***Curriculum Vitae: Siba M. Yousef Shanak***

***Address:***

Siba Shanak

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***Personal Information:***

• ***Name:*** Siba M. Y. Shanak (Ismael)

• ***Date of Birth:*** September 24, 1985

• ***Place of Birth:*** Abu Dhabi/ United Arab Emirates

• ***Marital Status:*** Married, with four children

• ***Nationality:*** Palestinian

***Education:***

• PhD in Bioinformatics (magna cum laude) at the Saarland University, Saarbrücken, Germany, January, **2015**.

*Title of the PhD Thesis:*

“Dynamics of epigenetic reader proteins and their interplay with expression in development”.

• M.Sc. in Computational Molecular Biology/ Bioinformatics (Honor’s degree), Saarland University, Saarbruecken, Germany, **2009.**

*Title of the M. Sc. Thesis:*

“On the Origin of Genomic Imprinting”

• B.Sc. in Biology and Biotechnology (Honor’s degree), Arab American University, Jenin, Palestine, **2006.**

GPA: 3.99 out of 4 with an ‘excellent’ standing; first ranked in the Department of Biology and Biotechnology, the Faculty of Arts and Sciences, and the University of AAUJ. B.Sc. was finished in 3 years (normal duration= 4 years)

• Secondary School Leaving Certificate (Tawjihi) – Scientific Stream
Ya’bad Secondary School, **2003/** Palestine

Average: 97.1%

***Academic Honors:***

* Al-Maqdesi fellowship, 2019.
* PALGER fellowship, 2017**.**
* Zamalah fellowship for a scientific research visit 06/2017-08/2017, Germany.
* Internal funding for scientific research, AAUJ, 2016.
* Scholarship for a PhD Program *in Germany* by the German Academic Exchange Service (DAAD, **D**eutscher **A**kademischer **A**ustausch **D**ienst), **08/2012 – 01/2015.**
* Scholarship for an M.Sc. Program *in Germany* by the German Academic Exchange Service (DAAD, **D**eutscher **A**kademischer **A**ustausch **D**ienst), **03/2008 - 09/2009.**
* Scholarship for a B.Sc. Program in AAUJ by the Palestinian Ministry of Higher Education, **09/2003- 06/2006**.

***Professional Experience:***

***In the Academic Year 2006- 2007:***

Lab technician within the department of Biology and Biotechnology at the Arab American University- Jenin with an excellent performance.

Labs prepared:

- In Fall Semester 2006/2007: Biology Lab I, Biology for Medical Students Lab, Biochemistry Lab, Immunology Lab, and Animal Biology Lab.

- In Spring Semester 2006/2007: Plant Cell Culture Techniques, Biology for

Medical Students Lab, Biochemistry Lab, and Genetics Lab

***In the Academic Year 2007- 2008:***

Research assistant (Winter Semester 07/08; August 2007 – February 2008) in the work group of professor Volkhard Helms, Department of Computational Biology, Saarland University, Germany in the field of Computational Analysis of Genomic Imprinting.

***In the Academic Year 2008- 2009:***

Practical Experience (Winter break 08/09; March 2009) at the University Hospital of Heinrich-Heine University- Düsseldorf, Germany in the field of DNA isolation, Nanodrop technology for DNA quantification and detection of quality, Bisulfite treatment for the detection of differential methylation as well as Real-Time PCR.

***In the Academic Year 2009- 2010:***

- Practical experience in the labs of the department of Biology and Biotechnology at the Arab American University- Jenin after fulfilling my vacation for the Master’s study. I dealt with genetics, recombinant biology and biochemistry labs.

- Teaching some courses in the department of Biology and Biotechnology at the Arab American University. These included:

 - in Fall Semester (1st, FS) 2009/2010: Biology Lab I, and Biology for Medical Students Lab

- in Spring Semester (2nd, SS) 2010: Biology II labs, and Bioinformatics and Computational Biology course

- in Summer semester, 2010: Biology I Lab.

***September 2010- July 2012:***

- Instructor in the department of Biology and Biotechnology at the Arab American University- Jenin (then on leave vacation)

- Internal Evaluator for Zuhair Hijjawi Awards for Scientific Research - 2011.

