Hamid Khoshfekr Rudsari, PhD

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Education

- **Ph.D. at University of Oslo** (Oslo, Norway, September 2020 – September 2023)

  Faculty of Medicine
  Institute of Clinical Medicine
  Thesis title: Modeling Aspects of the Extracellular Vesicles-mediated Bio-nano Communication for Medical Applications.
  Supervisor: Prof. Ilangko Balasingham, Oslo University Hospital & Norwegian University of Science and Technology (NTNU)

- **M.Sc. at Tarbiat Modares University** (Tehran, Iran, September 2017 – January 2020)

  Faculty of Electrical and Computer Engineering
  Department of Biomedical Engineering
  Thesis title: An Optimization on Binary Concentration Shift Keying Modulation in Term of Bit Error Rate in Molecular Communication.
  Supervisor: Prof. Mahdi Orooji, Tarbiat Modares University & University of California, Davis

- **B.Sc. at K. N. Toosi University of Technology** (Tehran, Iran, September 2013 – September 2017)

  Faculty of Electrical Engineering
  Department of Telecommunications Engineering
  Thesis title: Design and Implementation of the Modulation Block for Fiber-Optical Communication System in MATLAB.
  Supervisor: Prof. Lotfollah Beygi, K. N. Toosi University of Technology

Publications

Journal Publications

1. Sigrid Valen Hestetun, **Hamid Khoshfekr Rudsari**, Piotr Jaholkowski, Alexey Shadrin, Kristine Løkås Haftorn, Svend Andersen, Marite Rygg, Ellen Nordal, Oleksandr Frei, Ole A. Andreassen, Anne Marit Selvaag, Ketil Størdal, Helga Sanner, "Incidence and genetic risk of juvenile idiopathic arthritis in Norway by latitude," In production in *Arthritis & Rheumatology*, 2024, DOI: 10.1002/art.43040.

2. **H. K. Rudsari**, M. Damrath, M. Zoofaghari, I. Balasingham and M. Veletić, "An Intercellular Communication System for Intra-Body Communication Networks," in *IEEE Transactions on Communications*, In Press, 2024, doi: 10.1109/TCOMM.2024.3440877.

3. S. Logotheti, A. Pavlopoulou, **H. K. Rudsari**[1], A. Galow, Y. Kafali, E. Kyrodimos, A. I. Giotakis, S. Marquardt, A. Velalopoulou, I. I. Verginadis, C. Koumenis, T. Stiewe, J. Zoidakis, I. Balasingham, R. David, A. G. Georgakilas, "Intercellular pathways of cancer treatment-related cardiotoxicity and their therapeutic implications: the paradigm of radiotherapy," in *Pharmacology & Therapeutics*, vol. 260, 108670, doi: 10.1016/j.pharmthera.2024.108670.

[1] shared second author

4. M. Damrath, M. Veletić, **H. K. Rudsari** and I. Balasingham, "Optimization of Extracellular Vesicle Release for Targeted Drug Delivery," in *IEEE Transactions on NanoBioscience*, vol. 23, no. 1, pp. 109-117, Jan. 2024, doi: 10.1109/TNB.2023.3287637.

5. M. Damrath, M. Zoofaghari, M. Lekic, **H. K. Rudsari**, F. Pappalardof, M. Veletic, I. Balasingham, "Computational estimation of chemical reaction rates in extracellular vesicle signaling," *Nano Communication Networks*, p. 100455, 2023, doi:10.1016/j.nancom.2023.100455

6. **H. K. Rudsari**, M. Zoofaghari, M. Damrath, M. Veletić, J. Bergsland and I. Balasingham, "Anomalous Diffusion of Extracellular Vesicles in an Extracellular Matrix for Molecular Communication," in *IEEE Transactions on Molecular, Biological, and Multi-Scale Communications*, vol. 9, no. 1, pp. 8-12, March 2023, doi: 10.1109/TMBMC.2023.3240928.

7. **H. K. Rudsari**, M. Zoofaghari, M. Veletić, J. Bergsland and I. Balasingham, "The End-to-End Molecular Communication Model of Extracellular Vesicle-Based Drug Delivery," in *IEEE Transactions on NanoBioscience*, vol. 22, no. 3, pp. 498-510, July 2023, doi: 10.1109/TNB.2022.3206908.

8. M. Rezaei, **H. K. Rudsari**, M. Javan, N. Mokari, E. A. Jorswieck and M. Orooji, "Molecular Communication Transmitter Design in Limited-Capacity Storage Regime," in *IEEE Transactions on NanoBioscience*, vol. 22, no. 2, pp. 212-222, April 2023, doi: 10.1109/TNB.2022.3179317.

