ASHRAF M. M SAWAFTA, PhD

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Education

- University of Paris 6, France, **PhD,** Molecular Genetics and Cloning 2008 **(**Honorable)
- The Hebrew University of Jerusalem **M.Sc**. in Molecular Biotechnology 1999 (Excellent)
- An Najah National University, Palestine **B.Sc**. in Plant Biology 1996 (Very Good)

Positions

- 1992-1996 B.Sc. Plant Productions and Protection, An Najah National University
- 1996-1997 Specialized training, project management and proposal writing. Italy
- 1997-1999 Master studies: Cell and tissues cultures: Biotechnology and genetic engineering, Rehovt, Israel.
- 1999-2000 Agronomist, United Nation Development Programs UNDP/PAPP
- 2001-2003 Instructor, Department of Biotechnology, Arab American University (aauj) Jenin Palestine
- **2004-2008 Junior investigator (Ph. D Student): Research subject: Design of vectors for the Expression of shRNA in Transgenic Animals. Laboratory of "Biologie du Développement et Reproduction (BDR)", INRA Jouy-en-Josas, France**
- **2009-2012 Assistant Professor, Center of Research and Excellence in Nanobiosciences and Nanoengineering, Joint School of nanosciences and nanoengineering NC27412, USA**
- **2010-2012 Manager & coordinator for the Center of Research and Excellence in Nanobiosciences 203, Eberhart Building University of North Carolina at Greensboro NC 27412, USA**
- **2012-present Assistant professor at An Najah National University, Nablus Palestine**

Teaching interests

My teaching interests relate to immunology and inflammatory mechanisms in a variety of disease states as well as molecular genetics of cancer diseases.

My research interests

For the last five years I have been working on development of smart novel hybrid nanomaterials for biosensors, cancer applications and diagnostics. My research involves aptamer selection (DNA, RNA and cell based selection) for target proteins and receptors on the surface of cancer cells.

Our research group focuses on the:

- Development of an aptamer platform technology for imaging, disease diagnostic and curing.
- Development of Specific target drug delivery (through bio-conjugation of aptamers to nanomaterials and drugs)
- Construction of novel nucleic acid aptamer-conjugated nanostructures for rare protein capturing, biosensor development and targeted cancer therapy.
- Development of rapid detection of Mild Brain Trauma (TBI)

- Development of detection methods for atherosclerotic plaque by magnetic resonance imaging using biomarker-targeting contrast agents
- Development of drug discovery platform based on natural products.
- We are looking at how cancer cells are able to affect the immune cell's DNA and RNA.

Because of the experience that I have been able to acquire in the past three years, I believe I would be able to initiate a multidisciplinary research group with physicists, chemists, biologists and biotechnologist. In addition I can teach courses in more than one department such as Biology and Biotechnology, Physics, Chemistry and Medicine such as biotechnology, nanotechnology, nanobiosciences, instrumentation and other biology and molecular biology, biochemistry, molecular and nanomedicine medicine etc….

Media coverage of my research

http://www.uncg.edu/cha/new-format/chancellor_report/2011/JSNN.html
http://sports.espn.go.com/action/freeskiing/news/story?id=5985987
http://www.cbssports.com/mcc/blogs/entry/22475988/27696073
http://www.news-record.com/content/2011/01/17/article/joint_center_plans_tool_to_detect_concussions

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Teaching

- **Medical and Molecular genetics, Advanced Molecular biology (For Master students), Selected Topics in Immunology & Nanomedicine (Allied medical department) at An Najah national university**
- Various Immunology, Advanced molecular biology-focused, Molecular basis of diseases (Cancer, Inflammatory and allergy), Cancer Biology, Molecular genetics, Epigenetic, Advance molecular biology and molecular techniques, Nanotechnology and Nanobiosciences lectures **for Nanotechnology Ph.D students, Joint School of nanosciences and nanoengineering, NC 27412, USA**

- Nanolaboratory lab rotation. Coordinate and supervise lab rotation for 5-6 students per semester
- Nanoimmunology, Allergy, Asthma, Cancer Cell Inflammatory Responses, Clinical Immunology
- Cell culture and Tissue engineering, Nanotechnology instrumentation courses for Ph.D students (include training students on using sophisticated instruments (Scanning Electron Microscopy/Energy Dispersive X-ray Spectroscopy (SEM/EDS), Inductively coupled plasma optical emission spectroscopy (ICP), Confocal laser scanning microscopy, Zeta potential, Differential Scanning Calorimetry and Thermogravimetric Analysis (DSE and TGA), Flow Cytometry (FCM), Cellometer Automated Cell Counters and other instruments.

