Dr. Ana Karen Velázquez Sánchez

28.09.1989, Mexico

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akaren-velazquezs

LANGUAGES

o **Spanish** Native
o **English** Proficient, Toefl iBT
o **German** Intermediate, B1.1 Carl Duisberg
o **Japanese** Novice, A1.1 Hamburger Volkshochschule

AWARDS AND FELLOWSHIPS

o **Fellowship Doctoral studies**
  Aug 2017 –Sep 2021
Awarded by the German Academic Exchange Service (DAAD) and Mexican National Council for Science and Technology (CONACYT)
o **Fellowship Master studies**
  Oct 2012 - Sep 2014
Awarded by the Mexican National Council for Science and Technology (CONACYT)
Technology (CONACYT)
o **International Genetically Engineered Machine Competition (iGEM 2019) – Team Hamburg gold award**

TRAINING AND WORKSHOPS

o **Mathematics of life: modelling molecular mechanisms 202**
  12-16 Sep 2022
EMBL's European Bioinformatics Institute, virtual workshop
o **PIER Startup Bootcamp I: "Design Thinking"**
  08 Apr 2022
o **Young Entrepreneur in Science: From Potential to Prototype**
  20 May 2022
o **'From PhD to Innovator'**
  09-10 Jun 2022
Partnership for Innovation, Education and Research of DESY and Universität Hamburg

INTERESTS

o **Multidisciplinary research**
o **Synthetic biology ,biomedicine, RNA therapeutics**
o **Artificial intelligence and machine learning**
o **Sailing and music**

Due to my Ph.D. studies, in addition to my computer science qualifications, I have acquired molecular biology knowledge, laboratory/experimental skills, and modeling and simulating molecular mechanisms. I have experienced the systems development cycle, including quality assurance, using a range of programming languages and development tools. Specializing in synthetic and systems biology, passionate about multidisciplinary projects and learning.

EDUCATION

o **Doktorin der Naturwissenschaften** with honors (1.0, *magna cum laude*)   **Oct 2017 - Dec 2021**
Hamburg University of Technology (TUHH) co-affiliated with Hamburg University (UHH). Germany.
Dissertation: "Design and implementation of molecular circuits for mitigating genetic diseases"
o **Master of Science in Computer Science**   **Oct 2012 - Oct 2014**
Center for Scientific Research and Higher Education at Ensenada (CICESE). Mexico.
Dissertation: "Logic gates based on DNA strand displacement"
o **Bachelor of Computer Science**   **Aug 2007 - Oct 2012**
Autonomous University of Baja California (UABC). Mexico.

WORK EXPERIENCE

o **Postdoctoral associate (synthetic and systems biology)**   **Jan 2022 - Dec 2022**
AG Ignatova, Hamburg University (UHH). Germany.
Tasks: experimental research, mathematical modeling, and simulations, data analysis, generating plots and images, preparing manuscripts for publication, teaching
o **Guest Research Scientist (PhD student)**   **Oct 2017 - Dec 2021**
Algebraic Engineering Group, Institute of Embedded Systems (TUHH) and AG Ignatova, Hamburg University (UH). Germany.
Tasks: research and development of molecular circuits toward the mitigation of genetic diseases, kinetic modeling, simulations, and experimental research.
o **Scientific applications software developer**   **Jan 2015 - Jul 2017**
The Gulf of Mexico Research Consortium (CIGoM). Mexico.
Project "Data base and management system for oceanographic expeditions"
Tasks: Development of data management platform for multidisciplinary scientific data
o **Research assistant**   **Nov 2014 - Dec 2015**
Center for Scientific Research and Higher Education at Ensenada (CICESE). Mexico.
Project "Cellular computation models and their application to the design of biomolecular logic circuits"
Tasks: Development of full adder based on DNA strand displacement
o **Internship in Software Quality Assurance (SQA)**   **Dec 2010- Dec 2011**
Navico Marine Electronics R&D. Mexico.
Project "Reengineering process: tracking of software defects"
Tasks: Software testing and issue tracking, scripting for automation of test cases
o **Working student: Ambient Intelligence App developer and trainer**   **Aug 2010 – Dec 2010**
Autonomous University of Baja California (UABC). Mexico.
Projects "Development of Applications on Ambient Intelligence in Support of Non-pharmacological Treatment of the Elderly" and "Introduction to informatics and media for senior adults"
Tasks: Development of Serious games on tactile surfaces, production of teaching/didactic materials for the course, and course trainer.

SKILLS

Programming, software, and libraries
o Programming languages: Python, R, *Java, C#, Matlab,* HTML5, CSS, JavaScript, PHP, SQL, C++
o *Figure preparation: Photoshop*
o *Molecular thermodynamics prediction: ViennaRNA, NUPACK*
o *Molecular simulations: COPASI, VisualDSD, SimBiology*
o *Graphs and plots: Ggplot2, matplotlib, Seaborn, Origin*
o Web development: Laravel, Bootstrap, October CMS, Jquery
o *Formats: XML, SBOL*
o *SQA: Jyra*
o Text processing: LaTex, *Microsoft Office*

Molecular biology lab techniques
o *Fluorescence activated cell sorting (FACS)*
o *Microbiology, e.g. culture, golden gate assembly (GGA) cloning, DNA/RNA extraction*
o *Microplate assays*
o *RNA isolation and northern dot blots*
o *PCR (RT-PCR)*
o *Electrophoresis (e.g. SDS-page)*

General
o *Coding and computer skills*
o *Data analysis and design*
o *International work experience*
o *Writing and communication (scientific articles writing, scientific talks, workshop organization, teaching)*
o *Problem-solving, attention to detail, critical thinking, fast learning*
o *Organization (e.g. project planning and management, workshop organization) and creativity (e.g. figures and data representation)*

REFERENCES

o **Prof. Dr. Zoya Ignatova, Group Leader AG Ignatova Lab (UHH)**
  zoya.ignatova@uni-hamburg.de
o **Prof. Dr. Dr. habil. Karl-Heinz Zimmermann, Group Leader Algebraic Engineering (TUHH)**
  k.zimmermann@tuhh.de