

## Mahmoud Y. Alkawareek, PhD

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### **Education**

- October, 2010 – October, 2013: PhD in Pharmacy; School of Pharmacy; Queen's University Belfast, Belfast, UK
- September, 2004 – June, 2009: BSc in Pharmacy; School of Pharmacy, The University of Jordan, Amman, Jordan

### **Professional Experience**

- September, 2019 – Present: Associate Professor; Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, Jordan.
- October, 2019 – September, 2020: Director of Quality Assurance Unit, Accreditation and Quality Assurance Center, The University of Jordan, Amman, Jordan.
- September, 2018 – October, 2019: Assistant Dean for Accreditation and Development, School of Pharmacy, The University of Jordan
- March, 2014 – September, 2019: Assistant Professor; Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, Jordan.
- September, 2016 – September, 2017: Assistant Dean for Student Affairs, School of Pharmacy, The University of Jordan
- October, 2013 – March, 2014: Lecturer; Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, Jordan.
- October, 2010 – October, 2013: PhD Research Student; School of Pharmacy; Queen's University Belfast, Belfast, UK
- September, 2009 – September, 2010: Teaching Assistant; Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, Jordan.
- June, 2009 – September, 2009: Community Pharmacist; Orange Pharmacy, Amman, Jordan.

### **Professional Membership**

- Jordan Pharmaceutical Association, Jordan
- Society for Applied Microbiology, UK
- American Association of Pharmaceutical Scientists, USA

### **Committee Membership (External)**

- Generic Drug Registration Committee, JFDA, Mar, 2017 – June, 2017.
- Post-Approval Changes Committee, JFDA, Oct, 2015 – Mar, 2017.
- Quality Control Committee, JFDA, Dec, 2015 – Feb, 2017.
- Bioequivalence Studies Committee, JFDA, Mar, 2015 – Sep, 2015.

### **Teaching and Supervision Activities:**

#### **Taught Courses**

- Pharmaceutical Microbiology I (for Pharmacy and PharmD Students)
- Pharmaceutical Microbiology II (for Pharmacy and PharmD Students)
- Pharmaceutical Microbiology-Practical (for Pharmacy and PharmD Students)
- Seminar in Pharmaceutics and Pharmaceutical Technology (for Pharmacy and PharmD Students)
- Microbiology II (for Dental Students)
- Introduction to Microbiology (for Medical Students)
- Microbiology section in the following system modules: (for Medical Students):
  - Musculoskeletal and Skin System
  - Gastrointestinal System
  - Genitourinary system
  - Respiratory System
  - Cardiovascular System
  - Central Nervous System

#### **Postgraduate Supervision:**

- Iyman Saad, MSc. Stability and antibacterial efficacy of silver nanoparticles when used in combination with other antimicrobial agents. 2021/2022.

- Hiba Awni, MSc. Implementation of Machine Learning Techniques in Designing a Predictive Model for Characterizing PLGA Nanoparticles. 2020/2021.
- Taqwa Shaban, MSc. Application of Supervised Machine Learning Techniques for the Prediction of Antibiofilm Activity of Antibiotics. 2020/2021.
- Bayan Alanati, MSc. Synthesis and Characterization of Polymeric Microcapsules Containing Anticancer Agents by Internal Phase Separation Method. 2018/2019.
- Fareda Rawhi Hamad, MSc. Antibacterial Activity of Silver Nanoparticles in Combination with Other Antimicrobial Agents. 2018/2019.

### **Research Interests**

- Pharmaceutical and medical microbiology
- Nanotechnology: pharmaceutical and medical applications
- Novel drug delivery systems
- Data science and machine learning for biomedical applications.

