

CURRICULUM VITAE

Rasoul Abdullah Mahdi Al-Majmaie

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EXPERIENCE:

University College Dublin (09/2010-05/2015)

PhD in Biophysics, School of Physics

Title: Photodynamic cancer therapy using gold nanoparticles: new techniques for intracellular localization and apoptosis detection

Advisors: Dr. Dominic Zerulla, School of Physics,
Prof. Mohamed Al-Rubeai, School of Chemical and Bioprocess engineering

Collaboration: Dr. James Rice, Dr. Eamonn Kennedy, UCD School of Physics

- Preparation and characterization of gold nanoparticles for photodynamic therapy (PDT) of cancer cells and investigating the cell death mechanism that was induced by PDT.
- Using of a nanoscale resolution chemical imaging method, infrared (IR) nanospectral absorption imaging, to map the subcellular localization of a photosensitizer- gold nanoparticles conjugates within nanoscale subsections of cancer cells.
- AFM imaging for investigating the morphological properties of cancer cells during apoptosis that was initiated by PDT using photosensitizer-conjugated gold nanoparticles.

Additional research works:

- Energy metabolism study of colon cancer cells during interaction with different sizes of Gold nanoparticles.
- Investigation of the expression pattern of miR-7 in a group of GS-CHO clonal cell lines with varying levels of productivity over the entire course of batch culture.
- Enhancement of monoclonal antibody production in CHO cells by exposure to He-Ne laser radiation.
- Cultivation of Mouse Gastric Stem Cells on Novel Microporous ImmobaSil Microcarriers.
- The use of surface enhanced Raman scattering (SERS) as a non-destructive tool for detection and localisation of Porphyrin-Gold nanoparticles (GNP) conjugates at the subcellular level.
- Participated in Specialised Cell Carrier Components project.

University of Baghdad (09/2004-present)

Research Assistant, Assistant Lecturer

- Assistant Lecturer in Institute of Laser for Postgraduate Studies, University of Baghdad, Iraq.
- Being part of a team for installation, maintenance and service of Medical Laser System.
- Microbiologist in Microbiology lab. , Biomedical application department, Institute of Laser for Postgraduate Studies
- Financial Manager in Institute of Laser for Postgraduate Studies, University of Baghdad, Iraq..
- Member of the Iraqi Laser Network (ILN), Baghdad – Iraq.

EDUCATION:

PhD Biophysics

University College Dublin, Ireland
(05/2010- 05/2015)

MSc Biophysics

University of Baghdad, Iraq
(09/2000-05/2004)

BSc Biology/ Microbiology

University of Baghdad, Iraq
(09/1995-09/1999)

AWARDS:

IDB MERIT SCHOLARSHIP PROGRAMME

(Doctoral scholarship)

SKILLS:

Cell culture:

Familiar with bacterial and yeast system. Experienced in maintaining and expanding Chinese hamster ovary cells (CHO), breast cancer cell, Co culture of a hepatocyte (C3A) and an endothelial (HUVEC) cell lines, hematopoietic stem cell, and mesenchymal stem cell.

Molecular biology:

DNA and RNA isolation, PCR, qPCR, PCR array, western blot and recombinant protein expression (mammalian cells).

Analytical:

Protein purification, biochemical assays, flow cytometry, light and fluorescence microscopy, Confocal microscopy, Atomic force microscopy, Transmission electron microscopy, Raman spectroscopy, Photodynamic therapy, Nanoparticles, biostatistics, ELISA and Singlet oxygen measurements.

LANGUAGES: English and Arabic

LIST OF REFEREES: Upon request

PUBLICATIONS:

- Al-Majmaie, Rasoul, Eamonn Kennedy, James H. Rice, Mohamed Al-Rubeai, and Dominic Zerulla. AFM-based bivariate morphological discrimination of apoptosis induced by photodynamic therapy using photosensitizer-functionalized gold nanoparticles (Submitted to Scientific Reports)
- Zedan, Wahed, Rasoul Al-Majmaie, and Mohamed Al-Rubeai. Impact of the age of CHO cell culture on the dynamically changing patterns of miR-7 expression (Submitted to Journal of Biotechnology)
- Kennedy, Eamonn, Rasoul Al-Majmaie, Mohamed Al-Rubeai, Dominic Zerulla, and James H. Rice. "Quantifying nanoscale biochemical heterogeneity in human epithelial cancer cells using combined AFM and PTIR absorption nanoimaging." *Journal of biophotonics* 8, no. 1-2 (2015): 133-141.
- Ghaleb, Rana, Mariam Naciri, Rasoul Al-Majmaie, Amel Maki, and Mohamed Al-Rubeai. "Enhancement of monoclonal antibody production in CHO cells by exposure to He-Ne laser radiation." *Cytotechnology* 66, no. 5 (2014): 761-767.
- Kennedy, Eamonn, Rasoul Al-Majmaie, Mohammed Al-Rubeai, Dominic Zerulla, and James H. Rice. "Nanoscale precision subcellular chemical identification using quantitative IR nanoimage analysis based on multiple-IR laser illumination." In *Lasers and Electro-Optics (CLEO), 2014 Conference on*, pp. 1-2. IEEE, 2014.
- Kennedy, Eamonn, Rasoul Al-Majmaie, Dominic Zerulla, Mohammed Al-Rubeai, and James H. Rice. "Human epithelial cancer cells studied using combined AFM-IR absorption nanoimaging." In *SPIE Photonics Europe*, pp. 91291M-91291M. International Society for Optics and Photonics, 2014.
- Al-Majmaie, Rasoul, Nebras Alattar, Eamonn Kennedy, Mohamed Al-Rubeai, James H. Rice, and Dominic Zerulla. "Raman spectroscopy for intracellular localisation of meso-tetraphenylporphyrin-gold nanoparticles conjugates." In *SPIE NanoScience+ Engineering*, pp. 88150K-88150K. International Society for Optics and Photonics, 2013.
- Kennedy, Eamonn, Rasoul Al-Majmaie, Mohamed Al-Rubeai, Dominic Zerulla, and James H. Rice. "Nanoscale infrared absorption imaging permits non-destructive intracellular photosensitizer localization for subcellular uptake analysis." *Rsc Advances* 3, no. 33 (2013): 13789-13795.
- Al-Alattar, Nebras, Rasoul Al-Majmaie, Ilona Kopf, Silvia Giordani, and James H. Rice. "Investigation of covalent functionalized single-wall carbon nanotubes using surface-enhanced Raman scattering." In *SPIE Photonics Europe*, pp. 84351P-84351P. International Society for Optics and Photonics, 2012.
- Al-Majmaie, Rasoul, Nebras Alattar, Dominic Zerulla, and Mohamed Al-Rubeai. "Toluidine blue O-conjugated gold nanoparticles for photodynamic therapy of cultured colon cancer." In *SPIE Photonics Europe*, pp. 842722-842722. International Society for Optics and Photonics, 2012.
- Yasemin Z. Ibrahim Ayad G. Anwer, Rasoul Al-Majmaie and Aunce A. Mohammed. "Intra Cellular Fluorescence for Monitoring The Physiological Changes and Biostimulation of Yeast Irradiated with Low Power 532nm CW Nd:YAG Laser." *Iraqi Journal of Laser* 10, no. 1(2011): 31-39.

- Al-Majmaie, Rasoul, and Aunce A. Mohammed. "Photodynamic Inactivation of Candida Albicans Sensitized by Malachite Green." *Iraqi Journal of Laser* 9, no. 2 (2010): 31-36.
- Al-Majmaie, Rasoul, Salem R. Hamodi and Khalil I. Hajim. "In vivo N2 Laser Effect on Lymphocyte Transformation Capacity and Phagocytosis Activity in Mice." *Iraqi Journal of Laser* 5, no. 1(2006): 27-33.

PRESENTATIONS:

- Al-Majmaie, Rasoul, Nebras Alattar, Dominic Zerulla, and Mohamed Al-Rubeai. *Toluidine blue O-conjugated gold nanoparticles for photodynamic therapy of cultured colon cancer*. SPIE Photonics Europe, Brussels, Belgium, 2012.
- Al-Majmaie, Rasoul, Nebras Alattar, Eamonn Kennedy, Mohamed Al-Rubeai, James H. Rice, and Dominic Zerulla. *Raman spectroscopy for intracellular localisation of meso-tetraphenylporphyrin-gold nanoparticles conjugates*. SPIE Optics + Photonics, San Diego, CA, United States.