***August 2012- January 2015:***

 PhD student at the Chair of Computational Biology- Workgroup Prof. Dr. Helms.

***January 2015- present:***

Assistant Professor at the Arab American University- Jenin/Palestine.

***August 2019- present:***

Dean- Faculty of Science- the Arab American University- Jenin/Palestine.

***September 2015- August 2016:***

Head of the Department of Biology and Biotechnology- Arab American University/Jenin.

***Research Areas:***

* Molecular Dynamics Simulations of protein-DNA complexes.
* Machine learning for Next-Generation Sequencing data; exon usage, Analysis of RNA-Seq and ChIP-Seq data.
* Study of Genomic Imprinting; including:

- Working on housekeeping genes with the group of V. Helms (2009) under the supervision of B. Hutter and M. Paulsen.

- Prediction of the functional networks for the imprinted genes known so far in human; analysis of the expression arrays, array normalization, etc.

* Plant Cell Culture Techniques
* Animal Tissue Engineering
* Cell-free extracts; targeting DNA methylation, biochemistry tools
* Recombinant DNA technology
* Biochemistry tools

***Research Interests:***

* Continuous and stochastic simulation for the cellular processes.
* Machine learning for the prediction of possible genetic diseases and disorders, including SNPs, missense mutations, differential methylation, etc.
* Docking
* Modeling of biological databases
* Study of *in silico* drug optimization through pharmacokintetics, pharmacodynamics, and ADMET properties.
* Next-Generation Sequencing.

***Taught Courses (Starting from September 2010- now):***

- Bioinformatics and Computational Biology

- Bioinformatics (Graduate MSc course)

- Biochemistry I

- General Biochemistry

- Biochemistry I Lab

- Biology for Medical Students

- Biology Lab for Medical Students/Sciences

- General Biology I

- General and Cell Biology for Medicine Students

- General Biology I Lab

- General Biology II Lab

- Seminar

- Undergraduate Research

***Teaching Capabilities:***

Topics in Bioinformatics, including *in silico* drug prediction, statistical analysis for cancer prediction, protein interaction prediction, dynamic simulation for cellular response to different stimuli, etc. Also, I am able to teach different topics at the bachelor’s level in the field of biology and biotechnology with high potential.

***Computer Skills:***

- Different programming languages, including C++, R statistical language, and Python.

- Linux scripting, html scripting and parsing, xml, etc.

***Workshops, meetings and conferences:***

- PGSB Cooperation Workshop, (Julich Research Center), 9/5/2017, Palestine Technical University- Kadoorie.

- Conference of Genomics and Bioinformatics, 13-15/11/2016; Emirates University; United Arab Emirates (*Invited speaker*).

- Fifth Palestinian Conference on Modern Trends in Mathematics and Physics, organizing committee, 31.07-2.08/2016.

- The Fourth Conference on Biotechnology Research and Application in Palestine, scientific and organizing committees, 21.03.2016, The Arab American University- Jenin.

- Hünfeld meetings in Function, Structure and Dynamics of Biomolecules; April, 2013 (poster presented) and April, 2014 (oral presentation)

- 552 WE-Heraeus Seminar in Physics of Biomolecular Folding and Assembly: Theory meets Experiment 02 – 06 February 2014 in the Physikzentrum Bad Honnef/Germany (poster presentation).

- SFB 1027 Seminars in September 2013 (poster presentation).

* + Meeting for DAAD Scholarship holders was organized in Cologne: 20-22 March
	+ 2009 and October, 2012; with academic workshops for the academic and cultural exchange between home country and German society as well as several seminars in scientific and cultural fields.

***Languages:***

• ***Arabic:*** mother tongue

• ***English:*** very good in written and spoken

• ***German:*** good in written and spoken

• ***Hebrew:*** Beginner

***Supervised M.Sc. Theses:***

* + External examiner for an M.Sc. thesis: Nadine Qalalweh, ‘*Preparation of ester compounds of aromatic alcohol (2-phenoxy ethanol) and the study of certain biological characteristics’,* 2015- An-Najah National University.
	+ External examiner for an M.Sc. thesis: Yasmin Tamimi; ‘*Define Runs of Homozygosity in Palestinian Cohort’*; September 2016, Bethlehem University.
	+ External examiner for an M.Sc. thesis: Muna Abu Alrub ‘Extraction, characterization and application of essential oil, used as insecticide or insect repellent, from native Palestinian plants’; June 2017, An-Najah National University.
	+ External examiner for an M.Sc. thesis: Raghad Albzoor ‘Medicinal Plants as a Source of Inhibitors of the Digestive Enzymes: Alpha-Glucosidase, Alpha-amylase and Pancreatic Lipase’; 2017, An-Najah National University.
	+ Ongoing supervision for the student: Shahd Abu Naim in the field of computational docking of phytochemicals.

