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PERSONAL INFORMATION



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Sex : Male

| Date of birth : 24/04/1986

| Nationality : Egyptian

PERSONAL STATEMENT

Lecturer at the Faculty of Pharmacy, Menoufia University, has expertise in Pharmaceutics and Pharmaceutical Technology, with a focus on rational design of nanosystems for drug delivery applications. Due to my ongoing interest in Pharmaceutical Sciences, I got admitted to the BSc program in Pharmaceutical Sciences, and in 2008 I received my undergraduate degree from the Faculty of Pharmacy, Al-Azhar University. In 2023, I received my Ph.D. in Pharmaceutics from the Faculty of Pharmacy at Cairo University, working on investigating self-assembly behaviour and pharmaceutical application of bola-amphiphilic polypeptide molecules.

WORK EXPERIENCE

(1/2024 – present)

Lecturer of Pharmaceutics and Pharmaceutical Technology

Faculty of Pharmacy- University of Al- Menoufia, Shebin El-Kom, Egypt.

<https://www.menofia.edu.eg/Home/en>

- Assigned to teach undergraduate courses of Physical Pharmacy, Pharmacy Orientation, Pharmaceutics, Pharmaceutical Formulations, Advanced Drug Delivery Systems, Pharmaceutical Engineering, Pharmacy Legislation, Biopharmaceutics, and Pharmacokinetics.
- Conduct research about nanomedicine aimed at improving the efficacy, safety, and targeted delivery of drugs.

(4/2021 – 9/2023)

International Program Associate (IPA)

Nano Medical Engineering Laboratory (NMEL), RIKEN cluster for pioneering research, RIKEN, Japan.

<https://www.riken.jp/en/>

https://www2.riken.jp/nano-med.eng.lab/index_eng.html

- A doctoral candidate who has been awarded the first IPA position between RIKEN and Cairo University. Based on the IPA agreement, I have registered for a doctoral degree in Pharmaceutics at the Faculty of Pharmacy, Cairo University, Egypt, and conducted research at NMEL, RIKEN, Japan, under the supervision of:

NMEL Principal Investigator, Prof. Yoshihiro Ito

https://scholar.google.co.jp/citations?hl=ja&user=Q8eP0IUAAAAJ&view_op=list_works&sortby=pubdate

The Senior Research Scientist, Motoki Ueda

https://scholar.google.co.jp/citations?hl=ja&user=EJQV3m3kAAAAJ&view_op=list_works&sortby=pubdate

<https://www.researchgate.net/profile/Motoki-Ueda>

Performing biomedical engineering research with a focus on:

- Designing and investigating the self-assembly behavior of amphiphilic polypeptide molecules to be further implemented in fabricating drug delivery carriers for targeted therapy.
- Enhancing the bioavailability of nanoparticles through surface functionalization with hydrophilic polymer.

(2/2020 – 3/2021)

Egyptian Japanese Educational Program (EJEP) fellowship

Nano Medical Engineering Laboratory (NMEL), RIKEN cluster for pioneering research, RIKEN, Japan.

<https://www.riken.jp/en/>

https://www2.riken.jp/nano-med.eng.lab/index_eng.html

- Conducting research to develop biocompatible nanocarriers for targeted drug delivery applications.

(3/2018 – 1/2020)

Assistant Lecturer of Pharmaceutical Technology

Faculty of Pharmacy- University of Al- Menoufia, Shebin El-Kom, Egypt.

<https://www.menoufia.edu.eg/Home/en>

- Assigned to teach the undergraduate practical courses of Physical Pharmacy, Pharmaceutics, Pharmaceutical Formulations, and Pharmacokinetics.

(2/2017– 3/2018)

Demonstrator of Pharmaceutical Technology

Faculty of Pharmacy- University of Al- Menoufia, Shebin El-Kom, Egypt.

<https://www.menoufia.edu.eg/Home/en>

- Teaching and researching at the Pharmaceutics and Industrial Pharmacy department under the supervision of the department professors.
- Student instructor for the practical lesson at the laboratory.

