Ahmed F. A. Mohammed, Ph.D

Assistant Professor | Postdoctoral Researcher

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Summary

Experienced researcher with a Ph.D. in Pharmaceutical sciences, specializing in nanoparticle and dendrimer-based drug delivery systems for cancer therapy, gene therapy, and siRNA delivery. Expertise in dendrimer/polymer synthesis, conjugation chemistry, and preclinical validation using animal models. Proven track record in biomaterials development, published in high-impact journals, and experienced in collaborating with multidisciplinary teams. Highly motivated to contribute to cutting-edge translational nanomedicine.

Professional Experience

Faculty of Pharmacy, Minia University, Egypt **Jun 2020 - Present**
Assistant Professor

- Leading research in cancer nanomedicine, focusing on biodegradable microparticle systems.
- Supervised junior researchers and provided mentorship in experimental design, drug-polymer conjugations, data analysis, nanoparticle synthesis for various therapeutic applications and manuscript preparation.
- Published research in collaboration with international teams across nanomedicine and biomaterials fields.

Kumamoto University, Japan **May 2022 - Nov 2022**
Postdoctoral Researcher

- Developed a novel folate-appended polyrotaxanes to stabilize siRNA/dendrimer-cyclodextrin conjugate polyplexes by connecting molecules through host-guest interactions, enhancing in vivo antitumor activity, and enabling effective systemic siRNA delivery.

Priority Organization for Innovation and Excellence, Kumamoto University, Japan **Apr 2019 - Feb 2020**
Postdoctoral Researcher

- Led projects on the synthesis of dendrimers and polymer-based drug delivery systems, with a focus on cancer therapy and gene delivery.
- Developed novel dendrimer conjugates for siRNA and drug co-delivery, achieving targeted tumor delivery with enhanced therapeutic efficacy in animal models.
- Published multiple peer-reviewed papers in collaboration with multidisciplinary teams.

Kumamoto University, Japan **Jan 2013 - Jan 2015**
Researcher

- Worked on the development of dendrimer-based carriers for gene therapy applications, including the development of linker chemistry for stable siRNA delivery.

Teaching Experience

Minia University, Egypt **Jun 2020 - Present**
Assistant Professor

- Taught courses in Advanced Drug Delivery Systems, Controlled Drug Delivery Systems, and Industrial Pharmacy.
- Mentored undergraduate and graduate students in research methodologies, scientific writing, and presentation skills.

Minia University, Egypt **Dec 2006 – Dec 2012**
Teaching Assistant

- Assisted in delivering lectures and practical sessions in Pharmaceutics, Biopharmaceutics, and Pharmacokinetics

Education

Kumamoto University, Japan, Ph.D. in Pharmaceutical Sciences **Jan 2015 - Jan 2019**
- Drug delivery systems

Minia University, Egypt, Master's Degree in Pharmaceutics **Jan 2006 - Jan 2012**

Minia University, Egypt, Bachelor's Degree in Pharmacy **Jan 2001 - Jan 2006**
- Graduated with honors

Awards

Best Poster Award, 19th International Cyclodextrin Symposium **2018**

HIGO Research Funding Project **2015-2017**
Multiple awards totaling 2.7 million Japanese Yen

Program for Leading Graduate Schools Forum Poster Award, Nagoya, Japan **2017**

Research Skills

Biomaterials Synthesis: Extensive experience in small-molecule and polymer synthesis for creating novel drug delivery platforms.

Nanoparticle Fabrication: Skilled in nanoprecipitation, emulsion solvent evaporation, and diffusion methods.

Analytical Techniques: Expertise in HPLC, UV-Vis, fluorescence spectrometry, 1H-NMR, DLS, and flow cytometry.

Microscopic Techniques: Proficient in scanning electron microscopy (SEM), transmission electron microscopy (TEM), and confocal microscopy.

Cell Culture & Animal Models: Hands-on experience in cell transfection, WST viability assays, apoptosis assays, Cell uptake of polymeric nanoparticles and handling murine models for cancer and regenerative medicine studies.

Immunomodulation Research: Investigated the use of biomaterials for immune modulation, including studies on macrophage interaction and immune response activation.