### **Publications**

#### **Research articles:**

1. Abu-Hassan, D.W., **Alkawareek, M. Y.**, Banat, F. and Al-Muhtaseb, S. Host-parasite Interaction Model Using Bead-Grown Biofilms. *The FASEB Journal*, **2020**, 34(S1), 1-1 (DOI: 10.1096/fasebj.2020.34.s1.09305).
2. **Alkawareek, M. Y.**, Bahlool, A., Abulateefeh, S. R., Alkilany, A. M. Synergistic Antibacterial Activity of Silver Nanoparticles and Hydrogen Peroxide. *PLOS ONE*, **2019**, 14(8), e0220575 (DOI: 10.1371/journal.pone.0220575).
3. Alkilany, A. M., Alsoutari, S. T., **Alkawareek, M. Y.**, Abulateefeh, S. R., Facile Hydrophobication of Glutathione-Protected Gold Nanoclusters and Encapsulation into Poly(lactide-co-glycolide) Nanocarriers. *Scientific Reports*, **2019**, 9, 11098 (DOI: 10.1038/s41598-019-47543-4).
4. Abulateefeh, S. R., **Alkawareek, M. Y.**, Alkilany, A. M. Tunable Sustained Release Drug Delivery System Based on Mononuclear Aqueous Core-Polymer Shell Microcapsules. *International Journal of Pharmaceutics*, **2019**, 558, 291-298 (DOI: 10.1016/j.ijpharm.2019.01.006).
5. Abulateefeh, S. R., Al-Adhami, G. K., **Alkawareek, M. Y.**, Alkilany, A. M. Controlling the Internal Morphology of Aqueous Core-PLGA Shell Microcapsules: Promoting the Internal Phase Separation via Alcohol Addition. *Pharmaceutical Development and*

- Technology*, **2019**, 24 (6), 671-679 (DOI: 10.1080/10837450.2018.1558238)
6. Khalil, E. A., **Alkawareek, M. Y.**, Othman, G., Tbakhi, B., and Al-Bakri, A. G. Evaluation of Paromomycin Sulphate Permeation Using ex Vivo Human Skin Model. *Pharmaceutical Development and Technology*, **2019**, 24 (3), 390-393 (DOI: 10.1080/10837450.2018.1485697).
  7. **Alkawareek, M. Y.**, Akkelah, B. M., Mansour, S. M., Amro, H. M., Abulateefeh, S. R., and Alkilany, A. M. Simple Experiment to Determine Surfactant Critical Micelle Concentrations Using Contact-Angle Measurements. *Journal of Chemical Education*, **2018**, 95 (12), 2227-2232 (DOI: 10.1021/acs.jchemed.8b00276).
  8. Behzadi, S., Serpooshan, V., Tao, W., Hamaly, M.A., **Alkawareek, M.Y.**, Dreaden, E.C., Brown, D., Alkilany, A.M., Farokhzad, O.C. and Mahmoudi, M. Cellular Uptake of Nanoparticles: Journey Inside the Cell. *Chemical Society Reviews* **2017**, 46 (14), 4218-4244
  9. Abulateefeh, S. R., **Alkawareek, M. Y.**, Abdullah, F. R., & Alkilany, A. M. Preparation of Aqueous Core-PLGA Shell Microcapsules with Mono-nuclear Cores by Internal Phase Separation: Optimization of Formulation Parameters. *Journal of Pharmaceutical Sciences* **2017**, 106 (4), 1136–1142.
  10. Alshraiedeh, N. H., Higginbotham, S., Flynn, P. B., **Alkawareek, M. Y.**, Tunney, M. M., Gorman, S. P., Graham, W.G.; Gilmore, B. F. Eradication and phenotypic tolerance of Burkholderia cenocepacia biofilms exposed to atmospheric pressure non-thermal plasma. *International Journal of Antimicrobial Agents* **2016**, 47 (6), 446-450.
  11. **Alkawareek, M.Y.**, Alshraiedeh, N.H., Higginbotham, S., Flynn, P.B., Algwari, Q.T., Gorman, S.P., Graham, W.G., Gilmore, B.F., Plasmid DNA damage following exposure to atmospheric pressure nonthermal plasma: kinetics and influence of oxygen admixture. *Plasma Medicine* **2014**, 4, 211-219.
  12. Lavery, G.; **Alkawareek, M. Y.**; Gilmore, B. F., The *in vitro* Susceptibility of Biofilm Forming Medical Device Related Pathogens to Conventional Antibiotics. *Dataset Papers in Science* **2014**, 2014, 250694.
  13. **Alkawareek, M. Y.**; Gorman, S. P.; Graham, W. G.; Gilmore, B. F., Eradication of Marine Biofilms by Atmospheric Pressure Non-Thermal Plasma: a Potential Approach to Control Biofouling? *International Biodeterioration & Biodegradation* **2014**, 86, 14-18.
  14. **Alkawareek, M. Y.**; Gorman, S. P.; Graham, W. G.; Gilmore, B. F., Potential Cellular Targets and Antibacterial Efficacy of Atmospheric Pressure Non-Thermal Plasma. *International journal of antimicrobial agents* **2014**, 43 (2), 154-160.
  15. Alshraiedeh, N. H.; **Alkawareek, M. Y.**; Gorman, S. P.; Graham, W. G.; Gilmore, B. F., Atmospheric Pressure, Nonthermal Plasma Inactivation of MS2 Bacteriophage: Effect of