(4/2013 – 1/2017)

Demonstrator of Pharmaceutics and Industrial Pharmacy

Faculty of Pharmacy, University of Al-Azhar, Assiut branch (Egypt).

<http://www.azhar.edu.eg/>

- Teaching and Research at the Pharmaceutics and Industrial Pharmacy department under the supervision of the department professors.
- Student instructor for the practical lesson at the laboratory.

(7/2009 – 4/2013)

Inspector Pharmacist

Drug Factories Inspection Department - Central Administration for Pharmaceutical Affairs (CAPA) - Ministry of Health (MOH), Egypt.

Recently, it was renamed to become the Egyptian Drug Authority (EDA).

<https://www.edaegypt.gov.eg/>

- Worked as Inspector Pharmacist in drug factories inspection department.
- Participating in Pharmaceutical manufacturers auditing and evaluation by factories inspection department.

EDUCATION

(10/2019 – 11/2023)

Doctoral degree in Pharmaceutics

Faculty of Pharmacy, University of Cairo, Giza, Egypt.

Thesis title: The fabrication of nano-platform for targeting and controlling delivery of drug and/or peptide to enhance their bioavailability and selectivity.

- During the Ph.D. study, I conducted research in nanomedicine at RIKEN institution in Japan, with focus on amphiphilic polypeptide polymer. I have designed and synthesized a bola amphiphilic polypeptide molecule utilizing a hydrophilic polymer named, poly sarcosine, for nanoparticle surface grafting. Firstly, I investigated the self-assembly behaviour of the prepared peptide, then, implement the peptide assembly tendency to fabricate drug delivery carrier with high bioavailability and selectivity.
- I have acquired a good experience in amphiphilic polypeptide polymer synthesis, HNMR and Mass analysis, amphiphilic polypeptide self-assembly behaviour investigation, transmission electron microscope sample preparation and observation (TEM), cargo release experiment, tissue culture experiment including flow cytometry, cell cytotoxicity and cellular internalization pathways, animal handling for in vivo biodistribution experiments.

(7/2012 – 2/2018)

Master's degree in Pharmaceutical Technology

CGPA:3.45

Faculty of Pharmacy, University of Tanta, Tanta, Egypt.

Thesis title: Development and characterization of a nanovesicular system for transdermal delivery.

- During my master, I studied general courses named (physical chemistry, Statistics and biostatistics, Instrumental analysis, Advanced physical pharmacy, Research ethics and Scientific writing), and special courses named (design of pharmaceutical dosage form, experimental design, Advanced biopharmaceutics, new drug delivery systems, pharmaceutical engineering, and seminar).
- In the practical part, I have developed and optimized a drug free nano lipid vesicular system for treatment of osteoarthritis. I acquired a good experience in transdermal drug delivery, nano vesicular drug delivery systems, experimental design program (factorial design MINITAB), pharmacokinetic model, chromatography (HPLC-HPTLC), spectroscopy (UV-VIS), in-vitro release and ex-vivo permeation experiment, gel preparation, DSC, rheology study, stability study, IR and scientific writing program including EndNote and Mendeley.

(9/2003 – 7/2008)

Bachelor of Pharmaceutical Sciences

Ranked seven
(84.2%)

Faculty of Pharmacy, Al-Azhar University, Assiut, Egypt.

- Through five years of study, I learned principal subjects include (Physical pharmacy, pharmaceutics and biopharmaceutics, Industrial pharmacy, clinical pharmacy, analytical, organic, and medicinal chemistry, biochemistry, molecular biology, microbiology, pharmacology, toxicology, histology, pathology, physiology, parasitology, and human anatomy), and acquired skills related to (pharmaceutical dosage form design and fabrication, industrial aspects of dosage form manufacturing, biopharmaceutical aspects of drug intake and dosing, cosmetic preparation, clinical and pharmacovigilance follow of drugs, assay, synthesis and identification of medicinal agents, pharmaceutical quality control, extraction and identification of drugs from botanical origin, cell biology, mechanism of action and dosage of pharmaceutically active drugs, interpretation of biological and microbiological tests).

