Achraf Al Faraj, Ph.D.
Chairperson – Department of Radiologic Sciences
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BIOGRAPHICAL SKETCH

Dr. Achraf Al Faraj received two M.S. degrees in Biomedical Engineering and in Microstructure Imaging in 2006 and 2008 respectively, and a Ph.D. degree in Biomedical Sciences and Engineering with emphasis in Biomedical Imaging in 2009, all from the University of Lyon 1, France. He then performed his Post-Doctorate Research Fellowship at the University of Paris 7 and served as a Medical Imaging Consultant at the European Hospital Georges Pompidou.

In 2010, Dr. Al Faraj joined King Saud University (KSU) in Saudi Arabia where he was appointed as Assistant Professor, and was promoted in 2015 to the rank of Associate Professor of Medical Imaging in the Department of Radiologic Sciences, College of Applied Medical Sciences. Dr. Al Faraj also served as the Director and the Principal Investigator of Nanomedicine, Molecular and Cellular Imaging Lab that he established in 2012 in KSU.

In 2016, Dr. Al Faraj joined the American University of Science and Technology (AUST) as Associate Professor of Medical Imaging to Chair the Department of Radiologic Sciences in the Faculty of Health Sciences (FHS). He is also serving as the Acting Chair of the Nursing Department at FHS.

Having a great passion in multidisciplinary biomedical research, Dr. Al Faraj is leading several generously funded international projects that aim to develop innovative approaches to promote the medical and healthcare sciences. During the last few years, he received more than 2 million USD as seed grants for scientifically approved research projects from the American Association for the Advancement of Science. In 2017, he received the Daniel Turnberg Middle East – UK Fellowship from The Academy of Medical Sciences, Wellcome Trust, United Kingdom, to perform research visit in King's College London, and in 2018 got the approval to perform a CNRS-LB research project.

Dr. Al Faraj research interests mainly focus on developing noninvasive multimodality imaging protocols for MRI and applying novel nanoparticles as drug delivery systems or nanomedicine for early and better diagnosis and therapy of various cancerous (i.e., breast, lung, etc.) and chronic pulmonary diseases (i.e., Asthma and COPD). Through collaborative research projects, Dr. Al Faraj is also interested in multidisciplinary biomedical research, focusing on evaluating the toxicity of nanomaterials, optimizing the biocompatibility of engineered scaffold for tissue engineering, and developing novel therapeutic strategies to tackle viruses via targeted delivery of specific mRNA-loaded nanocarriers.

Dr. Al Faraj has published more than 35 peer-reviewed articles in top International ISI-index journals, either as first and/or corresponding author, 40 conference proceedings presented in International

conferences, 1 book, and 1 patent registered in US Patent and Trademark Office. Dr. Al Faraj is also serving an invited reviewer in more than 10 top International journals.

Achraf Al Faraj, Ph.D.

LIST OF RECENT PUBLICATIONS

1. A. Sultana Shaik, A. Pasha Shaik, V. Bammidi, **A. Al Faraj**. Effect of Polyethylene Glycol Surface Charge Functionalization of SWCNT on the in vitro and in vivo Nanotoxicity and Biodistribution Monitored Noninvasively using MRI. Toxicology Mechanisms and Methods 2018. In press. IF: 1.994.

2. A.K. Malkawi, K. H. Alzoubi, M. Jacob, G. Matic, A. Ali, **A. Al Faraj**, F. Almuhanna, M. Dasouki, A. M. Abdel Rahman. Metabolomics Based Profiling of Dexamethasone Side Effects in Rats. Frontiers in Pharmacology 2018, Volume 9, Pages 46. IF: 4.400.

3. A. Pasha Shaik, A. Sultana Shaik, A. Al Majwal, **A. Al Faraj**. Blocking IL4-Alpha Receptor Using Polyethylene Glycol Functionalized Superparamagnetic Iron Oxide Nanocarriers to Inhibit Breast Cancer Cell Proliferation. Cancer Research and Treatment 2017 Apr; 49(2):322-329. IF: 4.245.

4. **A. Al Faraj**, A. Sultana Shaik, E. Ratemi, R. Halwani. Combination of drug-conjugated SWCNT nanocarriers for efficient therapy of cancer stem cells in a breast cancer animal model. Journal of Controlled Release 2016, Volume 225, 10 March 2016, Pages 240-251. IF: 7.703.