9. **H. K. Rudsari**, M. Veletić, J. Bergsland and I. Balasingham, "Targeted Drug Delivery for Cardiovascular Disease: Modeling of Modulated Extracellular Vesicle Release Rates," in *IEEE Transactions on NanoBioscience*, vol. 20, no. 4, pp. 444-454, Oct. 2021, doi: 10.1109/TNB.2021.3097698.

10. H. Arjmandi, **H. K. Rudsari**, J. Santos, M. Zoofaghari, A. Ievglevskyi, A. Khaleghi,I. Balasingham, and M. Veletić, "Extracellular Vesicle-mediated Communication Networks: Opportunities and Challenges," in *IEEE Communications Magazine*, vol. 59, no. 5, pp. 68-73, May 2021, doi: 10.1109/MCOM.001.2000994.

11. **H. K. Rudsari**, M. R. Javan, M. Orooji, N. Mokari and E. A. Jorswieck, "TDMA-MTMR-Based Molecular Communication with Ligand-Binding Reception," in *IEEE Transactions on Molecular, Biological and Multi-Scale Communications*, vol. 7, no. 2, pp. 111-116, June 2021, doi: 10.1109/TMBMC.2021.3054902.

12. **H. K. Rudsari**, M. R. Javan, M. Orooji, N. Mokari and E. A. Jorswieck, "Multiple-Type Transmission Multiple-Type Reception Framework on Molecular Communication," in *IEEE Wireless Communications Letters*, vol. 9, no. 11, pp. 1825-1829, Nov. 2020, doi: 10.1109/LWC.2020.3003981.

13. **H. K. Rudsari**, N. Mokari, M. R. Javan, E. A. Jorswieck and M. Orooji, "Drug Release Management for Dynamic TDMA-Based Molecular Communication," in *IEEE Transactions on Molecular, Biological and Multi-Scale Communications*, vol. 5, no. 3, pp. 233-246, Dec. 2019, doi: 10.1109/TMBMC.2020.2989637.

Conference Papers, Abstracts, Posters, and Presentations

- ***International Conference Papers:***

1. Presented by **Martin Damrath** at Warwick, UK:
   Hamid Khoshfekr Rudsari, Colin O'Hern, Evran Ural, Martin Damrath, Emily Neeb, Mohammad Zoofaghari, Mladen Veletić, William E. Louch, Aitor Aguirre, Ilangko Balasingham, and Christopher H. Contag. 2023. Human Heart Organoid-derived Extracellular Vesicles for Cardiac Intercellular Communication. In *Proceedings of the 10th ACM International Conference on Nanoscale Computing and Communication* (*NANOCOM '23*). Association for Computing Machinery, New York, NY, USA, 122–128. https://doi.org/10.1145/3576781.3608718
2. Presented by **Fabrizio Pappalardo** at Barcelona, Spain:
   Mohammad Zoofaghari, Martin Damrath, **Hamid Khoshfekr Rudsari**, Fabrizio Pappalardo, Mladen Veletić, and Ilangko Balasingham. 2022. Reaction rates estimation for the endocytic reception in extracellular vesicles-mediated communications. In *Proceedings of the 9th ACM International Conference on Nanoscale Computing and Communication* (*NANOCOM '22*). Association for Computing Machinery, New York, NY, USA, Article 10, 1–6. https://doi.org/10.1145/3558583.3558848
3. Presented by **Hamid Khoshfekr Rudsari** at Coimbra, Portugal:
   H. K. Rudsari, M. Veletić, J. Bergsland, and I. Balasingham. 2021. Cardiac Bio-Nanonetwork: Extracellular Matrix Modeling for the Propagation of Extracellular Vesicles. In *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems* (*SenSys '21*). Association for Computing Machinery, New York, NY, USA, 645–648. https://doi.org/10.1145/3485730.3494035

4. Presented virtually by **Hamid Khoshfekr Rudsari** at Italy:
   Hamid Khoshfekr Rudsari, Mladen Veletić, Jacob Bergsland, and Ilangko Balasingham. 2021. Cardiac Bio-Nanonetwork: Extracellular Vesicles Release Modeling for Engineered Stem Cell-Derived Cardiomyocyte. In *Proceedings of the Eight Annual ACM International Conference on Nanoscale Computing and Communication* (*NANOCOM '21*). Association for Computing Machinery, New York, NY, USA, Article 4, 1–7. https://doi.org/10.1145/3477206.3477479