TRAINING

Academic Training Courses

National Authority for Quality Assurance and Accreditation of Education, Cairo, Egypt.

- Strategic Planning for H.E. Institutes in October 2017.
- Education Programs and Courses Specifications and Evaluation of Learning Outcomes for H.E. Institutes in August 2017.
- External review for H.E. Institutes in August 2017.
- Self-evaluation for H.E. Faculties and Institutes in July 2017.

Quality assurance Training Courses

Drug factories inspection department, Central Administration for Pharmaceutical Affairs, Ministry of Health, Al Manial, Egypt.

- Training Program on GMPs (Good Manufacturing Practices) in May 2011.
- Basic of GMPs (Good Manufacturing Practices) in May 2010.
- GMP Fundamentals & Inspections" course in December 2009. The Course Director is Stan O'Neil.

PERSONAL SKILLS

Mother tongue

Arabic

Other language

English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2
ILETS				

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Communication skills

Good communication skills gained through my experience as a pharmacist inspector with inspection team and pharmaceutical company and as a staff member at the university with both teachers and students. Also, as a pharmacist in my own community Pharmacy with customers.

Organisational / managerial skills

Conferences organization (member of the organizing committee of the first international conference of Faculty of Pharmacy, Menoufia University "Drug Development: From Benchside To Bedside") 11-12 August, 2018.

Job-related skills

Good command of the following pharmaceutical skills:

- Topical and transdermal drug delivery.
- Targeted drug delivery.
- Nano-formulations.
- TEM sample handling and observation.
- Cell culture
- Dosage form design.
- Drug dissolution and solubility.
- HPLC and HPTLC analysis.
- Factorial design program.
- Drug release and diffusion experiments.
- Biopharmaceutics and Pharmacokinetic models.
- Stability studies.
- Dissemination of research results to the scientific community.
- Patents registration.
- Quality assurance and control
- Good manufacturing practices.
- Pharmaceutical factories auditing.
- Ability to pay close attention to detail and to meet deadlines.
- Work independently and/or in a multidisciplinary team.

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Independent user	Independent user	Basic user

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Other skills

Carpentry (I acquired it because of helping my father in the school vacation as he had a carpentry workshop for furniture manufacture).

Driving licence

B

AWARDS

2023

Poster Award Engineering Prize, RIKEN Summer School.

PUBLICATION RECORD

Published Papers

1. Xiaoyu Guan, Bingyuan Zhang, Yanxia Zhu, Xuhui Sun, Kai Meng, Zequn Wang, Afnan H El - Gowily, Yi Chen, Sai Zheng, Qingxin Han, **Mohamed S Elafify**, Meng An, Ping Rao, Motoki Ueda, Yoshihiro Ito, Mineral Tanning - Inspired Metal Ions Coordination Hydrogels with Outstanding Mechanical Strength and Toughness for Flexible Force Sensors, **Adv. Func. Mater.**, 2024, 23136633.
<https://doi.org/10.1002/adfm.202313633>
 This paper was a collaboration work.
2. Xiaoyu Guan, Sai Zheng, Bingyuan Zhang, Xuhui Sun, Kai Meng, **Mohamed S. Elafify**, Yanxia Zhu, Afnan H El-Gowily, Meng An, Dongping Li, Qingxin Han, Masking Strategy Constructed Metal Coordination Hydrogels with Improved Mechanical Properties for Flexible Electronic Sensors, **ACS Appl. Mater. Interfaces.**, 2024, 16, 4, 5168–5182.
<https://doi.org/10.1021/acsami.3c18077>
 This paper was a collaboration work.
3. **Mohamed S. Elafify**, Toru Itagaki, Nermeen A. Elkasabgy, Sinar Sayed, Yoshihiro Ito, Motoki Ueda, Reversible transformation of peptide assembly between densified-polysarcosine-driven kinetically and helix-orientation-driven thermodynamically stable morphologies, **Biomater. Sci.**, 2023, 11, 6280-6286.
<https://doi.org/10.1039/D3BM00714F>
 This paper was a part of my doctoral work. The experimental work, methodology, data curation, analysis, validation, and investigation involved in this paper were performed by me as a Ph.D. candidate. I also contributed to write the work for publication.
4. **Mohamed S. El Afify**, Esmat A. Zein El Dein, Bakheet E. M. Elsadek, Mostafa A. Mohamed, Sanaa A. El-Gizawy, Development and optimization of a novel drug free nanolipid vesicular system for treatment of osteoarthritis, **Drug Development and Industrial Pharmacy**, 2018, 44:5, 767-777.
<https://doi.org/10.1080/03639045.2017.1411944>
 This paper was a part of my master work. The experimental work, data collection and analysis involved in this paper were performed by me as a master student. Also, it was my responsibility to submit the paper to the journal and follow it till publication.