5. **A. Al Faraj**. SWCNTs as novel theranostic nanocarriers for cancer diagnosis and therapy: towards safe translation to the clinics. Nanomedicine 2016 Jun;11(11):1431-45. IF: 5.431.

6. R. Halwani, A. Sultana Shaik, E. Ratemi, S. Afzal, S. Al Muhsen, **A. Al Faraj**. A Novel Anti-IL4Rα Nanoparticle Efficiently Controls Lung Inflammation during Asthma. Experimental and Molecular Medicine 2016; 48, e262. IF: 5.164.

7. E. Ratemi, A. Sultana Shaik, **A. Al Faraj**, R. Halwani. Alternative Approaches for the Treatment of Airway Diseases: Focus on Nanoparticle Medicine. Clinical and Experimental Allergy 2016. Volume 46, Issue 8, August 2016, Pages 1033-1042. IF: 5.587.

8. **A. Al Faraj**, A. Sultana Shaik, B. Al Sayed, R. Halwani, I. Al Jammaz. Specific Targeting and Noninvasive Imaging of Breast Cancer Stem Cells using Single-walled Carbon Nanotubes as Novel Multimodality Nanoprobes. Nanomedicine 2016: 11(1), 31–46. IF: 5.431.

9. **A. Al Faraj**, A. Sultana Shaik, S. Afzal, S. Al-Muhsen, R. Halwani. Specific Targeting and Noninvasive Magnetic Resonance Imaging of an Asthma Biomarker in the Lung using Polyethylene Glycol functionalized Magnetic Nanocarriers. Contrast Media and Molecular Imaging 2016 May;11(3):172-83. IF: 3.333.

10. **A. Al Faraj**, A. Sultana Shaik, R. Halwani, A. Alfuraih. Magnetic targeting and delivery of drug-loaded SWCNTs theranostic nanoprobes to lung metastasis in breast cancer animal model:

noninvasive monitoring using Magnetic Resonance Imaging. Molecular Imaging and Biology 2016 Jun;18(3):315-24. IF: 2.774.

11. **A. Al Faraj**, B. Alotaibi, A. Pasha Shaik, K. Shamma, I. Al Jammaz, J. Gerl. Sodium-22 radiolabeled silica nanoparticles as new radiotracer for biomedical applications: in vivo PET imaging, biodistribution and biocompatibility. International Journal of Nanomedicine 2015:10 Pages 6293-6302. IF: 4.383.

12. **A. Al Faraj**, A. Sultana Shaik, A. Pasha Shaik. Magnetic SWCNT as efficient drug delivery nanocarriers in breast cancer murine model: noninvasive monitoring using diffusion-weighted MRI as sensitive imaging biomarker. International Journal of Nanomedicine 2015:10 157–168. IF: 4.383.

13. **A. Al Faraj**, A. Sultana Shaik, B. Al Sayed. Preferential magnetic targeting of carbon nanotubes to cancer sites: noninvasive tracking using MRI in a murine breast cancer model. Nanomedicine 2015. 10(6). IF: 5.824.

14. **A. Al Faraj**, A. Pasha Shaik, A. Sultana Shaik. Effect of surface coating on the biocompatibility and in vivo MRI detection of iron oxide nanoparticles after intrapulmonary administration. Nanotoxicology 2015; 9(7): 825–834. IF: 7.336.

15. A. Saad and **A. Al Faraj**. 3D Visualization of Iron Oxide Nanoparticles in MRI of inflammatory model. Journal of Visualization 2015. Volume 18, Issue 4 , pp 563-570.

16. **A. Al Faraj**, A. Sultana Shaik, M. Alnafea. Enhanced resolution of LPS-induced lung inflammation following M2 macrophages intrapulmonary administration: noninvasive monitoring using noninvasive free-breathing MR and CT imaging protocols. BMC Medical Imaging 2015, 15: 16.

17. A. Sultana Shaik, G. Das, A. Al Faraj. Nanomedicine – A targeted combat against cancer stem cells. Current research and future perspectives. LAP Lambert Academic Publishing 2015. ISBN: 978-3-659-66721-3

18. **A. Al Faraj**, A. Pasha Shaik, B. Al Sayed, A. Sultana Shaik. Enhanced Magnetic Delivery of Iron Oxide Nanoparticles to the Lung Monitored Using Noninvasive MR. Journal of Nanoparticle Research 2014. 16:2667. IF: 2.278.