- Oxygen Concentration on Virucidal Activity. *Journal of applied microbiology* **2013**, 115 (6), 1420-1426.
16. Ryan, E. M.; **Alkawareek, M. Y.**; Donnelly, R. F.; Gilmore, B. F., Synergistic Phage-Antibiotic Combinations for The Control of *Escherichia coli* Biofilms *in vitro*. *FEMS immunology and medical microbiology* **2012**, 65 (2), 395-398.
  17. Bani-Jaber, A.; Hamdan, I.; **Alkawareek, M. Y.**, The Synthesis and Characterization of Fatty Acid Salts of Chitosan as Novel Matrices for Prolonged Intragastric Drug Delivery. *Archives of pharmacal research* **2012**, 35 (7), 1159-1168.
  18. **Alkawareek, M. Y.**; Algwari, Q. T.; Laverty, G.; Gorman, S. P.; Graham, W. G.; O'Connell, D.; Gilmore, B. F., Eradication of *Pseudomonas aeruginosa* Biofilms by Atmospheric Pressure Non-Thermal Plasma. *PLOS ONE* **2012**, 7 (8), e44289.
  19. **Alkawareek, M. Y.**; Algwari, Q. T.; Gorman, S. P.; Graham, W. G.; O'Connell, D.; Gilmore, B. F., Application of Atmospheric Pressure Nonthermal Plasma for the *in vitro* Eradication of Bacterial Biofilms. *FEMS immunology and medical microbiology* **2012**, 65 (2), 381-384.
  20. Bani-Jaber, A. K.; **Alkawareek, M. Y.**; Al-Gousous, J. J.; Abu Helwa, A. Y., Floating and Sustained-Release Characteristics of Effervescent Tablets Prepared with a Mixed Matrix of Eudragit L-100-55 and Eudragit E PO. *Chemical & pharmaceutical bulletin* **2011**, 59 (2), 155-160.

### Conference Contributions:

1. International Conference on Advances in Pharmaceutical and Medical Sciences; Nov. 20-21, 2017; Kuala Lumpur, Malaysia; Alaaldin M. Alkilany and Mahmoud Y. Alkawareek; Azathioprine-Loaded Gold Nanoparticles for the Treatment of Rheumatoid Arthritis. (Poster presentation)
2. The 21st International Symposium on Microencapsulation; Sep 27-29, 2017; University of Algarve, Faro, Portugal; Abulateefeh S.R., Alkawareek M.Y., Alkilany A.M.; Tuning the Internal Core Architecture of PLGA Microcapsules for Drug Delivery Applications. (Poster presentation)
3. Excellence in Pharmacy Education & Research: a Quality Approach; Oct 25-27, **2016**; School of Pharmacy, The University of Jordan, Amman, Jordan; Alkawareek M.Y., Bahloul A., Alkilany A.M.; Silver Nanoparticles and Hydrogen Peroxide Based System for The Eradication of Stubborn Bacterial Infections. (Oral Presentation)
4. EUROBIOFILMS **2013**, Third European Congress on Microbial Biofilms – Basic and Clinical Aspects; Sep 9-12, 2013; Ghent, Belgium; Alkawareek M.Y., Gorman S.P. , Graham W.G., Gilmore B.F.; Anti-biofilm Activity of Atmospheric Pressure Cold Plasmas: Efficacy and Mechanism. (Oral presentation)

