NOAF ALWAHAB
Curriculum Vitae
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EDUCATION

- **Ecole Polytechnique Fédérale de Lausanne**, *Lausanne, Switzerland, Fall 2015-Present*
  - MA in Life Sciences and Technologies specializing in Neurosciences and Neuroengineering
  - Coursework includes: Molecular Neuroscience, Cellular Neuroscience, Cognitive Neuroscience, In-silico Neuroscience, Sensorimotor Neuroprosthetics, Data Analysis and Model Classifications and Signal Processing for Functional Brain imaging.

- **Khalifa University of Science, Technology and Research**, *Abu Dhabi, UAE, Fall 2010- Spring 2014*
  - B.Sc. in Biomedical Engineering, received in June 2014, CGPA 3.80/4.00, Major GPA 3.89/4.00 with highest honors
  - Coursework includes: Problems in Biomedical Engineering, Biomedical Engineering Fundamentals, Physiological Systems and Modeling, Digital Signal Processing, Organic Chemistry, Biochemistry, Molecular and Cellular Physiology, Tissue Engineering, Biomaterials, Biomechanics and Bio-transport Phenomena

- **Al Najah Private School,** *Abu Dhabi, UAE, June 2010*
  - Earned high school diploma with focus on natural sciences coursework
  - Earned Ordinary-level General Certificate of Education (O-levels GCE) with 7 subjects and Advanced-level General Certificate of Education (A-levels GCE) with 3 subjects (Edexcel Board)

RESEARCH EXPERIENCE

- **R&D intern at Aleva Neurotherapeutics,** *Lausanne, Switzerland, Summer 2016-Winter 2017*
  Performing *in vitro* and *in vivo* experiments as well as data analysis to characterize different stimulation and recording protocols using a novel deep brain stimulation system

- **Research assistant volunteer at the Cell Biology and Tissue Engineering lab under the supervision of Profs. Nicolas Christoforou and Jeremy Teo,** *Khalifa University, Summer 2014-Summer 2015*
  - Studying the behavior of Human Dermal Fibroblasts (NHDFs) on collagen gels with varying stiffness and ECM components in order to deconstruct and optimize the fibroblast's microenvironment for NHDF cell sheet engineering
  - Attempting to chemically induce mesenchymal-to-epithelial transition in Human Fibroblasts (HFFs) by manipulating TGFβ, RTK and WNT signaling pathways through small molecule enzyme inhibitors and epigenetic modifiers
  - Carried out transdifferentiation protocols of NHDFs into Skeletal Muscle Cells (SMCs) and primary neurons through gene transfections and optimization of transdifferentiation efficiency using various combinations of small molecules and growth factors
  - Acquired training in cell culturing techniques, immunofluorescence, MTT and live/dead assays, lentiviral preps, mini/maxi preps, 2D/3D hydrogel synthesis and fluorescent microscopy imaging

- **Senior Design Project: A Micro-fabricated device for stiffness-based cell characterization,** *Khalifa University, Fall 2013-Spring 2014*
  Designed a microfluidic device that sorts different populations of cells by utilizing the concept of conservation of momentum upon the collision of viscoelastic spheres against a rigid surface

- **Summer intern at the Bioengineering Department at the Sheikh Zayed Research Institute at Children's National Medical Center**, *Washington DC, Summer 2013*
  - Modified the design of an MR-compatible, patient mounted robot to incorporate motion with 4 Degrees of Freedom
  - Collected and analyzed data using MATLAB for a low-cost, acoustic sensor used to detect fetal heart sounds

- **Undergraduate Research Project: Flow characterization of Cerebral Spinal Fluid in Alzheimer's Patients,** *Khalifa University, Spring 2013-Summer 2013*
  Developed a MATLAB-based, 3D tracking algorithm characterizing the flow of CSF in the lateral ventricles of the brain to account for the effect of varying sizes of ventricles on the CSF flow between Alzheimer's and healthy subjects. This project was done under the supervision of Dr. Jeremy Teo and in collaboration with Dr. Isabelle Magold at EPFL, Switzerland

- **Global Undergraduate Research Program at Georgia Institute of Technology,** *Atlanta, Summer 2012*
  Trained in cell culturing techniques and animal dissection for research purposes as well as shadowed a research assistant working on blood flow characterization of Bicuspid Aortic Valve patients in Prof. Ajit Yoganathan's lab