19. **A. Al Faraj**, A. Sultana Shaik, S. Afzal, B. Al Sayed, R. Halwani. MR Imaging and targeting of a specific alveolar macrophage subpopulation in COPD animal model using antibody conjugated magnetic nanoparticles. International Journal of Nanomedicine. 2014:9 1491–1503. IF: 4.383.

20. **A. Al Faraj**, A. Sultana Shaik, M.A. Pureza, M. Alnafea, R. Halwani: Preferential macrophage recruitment and polarization in LPS-induced animal model for COPD: Noninvasive tracking using MRI. Plos One 2014; 3 (9). IF: 3.73.

21. **A. Al Faraj**, H. Kassim, K. Kezzar. 3D Image generation with a position-sensing gamma probe. US Patent and Trademark Office. US 9,568,612.

22. **A. Al Faraj**, R. Chinnappan, M. Zourob. Combination of anti-VCAM-1 and anti-IL4Rα aptamers conjugated nanoparticles for efficient breast cancer diagnosis and therapy. European Molecular Imaging Meeting 2019, Glasgow, UK.

23. **A. Al Faraj**, A. Sultana Shaik, R. Halwani. Efficient theranostic of Cancer Stem Cells using combined delivery of drug-conjugated SWCNTs nanocarriers. European Molecular Imaging Meeting 2017, Cologne, Germany.

24. **A. Al Faraj**, A. Sultana Shaik, R. Halwani. Targeting and Noninvasive MR Imaging of IL4Rα Asthma Biomarker in the Lung using magnetic nanocarriers. European Molecular Imaging Meeting 2017, Cologne, Germany.

25. **A. Al Faraj**, A. Sultana Shaik, R. Halwani: Enhanced targeting and sensitive noninvasive imaging of Single-Walled Carbon Nanotubes (SWCNTs) to breast cancer site as novel theranostic nanocarriers. European Molecular Imaging Meeting 2015, Tübingen, Germany.

26. **A. Al Faraj**, A. Pasha Shaik, A. Sultana: Effect of surface coating on the biocompatibility and in vivo MRI detection of iron oxide nanoparticles after intrapulmonary administration. European Molecular Imaging Meeting 2015, Tübingen, Germany.

27. **A. Al Faraj**, A. Sultana Shaik, B. Al Sayed. Magnetic Single-Walled Carbon Nanotubes (SWCNTs) as novel theranostic nanocarriers: enhanced targeting and noninvasive MRI tracking. ICNN 2015, Paris, France.

28. **A. Al Faraj**, A. Sultana Shaik, S. Afzal, B. Al Sayed, R. Halwani. Magnetic Nanocarriers for Specific Targeting and Noninvasive MR Imaging of IL4Rα Asthma Biomarker in the Lung. ICoN 2015, Limassol, Cyprus.

29. **A. Al Faraj**, A. Sultana Shaik, B. Al Sayed, R. Halwani. Specific targeting and noninvasive imaging of pulmonary diseases using Magnetic Resonance Imaging coupled with magnetic iron oxide nanoparticles. IWR 2015, Itanbul, Turkey.

30. **A. Al Faraj**, A. Sultana Shaik, R. Halwani: Specific alveolar macrophage targeting in LPS-induced COPD animal model using a free-breathing noninvasive MR imaging protocol coupled with the use of antibody-conjugated SPIO nanoparticles. ISMRM2014, Milano, Italy.

31. **A. Al Faraj**, Flexible Magnet for Improved Lung Delivery of Superparamagnetic Iron Oxide Nanoparticles (SPION): Noninvasive Tracking using MRI. World Molecular Imaging 2014, Seoul, South Korea.

32. **A. Al Faraj**, Enhanced tumor targeting of single-walled carbon nanotubes (SWCNT) in breast cancer model monitored using noninvasive MRI. World Molecular Imaging 2014, Seoul, South Korea.

33. **A. Al Faraj**, MR imaging and targeting of a specific alveolar macrophage subpopulation in COPD animal model using antibody conjugated magnetic nanoparticles. European Congress of Radiology 2014. Vienna, Austria.

34. **A. Al Faraj**, Enhanced Magnetic targeting of Single-Walled Carbon Nanotubes (SWCNTs) to breast cancer site as novel theranostic nanocarriers: noninvasive tracking using MRI. ICNNN 2014. Hong Kong.