5. EUROBIOFILMS **2013**, Third European Congress on Microbial Biofilms – Basic and Clinical Aspects; Sep 9-12, 2013; Ghent, Belgium; Alkawareek M.Y., Gorman S.P. , Graham W.G., Gilmore B.F.; Microscopic Examination of Biofilm Destruction by Atmospheric Pressure Plasma. (Poster presentation)
6. Plasma Sources in Plasma Medicine; Feb 21, **2013**; Greifswald, Germany; Alkawareek M.Y., Gorman S.P. , Graham W.G., Gilmore B.F.; Elucidating the Mechanisms of Antimicrobial and Anti-biofilm Activities of Non Thermal Plasma. (Oral presentation)
7. IBBS ‘Antimicrobial Strategies for Biofilm Control’; Sep 10-11, **2012**; Winchester, UK; Alkawareek M.Y., Gorman S.P. , Graham W.G., Gilmore B.F.; A Novel Atmospheric Pressure Non-thermal Plasma for the Efficient Eradication and Control of Biofilms. (Oral presentation)
8. The 4th International Conference on Plasma Medicine (ICPM-4); June 17-21, **2012**; Orléans, France; Alkawareek M.Y., Gorman S.P. , Graham W.G., O’Connell D. , Gilmore B.F.; Effects of Atmospheric Pressure Plasma on Cellular Components: An Insight into Bacterial Destruction Mechanisms. (Poster presentation)
9. The 34th All Ireland Schools of Pharmacy Research Seminar; April 2-3, **2012**; UCC, Cork, Ireland; Alkawareek M.Y., Gorman S.P. , Graham W.G., O’Connell D. , Gilmore B.F.; Antibacterial Activity of Atmospheric Pressure Non-Thermal Plasma. (Oral presentation)
10. 64th Annual Gaseous Electronics Conference (GEC); November 14-18, **2011**; Salt Lake City, Utah, USA; Alkawareek M.Y., Gilmore B.F., Gorman S.P. , Algwari Q.T., Graham W.G., O’Connell D. ; Eradication of Bacterial Biofilms Using Atmospheric Pressure Non-Thermal Plasmas. (Oral presentation)
11. The 30th International Conference on Phenomena in Ionized Gases (ICPIG); August 28th – September 2nd, **2011**; QUB, Belfast, NI, UK; Alkawareek M.Y., Gorman S.P. , Algwari Q.T., O’Connell D. , Gilmore B.F.; Kilohertz-Driven Atmospheric Pressure Plasma Jet for the Decontamination of Bacterial Biofilms. (Poster presentation)
12. EUROBIOFILMS **2011**, Second European Congress on Microbial Biofilms - Basic and Clinical Aspects; July 6-8, 2011; Copenhagen, Denmark; Alkawareek M.Y., Gorman S.P. , Algwari Q.T., O’Connell D. , Gilmore B.F.; Bacterial Biofilms Eradication Using Atmospheric Pressure Plasma Jet. (Poster presentation)
13. The 33rd All Ireland Schools of Pharmacy Research Seminar; April 18-19, **2011**; RCSI, Dublin, Ireland; Alkawareek M.Y., Gorman S.P. , Algwari Q.T., O’Connell D. , Gilmore B.F.; Atmospheric Pressure Plasma for the Elimination of Bacterial Biofilms. (Poster presentation)

## **Workshops and Training Courses**

- Creating Effective Surveys Using Google Forms (Training Course); Nov. 6<sup>th</sup>, **2019**; Accreditation and Quality Assurance Center, The University of Jordan, Amman, Jordan. (Trainer)
- E-Learning (Training Course); Nov. 16<sup>th</sup>, **2017**; School of Pharmacy, The University of Jordan, Amman, Jordan. (Trainer)
- Matching Course ILOs to Program ILOs in Course Syllabus (Workshop); Nov. 9<sup>th</sup>, **2017**; School of Pharmacy, The University of Jordan, Amman, Jordan.
- New Trends in University Education: Project-Based Learning and Flipped Learning; May 24<sup>th</sup>, **2017**; Accreditation and Quality Assurance Center, The University of Jordan, Amman, Jordan.
- Best Practices for Planning Educational Assessment and Curriculum Mapping (Workshop); March 5-6, **2017**; Al Ain University of Science and Technology, Abu Dhabi, United Arab Emirates
- The 4<sup>th</sup> Pharmacy Students Research Training Program; Aug. 28-31, **2016**; School of Pharmacy, The University of Jordan, Amman, Jordan. (Speaker)
- Academic Development Training Program; Jan. 18-25, **2015**; Accreditation and Quality Assurance Center, The University of Jordan, Amman, Jordan. (including courses about course design, intended learning outcomes, new trends in university teaching, student learning evaluation, university laws and regulations and code of practice for quality assurance)
- Plasma Medicine: a mini-course; July 12-13, **2012**; Edinburgh International Conference Center, Edinburgh, UK.
- QUB Postgraduate Training Programme; **2010-2013**; Queen's University Belfast, Belfast, UK. (including courses about: academic writing, project management, communication and presentation skills, reference management systems, research originality and plagiarism, SPSS, and basics of graphic design)