Research Related Software: *Microsoft Office:* Word, Excel, PowerPoint; GraphPad Prism; Image J, MestReNova

Publications

1. N Wathoni, C Suhandi, K M Elamin, R Lesmana, N Hasan, **Ahmed FA Mohammed**, A El-Rayyes, G Wilar. Advancements and Challenges of Nanostructured Lipid Carriers for Wound Healing Applications. **International Journal of Nanomedicine 2024**

2. N Wathoni, Y Herdiana, C Suhandi, **Ahmed FA Mohammed**, A El-Rayyes, A Ci Narsa. Chitosan/Alginate-Based Nanoparticles for Antibacterial Agents Delivery. **International Journal of Nanomedicine 2024**

3. C Vitamia, G N Iftinan, I R Latarissa, G Wilar, A Cahyanto, **Ahmed FA Mohammed**, A El-Rayyes, N Wathoni. α-Mangostin hydrogel film with chitosan alginate base for recurrent aphthous stomatitis (RAS) treatment: study protocol for double-blind randomized controlled trial. **Frontiers in Pharmacology 2024**

4. C Suhandi, **Ahmed FA Mohammed**, G Wilar, A El-Rayyes, N Wathoni. Effectiveness of mesenchymal stem cell secretome on wound healing: a systematic review and meta-analysis. **Tissue Engineering and Regenerative Medicine 2023**

5. M Muchtaridi, A I Suryani, N Wathoni, Y Herdiana, **Ahmed FA Mohammed**, A M Gazzali, R Lesmana, I M Joni. Chitosan/Alginate Polymeric Nanoparticle-Loaded α-Mangostin: Characterization, Cytotoxicity, and In Vivo Evaluation against Breast Cancer Cells. **Polymers 2023**

6. E Sulastri, R Lesmana, M S Zubair, **Ahmed FA Mohammed**, K M Elamin, N Wathoni. Ulvan/Silver nanoparticle hydrogel films for burn wound dressing. **Heliyon 2023**

7. N Fitriani, G Wilar, AC Narsa, **Ahmed FA Mohammed**, N Wathoni. Application of Amniotic Membrane in Skin Regeneration. **Pharmaceutics. 2023**

8. Y Ohno, M Toshino, **Ahmed FA Mohammed**, Y Fujiwara, Y Komohara, R Onodera, T Higashi, K Motoyama. Mannose-methyl-β-cyclodextrin suppresses tumor growth by targeting both colon cancer cells and tumor-associated macrophages. **Carbohydrate Polymers. 2023**

9. N Wathoni, LE Puluhulawa, IM Joni, M Muchtaridi, **Ahmed FA Mohammed**, KM Elamin, T Milanda, D Gozali. Monoclonal antibody as a targeting mediator for nanoparticle targeted delivery system for lung cancer. **Drug Delivery. 2022**

10. N Wathoni, WA Sari, KM Elamin, **Ahmed FA Mohammed**, I Suharyani. A Review of Coformer Utilization in Multicomponent Crystal Formation. Molecules. 2022

11. M Inoue, K Muta, **Ahmed FA Mohammed**, R Onodera, T Higashi, K Ouchi, M Ueda, Y Ando, H Arima, H Jono, K Motoyama. Feasibility Study of Dendrimer-Based TTR-CRISPR pDNA Polyplex for Ocular Amyloidosis in Vitro. **Biological and Pharmaceutical Bulletin. 2022**

12. **Ahmed FA Mohammed,** MH Othman, T. Taharabaru, KM Elamin, K Ito, M Inoue, M El-Badry, KI Saleh, R Onodera, K Motoyama, T Higashi. Stabilization and Movable Ligand-Modification by Folate-Appended Polyrotaxanes for Systemic Delivery of siRNA Polyplex. **ACS Macro Letters. 2022**

13. LE Puluhulawa, IM Joni, KM Elamin, **Ahmed FA Mohammed**, M Muchtaridi, N Wathoni. Chitosan–Hyaluronic Acid Nanoparticles for Active Targeting in Cancer Therapy. **Polymers. 2022**

14. T Milanda, F R Cindana Mo'o, **Ahmed FA Mohammed**, K M Elamin, G Wilar, I Suharyani, N Wathoni. Alginate/Chitosan-Based Hydrogel Film Containing α-Mangostin for Recurrent Aphthous Stomatitis Therapy in Rats. **Pharmaceutics. 2022**

15. S Megantara, N Wathoni, **Ahmed FA Mohammed**, C Suhandi, M H Ishmatullah, M FFD Putri. In Silico Study: Combination of α-Mangostin and Chitosan Conjugated with Trastuzumab against Human Epidermal Growth Factor Receptor 2. **Polymers. 2022**

16. L Meylina, M Muchtaridi, IM Joni, **Ahmed FA Mohammed**, N Wathoni. Nanoformulations of α-Mangostin for Cancer Drug Delivery System. **Pharmaceutics. 2021**

