scientific concepts and philosophical ideas to a wider audience (Table 1).

Table 1. Authored Books on Animal Genetics

Book Title	Publisher	Year
Introduction to Animal Science	Anglo-	1966
A Study in Genetic Selection in	Dar Al-	1969
Genetic Improvement of Farm	Gharib	1980
Applied Aspects of Animal and	Gharib	1986

Literary Contributions: Beyond his scientific pursuits, Dr. Mostageer possessed a profound literary sensibility. His poetry collections, such as "Will the Ducks Return?" and "Journey into the World of Genes," eloquently intertwined scientific insights with poetic expression, reflecting a deep sense of social responsibility and a profound connection to his homeland. He further demonstrated his commitment to scientific communication through insightful books on scientific culture, including "In the Oceans of Science" and "A Science Called Happiness," which conveyed complex scientific concepts to the public accessibly and engagingly. Dr. Mostageer actively engaged in academic discourse, participating in numerous conferences and publishing articles that explored the intersections of science, philosophy, and literature. This interdisciplinary approach fostered a deeper understanding of the human condition and its place within the natural world. His multifaceted contributions highlight his dedication to advancing scientific knowledge, promoting scientific literacy, and enriching his community's intellectual and cultural life.

Scientific Publications and Translations: Dr. Mostageer significantly contributed to scientific research and the dissemination of scientific knowledge. He authored over 40 research papers and several foundational texts in animal husbandry, including "Introduction to Animal Science" and "Genetic Improvement of Farm Animals." Recognizing the importance of scientific literacy, he translated seminal works such as "The Double Helix" and "Silent Spring" into Arabic, enriching the Arab world's intellectual landscape.

Literary Legacy: Dr. Mostageer's literary pursuits seamlessly intertwined scientific rigor with artistic expression. His poetry collections, such as "Will the Ducks Return?" and "Journey into the World of Genes," eloquently captured the essence of scientific

inquiry while reflecting a deep sense of social responsibility and a profound connection to his homeland.

Challenges and Critiques in Integrating Science and Literature

Despite his significant achievements, Dr. Mostageer faced challenges and critiques in his efforts to integrate science and literature. Some scholars argued that blending these two distinct disciplines could lead to a dilution of scientific rigor or a superficial treatment of literary elements. Additionally, the academic environments of his time often favored specialization, making interdisciplinary pursuits like Mostageer's less common and sometimes less valued. He had to navigate the skepticism of those who believed that science and art should remain separate domains, demonstrating through his work that both could enrich and inform the other.

Recognition as Personality of the Cairo International Book Fair 2025

The Cairo International Book Fair, a prestigious cultural event in the Arab world, selected Dr. Ahmed Mostageer as the "Personality of the Fair" for its 56th edition in 2025. This honor celebrates his dual contributions to science and literature, emphasizing his role as a cultural icon who inspired generations through his interdisciplinary approach.

A Bridge Between Science and Society: Dr. Mostageer's impact transcends the confines of academia. He recognized the importance of disseminating scientific knowledge to the public and actively engaged in science communication. He authored numerous books on animal genetics, making complex scientific concepts accessible to a wider audience. Furthermore, his passion for translating scientific literature into Arabic played a pivotal role in bringing the latest advancements in science to the Arab world. His translations of renowned works like "The Double Helix" and "Silent Spring" introduced generations of readers to groundbreaking scientific discoveries.

Significance of the Fair: Held from January 23 to February 6, 2025, at the Egypt International Exhibition Center in New Cairo, the event highlights Mostageer's legacy while fostering intellectual exchange among readers, writers, and scholars. His recognition underscores the importance of integrating science and culture into addressing contemporary challenges.

Legacy and Impact

Scientific Innovations: Mostageer's groundbreaking work in genetic engineering, environmental adaptation, and agricultural sustainability has had a lasting impact on food security and livestock improvement in the Arab world. His research continues to inspire advancements in biotechnology and sustainable agriculture.

Cultural Contributions: As a poet and translator, Mostageer enriched Arabic literature with works that harmonized intellectual rigor with artistic expression. His literary efforts aimed to democratize scientific knowledge, fostering a culture of curiosity and critical thinking.

Inspiration for Future Generations: Mostageer exemplifies the ideal of a comprehensive intellectual who transcends disciplinary boundaries. His legacy serves as a roadmap for aspiring scientists, artists, and educators to pursue holistic approaches to knowledge and innovation.

Concluding Thoughts on Mostageer's Enduring Influence: Professor Ahmed Mostageer's extraordinary career is a testament to the transformative power of interdisciplinary scholarship. His pioneering contributions to animal genetics and agricultural biotechnology have left an enduring impact on Egypt's scientific and agricultural landscape, while his innovative work in genetic engineering has advanced sustainable solutions to some of the region's most pressing challenges. Equally remarkable are his efforts to democratize scientific knowledge through his literary endeavors, which introduced complex scientific concepts to the Arabic-speaking world and bridged the gap between science and society. Dr. Mostageer's legacy serves as a powerful reminder of the importance of integrating science and culture into addressing global challenges and inspiring future generations. His interdisciplinary approach offers valuable lessons for current scholars and scientists, highlighting the potential for collaboration between seemingly disparate fields to yield innovative solutions to contemporary problems. By seamlessly blending rigorous scientific inquiry with poetic artistry and cultural advocacy, he set a unique standard for intellectual excellence that continues to influence scholars, scientists, and writers in Egypt and beyond. As we honor his memory, his life's work provides a roadmap for cultivating innovation, fostering collaboration, and building bridges between disciplines for the betterment of society.

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أحمد مُستَجِير: جسرٌ بين العلم والأدب في مصر والعالم العربي

تحيةٌ للأستاذ الدكتور أحمد مُستَجِير: رائدٌ في علم الوراثة الحيوانية وجسرٌ بين العلم والمجتمع

طارق يحيي قابيل

قسم التقنية الحيوية - كلية العلوم - جامعة القاهرة - مصر

الملخص

التمهيد: يمثّل الدكتور أحمد مستجير نموذجًا فريدًا للعالم الأديب الذي دمج بين التقدم العلمي والعمق الأدبي في السياق المصري والعربي. وقد جاءت مسيرته استجابة لحاجة ملحة إلى تعزيز الوعي العلمي والثقافي لمواجهة تحديات التنمية. **الهدف:** يهدف هذا البحث إلى استعراض الإسهامات العلمية والأدبية للدكتور مستجير، مع إبراز دوره الريادي في ربط العلوم الحيوية بالأدب وتعزيز ثقافة علمية شعبية. **المنهجية:** اعتمدت الدراسة على تحليل نوعي للمؤلفات والأبحاث التي أنجزها الدكتور مستجير، إلى جانب مراجعة سياقية لتاريخه الأكاديمي والثقافي، مع توثيق إنجازاته في مجالات الوراثة الحيوانية، الهندسة الوراثية، والترجمة العلمية. **النتائج:** أظهرت الدراسة أن مستجير ساهم بفعالية في تطوير تقنيات لتحسين الإنتاج الزراعي والحيواني، بما في ذلك التهجين الوراثي والتحمّل البيئي. كما لعب دورًا محوريًا في نقل المعرفة العلمية إلى الجمهور من خلال الشعر والترجمة، مما ساعد على ردم الفجوة بين المجتمع والعلم. **الخاتمة:** تجسّد سيرة الدكتور مستجير الإمكانات الخلّاقة للتكامل بين العلوم والآداب في خدمة المجتمع، وتشكل مصدر إلهام للأجيال القادمة من العلماء والمثقفين لتبني مناهج متعددة التخصصات في البحث والتواصل العلمي.