- Biotechnology I&II, Applied Biotechnology , Recombenent DNA technology
- Participated in the Nano-biology and Nano-medicine courses for Ph.D students.
- General Biology, Animal biology, Plant Physiology, Arab American University of Jenin, Palestine

Specialized Training

- FACSAria III Flow Cytometry training course held at BD head quarter in Saint Jose California from November 15 till November 20, 2010.
- Certified Flow Cytometry **TRAINER** from **BD** Biosciences
- Training on virus (HIV/ADIS) targeting and prevention strategies held at Laboratory for Immunology and Molecular Medicine, Office of Research, 206 Eberhart Building, University of North Carolina at Greensboro
  Greensboro, NC 27402-6170.
- Water treatments and purification technologies training at QuarTek Corporation 4180 Piedmont Parkway Greensboro, NC 27410 USA. 2009/2010

- Preparation and characterization of nanoparticles that have antimicrobial properties training at QuarTek Corporation 4180 Piedmont Parkway Greensboro, NC 27410 USA. 2009/2010

- Training on phase change material at Quartek Corporation 4180 Piedmont Parkway Greensboro, NC 27410 USA. 2009/2011

- Professional training course for " Agriculture, Agro - Industrial and Environmental - Turistic. From 21st Sep. to the 13th Dec. 1996 in Italy.
- Advanced microbial techniques training include bacterial culture, identification, transformation techniques, chromosomal DNA and plasmid extraction, plasmid curing and others: University Bielefeld, Germany. **2001**
- Modules OBI-1, 2, 3,4: Modules d'Informatique et de BioInformatique de Formation Permanente et de 3ème cycle pour les Ecoles doctorales de Biologie

- Vocational Training Structure Followed by a Course about Breeding, Pathology and Selection of APIS MILLEFERA LIGISTICA (Spin) in Italy.
- Biodiversity information systems training at Global (Management Consulting Group) Ramalla, 1999.
- Eco- geographic and Botanical survey specialized training course. Organized by the international center for agriculture research in dry areas (**ICARDA**) Aleppo, Syria and sponsored by the project on conservation and sustainable use of dry land agro-biodiversity in Jordan, Lebanon, Palestinian authority, and Syria. (**GEF/UNDP/ICARDA/IPIGRI/ACSAD)** from February 6, 2000 to February 17, 2000.
- Vegetation Survey, Analysis and Mapping held at Ramat Hanadiv and En Afeq Nature Reserve, under the anspices of the Israel nature and Parks Authority, 9-13 April 2000.
- Phytopathology Experimental and Theoretical training with special emphasis on Gram-positive, tomato – pathogenic Bacterium Clavibacter michiganensis subsp. Michiganensis. University of Bielefeld, Biology Faculty / Gene Technology Department. Germany from January 15 - April 16, 2001.

Technical Skills

- **Laboratory skills:**
  - Molecular Immunology Antibodies. Antibody uses: Elisa, Nephelometry, Radioimmunology Cellular Immunology Cytometry, Cellometer Tissue and Cell Immunology Microscopy,

Immunohistology
- Molecular biology and microbiology
- Biochemistry
- Bio-conjugate Techniques
- Mammalian and Plant Cell Culture (Transfection and analysis)
- RNA interference design
- Animal studies (experience with rats and mice) & Transgenic mice generation and engineering
- Aptamers selection and validation as therapeutic agents (**The complete Selex Process**)
- Nanoparticles preparation and characterization (size, charge and prosperities)