17. E Sulastri, MS Zubair, R Lesmana, **Ahmed FA Mohammed**, N Wathoni. Development and characterization of ulvan polysaccharides-based hydrogel films for potential wound dressing applications. **Drug Design, Development and Therapy. 2021**

18. I Suharyani, M Muchtaridi, Nwath oni, **Ahmed FA Mohammed**, M Abdassah. Evolution of Drug Delivery Systems for Recurrent Aphthous Stomatitis. **Drug design, development and therapy. 2021**

19. I Suharyani, M Muchtaridi, **Ahmed FA Mohammed**, K M Elamin, N Wathoni, M Abdassah. α-Mangostin/γ-Cyclodextrin inclusion complex: Formation and thermodynamic study. **Polymers. 2021**

20. LE Puluhulawa, I Joni, **Ahmed FA Mohammed**, H Arima, N Wathoni. The Use of Megamolecular Polysaccharide Sacran in Food and Biomedical Applications. **Molecules. 2021**

21. N Wathoni, L Meylina, A Rusdin, **Ahmed FA Mohammed**, D Tirtamie, Y Herdiana, K Motoyama, C Panatarani, I Joni, R Lesmana, M Muchtaridi. The Potential Cytotoxic Activity Enhancement of α-Mangostin in Chitosan-Kappa Carrageenan-Loaded Nanoparticle against MCF-7 Cell Line. **Polymers. 2021**

22. M M Hassan, **Ahmed FA Mohammed**, K M Elamin, H P Devkota, Y Ohno, K Motoyama, T Higashi, T Imai. Improvement of Pharmaceutical Properties of Zerumbone, a Multifunctional Compound, Using Cyclodextrin Derivatives**. Chem. Pharm. Bull. 2020**

23. Nasrul Wathoni, An Ny Nguyen, Agus Rusdin, Abd. Kakhar Umar, **Ahmed FA Mohammed**, Keiichi Motoyama4, I Joni, M Muchtaridi. Enteric Coated Strategies in Colorectal Cancer Nanoparticles Drug Delivery System. **Drug Design, Development and Therapy. 2020**

24. N Wathoni , D P Sari, I Suharyani, K Motoyama, **Ahmed FA Mohammed** ,A Cahyanto, M Abdassah, M Muchtaridi. Enhancement of α-Mangostin Wound Healing Ability by Complexation with 2-Hydroxypropyl--Cyclodextrin in Hydrogel Formulation. **Pharmaceuticals. 2020**

25. T Taharabaru, R Yokoyama, T Higashi, **Ahmed FA Mohammed**, M Inoue, Y Maeda, T Niidome, R Onodera, K Motoyama. Genome Editing in a Wide Area of the Brain Using Dendrimer-Based Ternary Polyplexes of Cas9 Ribonucleoprotein. **ACS Applied Materials & Interfaces. 2020**

26. N Wathoni, T Rusdiana, AN Hasanah, AR Pratama, M Okajima, T Kaneko, **Ahmed FA Mohammed**, B W Putera, H Arima. Epidermal growth factor in sacran hydrogel film accelerates fibroblast migration. **Journal of Advanced Pharmceutical Technolgy and Research 2020**

27. N Wathoni, T Rusdiana, AN Hasanah, A Muhtadi, ED Pratiwi, R Mahmudah, **Ahmed FA Mohammed**, M Okajima, T Kaneko, H Arima. Sacran Hydrogel Film Containing Keratinocyte Growth Factor Accelerates Wound Healing by Stimulating Fibroblast Migration and Re-epithelization. **Chemical and Pharmaceutical Bulletin. 2019**

28. **Ahmed FA Mohammed**, T Higashi, K Motoyama, A Ohyama, R Onodera, K A Khaled, H A Sarhan, A K Hussein, H Arima. In Vitro and In Vivo Co-delivery of siRNA and Doxorubicin by Folate-PEG-Appended Dendrimer/Glucuronylglucosyl-β-Cyclodextrin Conjugate. **AAPS J. 2019.**

29. **Ahmed FA Mohammed**, T Higashi, K Motoyama, A Ohyama, R Onodera, K A Khaled, H A Sarhan, A K Hussein, H Arima. Targeted siRNA delivery to tumor cells by folate-PEG-appended dendrimer/glucuronylglucosyl-β-cyclodextrin conjugate. **Journal of Inclusion Phenomena and Macrocyclic Chemistry. 2019**