***Publications:***

1. **ShanakS.,** Bassalat N, Kadan S., Barghash A., Arda M., and Zaid H (2022) Drug discovery of plausible lead natural compounds that target the insulin signaling pathway: Bioinformatics approaches. Accepted for publication in ECAM.
2. Zaid H, **Shanak S**, Tamrakar AK (2021) Computer-Aided Drug Design of Natural Candidates for the Treatment of Non-Communicable Diseases. Editorial: Accepted for publication in ECAM. (All papers of the editorial are published ahead of this date).
3. **Shanak S,** Bassalat N, Albzoor R, Kadan S and Zaid H (2021) *In Vitro and In Silico* Evaluation for the Inhibitory Action of *O. basilicum* Methanol Extract on α-Glucosidase and α-Amylase. ECAM, Vol. 2021, p 5515775.
4. **Shanak S,** Helms V (2020) DNA methylation and the core pluripotency network. Developmental biology. Vol. 464, pp: 145-160.
5. Hassan H, **Shanak S** (2019) GOTrapper: a tool to navigate through branches of gene ontology hierarchy. BMC bioinformatics,Vol. 20 (1), pp: 1-6.
6. **Shanak S.,** Saad B., Zaid H. (2019) Metabolic and epigenetic action mechanisms of antidiabetic medicinal plants. Evidence-Based Complementary and Alternative Medicine, Vol. 2019, p: 3583067.

***Books:***

1. Saad B, Zaid H, **Shanak S**, and Kaadan S (2017) *Medicinal Plants and their Active Compounds for Diabetes and Obesity Prevention and Treatment*. Springer.

***PhD Work:***

1. Schenkelberger M; **Shanak S**; Finkler M; Worst, E; Noireaux, V; Helms, V; Ott, A (2017) Expression regulation by a methyl-CpG binding domain in an *E. coli* based, cell-free TX-TL system. *Physical Biology* **2017,** Vol. *14*, p: 026002.
2. **Shanak, S;** Ulucan, O; Helms, V (2017) Methylation-targeted specificity of the DNA binding proteins R.DpnI and MeCP2 studied by molecular dynamics simulations. *Journal of Molecular Modeling*. Vol. 23, p: 152.
3. **Shanak S;** and Helms V (2014) *Hydration properties of natural and synthetic DNA sequences with methylated adenine or cytosine bases in the R.DpnI target and BDNF promoter studied by molecular dynamics simulations*. J Chem Phys, Vol. 141, p: 22D512.

***MSc Work:***

1. Hamed, M., **Ismael, S.,** Paulsen, M., and Helms, V. (2012) *Cellular functions of genetically imprinted genes in human and mouse as annotated in the Gene Ontology.* PLoS ONE, Vol.7, p: e50285.

***Earlier Work:***

1. Zaid,H., **Ismael-Shanak,S**., Michaeli,A., Rayan, A. (2012) Frontiers in Bioscience, Vol.17, pp232-247. *Computerized modeling techniques predict the 3D structure of H4R: Facts and fiction.*

***Under preparation:***

1. Trang Du, HT, **Shanak, S**, Barghash, A, and Helms, V (2022) Deregulation of epigenetic marks is correlated to differential exon usage of developmental genes (*submitted for publication*).
2. **Shanak S.** and Helms V. (2021) *Salt conditions affect interaction of MBD2 protein with methylated and unmethylated DNA* (*to be submitted*).
3. Zuhud O, **Shanak S.,** Helms V, Salam H, Zaidoun Salah Z, and Darwish H (2021) Structural and functional compatibility of two novel mutations (Asp413Asn and Gly420Arg) in the Factor X gene *(to be submitted).*