Patent Applications

1. Peptide cube, Japanese Patent Application No. 2023-087196.
2. Drug free nanosystem for treatment of osteoarthritis, Egyptian Patent Office, Academy of Scientific Research and Technology, application No. 1392/2017.

Conferences

Oral presentations

- **Mohamed S. Elafify**, Nermeen A. Elkasabgy, Sinar Sayed, Yoshihiro Ito, Motoki Ueda; Peptide-based mechano-sensitive drug delivery carrier, the 39th Annual meeting of the Japan Society of Drug Delivery System "Modality Innovations" 27-28 July, Chiba, **Japan**, 2023.

Poster presentations

- **Mohamed S. Elafify**, Motoki Ueda, Nermeen A. Elkasabgy, Sinar Sayed, Yoshihiro Ito; Shear-sensitive drug delivery carrier, RIKEN summer school, 6-7 September, Wako, **Japan**, 2023.
- **Mohamed S. Elafify**, Motoki Ueda, Nermeen A. Elkasabgy, Sinar Sayed, and Yoshihiro Ito; Transformable Peptide Assembly Induced By Dense-Polysarcosine Brush, the 44th Annual meeting of the Japanese Society for Biomaterials (JSB) "Biomaterials and diversity" 21-22 November, Tokyo, **Japan**, 2022.
- **Mohamed S. Elafify**, Nermeen A. Elkasabgy, Sinar Sayed, Yoshihiro Ito, Motoki Ueda; Temperature-Dependent Structure Transition of Sarcosine-Based Bola-Type Amphiphilic Polypeptide, Tsukuba Biomedical Engineering Forum 2022, 21 January, **Japan**, 2022.
- **Mohamed S. El Afify**, Sanaa A. El-Gizawy, Esmat A. Zein El-Dein; Influence of edge activator type on Ex-vivo half-life of phosphatidylcholine: Implementation of a quality by design approach, International Conference of Pharmaceutical Sciences (ICPS) Misr University of Science and Technology "Future Trends and Innovations in Pharmacy" 27-28 October, Hilton Pyramids Golf, **Egypt**, 2018.
- **Mohamed S. El Afify**, Sanaa A. El-Gizawy, Esmat A. Zein El-Dein, Studying the effects of span 80 and sodium deoxycholate on the In-vitro half-life of phosphatidylcholine: Application of 2³ factorial design, the first international conference of Faculty of Pharmacy, Menoufia University "Drug Development: From Benchside to Bedside" 11-12 August, Al- Menoufia, **Egypt**, 2018.

Attendance

- The Second International Conference in New Horizons in Basic and Applied science (ICNHBAS) 1-6 August, Hurghada, **Egypt**, 2015.

Seminars

- **Denderimers drug delivery**, Under supervision of Prof. Dr. Gamal M. El Maghraby at the department of Pharmaceutical Technology, College of Pharmacy, University of Tanta, Egypt, 7/2013.