30. N Wathoni, A N Hasanah, **Ahmed FA Mohammed**, E D Pratiwi, R Mahmudah. Accelerated wound healing ability of sacran hydrogel film by keratinocyte growth factor in alloxan-induced diabetic mice. **International Journal of Applied Pharmaceutics. 2018**

31. **Ahmed FA Mohammed**, A Ohyama, T Higashi, K Motoyama, K A Khaled, H A Sarhan, A K Hussein, H Arima. Preparation and evaluation of polyamidoamine dendrimer conjugate with glucuronylglucosyl-β-cyclodextrin (G3) as a novel carrier for siRNA. **Journal of Drug Targeting. 2014**

32. **Ahmed FA Wahab**, AK Hussein, KA Khaled, OA Ahmed. Meloxicam depot parentral biodegradable microspheres: Preparation, characterization and in vivo evaluation. **International journal of Pharmaceutical Sciences Review and Research. 2013**

Book Chapters

Ahmed FA. Mohammed, Keiichi Motoyama, Taishi Higashi, Hidetoshi Arima. "Promising Use of Cyclodextrin-Based Non-Viral Vectors for Gene and Oligonucleotide Drugs". In Poonam Arora (Eds.), Cyclodextrin- A versatile ingredient. Rejika: IntechOpen, 239-261, 2018. DOI: 10.5772/intechopen.74614.

Poster presentations

1- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Hidetoshi Arima. Targeted Delivery of Doxorubicin and siRNA Using Folate-Polyethylene glycol-appended Polyamidoamine Dendrimer (G3) Conjugates with Glucuronylglucosyl-β-cyclodextrin. AAPS PharmSci 360 (Washington DC, USA, November 4th – 7th 2018)

2- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Hidetoshi Arima. Induction of RNAi Using a siRNA Complex with Folate-PEG-appended Polyamidoamine Dendrimer (G3) Conjugates with Glucuronylglucosyl-β-cyclodextrin as Novel Tumor Cell Targeted siRNA Carriers. The 19th International Cyclodextrin Symposium (Tokyo, Japan , April 27th- 30th 2018).

3- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Hidetoshi Arima. Preparation and Evaluation of Folate PEG-appended Polyamidoamine Dendrimer (G3) Conjugates with Glucuronylglucosyl-β-cyclodextrin as Novel Tumor Cell-selective siRNA Carriers The 9th Asian Cyclodextrin Conference (Singapore, December 14th- 17th 2017).

4- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Khaled A. Khaled, Hatem A. Sarhan, Amal K. Hussein, Hidetoshi Arima. In Vitro Evaluation of Polyamidoamine Dendrimer Conjugates with Glucoronylglucosyl-β-cyclodextrin (G3) as siRNA Carriers. The 7th Cyclodextrin Workshop (Kumamoto, Japan. September 18th, 2016).

5- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Hidetoshi Arima. Evaluation of Polyamidoamine Dendrimer (G3) Conjugates with Glucuronylglucosyl-β-cyclodextrin as siRNA carriers. The 18th International Cyclodextrin Symposium (Gainesville, Florida, USA, May 18th- 21st 2016).

6- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Hidetoshi Arima. Induction of RNAi using a siRNA complex with gluculonylglucosyl-β-cyclodextrin/dendrimer (G3) conjugate. The First Meeting of Japanese Nucleic Acid Drugs. (Kyoto, Japan. November 30th- December 2nd 2015).

7- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Khaled A. Khaled, Hatem A. Sarhan, Amal K. Hussein, Hidetoshi Arima. Preparation and evaluation of glucuronylglucosyl-β-cyclodextrin/ dendrimer (G3) conjugate as a novel siRNA carrier. International Symposium on Chronic Inflammatory Diseases (Kumamoto, Japan. October 16-17th 2015).

8- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Khaled A. Khaled, Hatem A. Sarhan, Amal K. Hussein, Hidetoshi Arima. Evaluation of gluculonylglucosyl-β-cyclodextrin/dendrimer (G3) conjugate as a novel siRNA carrier. (The 134th Japan Pharmaceutical association meeting（Kumamoto, Japan, March 30th, 2014）

9- **Ahmed F. A. Mohammed**, Ayumu Ohyama, Taishi Higashi, Keiichi Motoyama, Khaled A. Khaled, Hatem A. Sarhan, Amal K. Hussein, Hidetoshi Arima. Preparation and evaluation of polyamidoamine dendrimer/glucuronylglucosyl-β-cyclodextrin conjugate (G3) as a novel siRNA carrier. The 30th cyclodextrin symposium (Kumamoto, Japan. September 12th 2013