- **Undergraduate Research Project: Zein-based oral drug delivery system targeting activated macrophages,** *Khalifa University, Spring 2012-Fall 2012*
  Designed drug formulations to deliver Catalase and Super Oxide Dismutase (SOD), and maintain their enzymatic activity through the harsh environment of the GI tract in order to scavenge Reactive Oxygen Species (ROS). This project was done under the supervision of Assist. Prof. Sungmun Lee

- **Freshman Summer Research Project: Evolutionary Development of the Brain and Control of Body Temperature in Mammals,** *Khalifa University, Summer 2011*

  Compiled research material regarding studies being done on the evolution and development of the mammalian brain, and trained in writing and presenting scientific work. This project was supervised by Assoc. Prof. Abdel Isakovic

PUBLICATIONS

- **Peer-reviewed articles**
  - Alhussein, G., Shanti, A., Farhat, I.A., Timraz, S.B., Alwahab, N., Pearson, Y.E., Martin, M.N., Christoforou, N. and Teo, J., 2016. A spatiotemporal characterization method for the dynamic cytoskeleton. *Cytoskeleton*, *73*(5), pp.221-232.
  - Lee, S., Alwahab, N.S.A. and Moazzam, Z.M., 2013. Zein-based oral drug delivery system targeting activated macrophages. *International journal of pharmaceutics*, *454*(1), pp.388-393.
  - Boularaoui, S.M., Abdel-Raouf, K., Alwahab, N.S.A., Kondash, M.E., Truskey, G.A., Teo, J.C.M. and Christoforou, N., 2017. Efficient transdifferentiation of human dermal fibroblasts into skeletal muscle. *Journal of Tissue Engineering and Regenerative Medicine*.
- **Book chapters**
  - Christoforou, N., Teo, J.C.M., Alwahab, N.S.A. and Boularaoui, S., 2016. Heart-Myocardium. In: L. Sang, J. Yoo & A. Atala. eds. *In Situ Tissue Regeneration and Regenerative Medicine*. Elsevier.

ACHIEVEMENTS AND AWARDS

- Awarded the Bertarelli fellowship in Translational Neuroscience and Neuroengineering at Harvard Medical School, *Spring 2016*
- Awarded Full Merit-based Scholarship by Khalifa University, *Fall 2010-Spring 2014*
- The President's List of honors for outstanding academic achievement, *Spring 2014*
- Selected for the Global Undergraduate Research Program at Georgia Institute of Technology based on high academic achievement, *Summer 2012*

TEACHING EXPERIENCE

- Volunteered as a tutor for math, physics and chemistry courses as part of the Khalifa University Peer Tutoring program for 3 consecutive semesters, *Spring 2011-Spring 2012*

ORGANIZATIONAL AND VOLUNTEER ACTIVITIES

- Participated in the first medical hackathon for a mobile application design targeting child obesity at the Children's National Medical Center, Washington DC, *Summer 2013*
- Student organizer of the first Neuro-rehabilitation conference in UAE, *Spring 2012*
- Member of the Student Advisory Group of the Biomedical Engineering Department in Khalifa University, *Spring 2012-Spring 2013*

PROFESSIONAL AFFILIATIONS

- Member of the Biomedical Engineering Society (BMES) chapter in Abu Dhabi, *Spring 2012-Spring 2014*
- Member of the Institute of Electrical and Electronic Engineering (IEEE) chapter in Abu Dhabi, *Spring 2011-Spring 2014*
- Member of American Society of Mechanical Engineers (ASME) chapter in Abu Dhabi, *Fall 2010-Spring 2014*

SKILLS

- **Programming skills:** C++, MATLAB/SIMULINK, Multisim, LabVIEW
- **Design skills:** SolidWorks, adobe Illustrator, Ansys, Prism, Layout Editor
- **Language skills:** Fluent in Arabic and English (TOEFL IBT Score: 111), and intermediate French speaker

REFERENCES

Nicolas Christoforou, Ph.D
Assistant professor, Biomedical Engineering
Khalifa University, Abu Dhabi, UAE
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Stephen P. DeWeerth, Ph.D
Associate Dean for Research; Professor of Bioengineering
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