- **Instrumentation**
  - FACSAria III and Guava EasyCyte flow cytometry (FCM)
  - Automated Cell Counters (cellometer)
  - Confocal and inverted laser scanning microscopy
  - Scanning Electron Microscopy/Energy Dispersive X-ray Spectroscopy (SEM/EDS)
  - Malvern Instruments ZEN 3600 Zetasizer Nano-ZX
  - Inductively coupled plasma optical emission spectroscopy (ICP)
  - Differential Scanning Calorimetry and Thermogravimetric Analysis (DSE and TGA)
  - Real time PCR
  - Zeiss Orion Helium Ion Microscope
  - Zeiss Cell Observer Confocal Microscope
  - Varian 610 FT-IR Spectrometer with Raman Module

- **Bio-computing:**
  - Sequence analysis: NCBI, BAST, and FASTA, BioEdit
  - Sequence database
  - Phylogeny
  - Software (Clone manager, Clustal, CellQuest, FACSDiva, EndNote, GraphPad Prism …etc)

Master students supervisions
During the last two years I supervised more that 5 master students, they all successfully defended their research and graduated.

- **Other computer skills**:
  - MS Word, MS xls, MS PPT, MS access, etc
  - Operating system: Lunix, Windows and Mac OS

Languages:
- Arabic (maternal language)
- English, French (Very good)

Publications

Peer-reviewed Papers

1. Molecular Interactions of Fullerene Derivatives in Human Serum and Inflammatory Cells

Anthony L. Dellinger, Zhiguo Zhou, Darren MacFarland, Marinella G. Sandros, **Ashraf Sawafta** and Christopher L. Kepley. *Insciences J.* 2011, 1(3), 102-114;doi: 10.5640/insc.0103102

2. Co authored with Professor Reyad Sawafta a white paper entitled "Pharmaceuticals in Drinking Water"

3. **Ashraf Sawafta**; Nathalie Daniel-Carlier; Mathieu Leroux-Coyau; Dominique Thépot;Sonia Prince; Bruno Passet; Geneviève Jolivet; Louis-Marie Houdebine: Viral infection resistance conferred on mice by siRNA transgenesis. Transgenic Res (October 2012) DOI 10.1007/s11248-012-9649-4

4. Characterization and biological activities of two copper (II) complexes

With dipropylenetriamine and diamine as ligands

Mousa AL-Noaimia*, Mohammad I. Choudharyb,c, Firas F. Awwadid, Wamidh H. Talibe, , Taibi Ben Haddaf, Sammer Yousufc, **Ashraf Sawaftag**, Ismail Waradh*

Submitted for publication in peer-reviewed journals

1. NF-κB-Dependent Prevention of Atherosclerotic Foam Cell Formation by Fullerene-Based Nanomedicines (submitted to **Circulation Journal** impact factor 14.5)

   Anthony L. Dellinger BS[1], , Ashraf Sawafta, PhD[2], Marinella Sandros PhD[2,] Patty Elkins, BS[2], and Christopher L. Kepley PhD MBA[2]

2. Detection of atherosclerotic plaque by magnetic resonance imaging using biomarker-targeting contrast agents (submitted to **Radiology** Impact factor 6.066**)**
   Anthony Dellinger, B.S.[2], Kerry Link, MD[1], Marinella Sandros, PhD[3], Ashraf Sawafta, PhD[3], PhD[3], and Christopher L. Kepley, PhD, MBA[3]

3. Biomarker Diagnostics for TBI: Recent Progress and Future Directions (Journal of Neurotrauma)

Manuscripts under preparation (very close to submission)

1. Cytotoxic Activities of the Aqueous Cactus pear Extract on Human Malignant Melanoma Skin Cancer C32 amelanotic Cell Line by Induction of Apoptosis
2. Inhibition of inflammatory biomarkers by natural extracts

3. Aptamers as new diagnostic tool for traumatic brain injury (TBI)
4. Article review Phase change materials past and future

Meeting:

1. Join Agilent Technologies' Specialists and Application Engineers to learn the latest tricks of the trade.

Hilton Raleigh Durham Airport @ Research Triangle Park 4810 Page Creek Lane Durham, NC 27703

2. Design of vectors for the Expression of siRNA in Transgenic Animals; 15-16 Mars 2005 Tours, France

3. Quantifications of small Interfering RNA both in vitro and in vivo using real time PCR; 22 November 2007 Tours, France.

4. Mise au point de vecteurs permettant une expression fiable de gènes codant pour des ARN interférents et des microARN, Séminaire AGENAE 28-29 mars 2006 Futuroscope (Poitiers)

References

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