- ***International Conference Abstracts:***

1. Presented by **Stella Logotheti** at Aristotle University of Thessaloniki, Thessaloniki, Greece:
   Stella Logotheti, **Hamid Khoshfekr Rudsari**, Athanasia Pavlopoulou, Jerome Zoidakis, Ilangko Balasingham, Robert David and Alexandros G. Georgakilas. Cancer radiotherapy-related cardiovascular diseases: providing multidisciplinary and omics-based solutions to a complex clinical condition. In *Data driven evidence: theoretical models and complex biological data, The Dynalife Workshop, 2024.*
2. Presented by **Mladen Veletic** at Oslo University Hospital, Oslo, Norway:
   Mladen Veletic, Martin Damrath, Mohammad Zoofaghari, **Hamid Khoshfekr Rudsari**, and Ilangko Balasingham. 2024. Channel Model and Capacity of Diffusive Particle Intensity Channels with Reactive Receivers. In *the 8th Workshop on Molecular Communications* (*MolComm '24*), *April, 2024, Oslo University Hospital, Oslo, Norway.*
3. Presented by **Hamid Khoshfekr Rudsari** at Venice, Italy:
   H. K. Rudsari, M. Veletić, M. Damrath, M. Zoofaghari, and I. Balasingham. 2023. *In-silico* Model of Extracellular Vesicle-mediated Intercellular Communication. In *80, 70, 20 - Conference Towards excellence and convergence research in theoretical biology* (*DYNALIFE*), *May, 2023, Venice, Italy.*
4. Presented by **Hamid Khoshfekr Rudsari** at Coventry, UK:
   H. K. Rudsari, M. Zoofaghari, M. Veletić, J. Bergsland and I. Balasingham. 2022. Anomalous Diffusion of the Extracellular Vesicles in an Extracellular Matrix for the Molecular Communication. In *the 6th Workshop on Molecular Communications* (*MolComm '22*), *July, 2022, Coventry, UK.*
5. Presented by **Ilangko Balasingham** at Oslo, Norway:
   M. Veletić, **H. K. Rudsari**, J. Bergsland and I. Balasingham. 2022. From Biological Communication Networks to Controllable Molecular Communication Technology for Human Health. In *the 33rd Annual SMIT Conference, May 30–31, 2022, Oslo, Norway.*

- ***International Conference Posters:***

1. Presented by **Kristine Løkås Haftorn** at Copenhagen, Denmark:
   Kristine Løkås Haftorn, **Hamid Khoshfekr Rudsari**, Sigrid Hestetun, Vilde Ø. Dåstøl, Anne Lise Brantsæter, Piotr P. Jaholkowski, Ida H. Caspersen, Siri Håberg, Ketil Størdal, Sjurdur F. Olsen, Helga Sanner. 2024. Early-life environmental factors and genetic risk in Juvenile Idiopathic Arthritis: Insights from Norwegian and Danish pregnancy cohorts. In *The 2nd European Perinatal and Paediatric Epidemiology Conference* (*EPPEC*), *2024.*
2. Presented by **Vilde Ø. Dåstøl** at Copenhagen, Denmark:
   Vilde Øverlien Dåstøl, Kristine Løkås Haftorn, **Hamid Khoshfekr Rudsari**, Ida Henriette Caspersen, Anne Lise Brantsæter, Helga Sanner. 2024. Does fish intake during pregnancy increase the risk of Juvenile Idiopathic Arthritis?. In *The 2nd European Perinatal and Paediatric Epidemiology Conference* (*EPPEC*), *2024.*
3. Presented by **Hamid Khoshfekr Rudsari** at Aristotle University of Thessaloniki, Thessaloniki, Greece:
   Hamid Khoshfekr Rudsari, Piotr P. Jaholkowski, Kristine Løkås Haftorn, Helga Sanner. Polygenic Risk Score Analysis for Juvenile Idiopathic Arthritis. In *Data driven evidence: theoretical models and complex biological data, The Dynalife Workshop, 2024.*

- ***Talks and Presentations:***

1. Presented by **Hamid Khoshfekr Rudsari** at Depratment of Rheumatology, Oslo University Hospital, Oslo, Norway:
   Polygenic Risk Scores for Juvenile Idiopathic Arthritis.
2. Presented by **Hamid Khoshfekr Rudsari** at Prof. Phillip C Yang's lab at Stanford University, CA USA:
   Computer-aided treatment of cardiovascular diseases mediated by nano-sized particles.
3. Presented by **Hamid Khoshfekr Rudsari** at Prof. Mikhail Shapiro's lab at California Institute of Technology, CA USA:
   Bio-nano Communication and Control in Extracellular Vesicle-Mediated Intercellular Communication Systems.
4. Presented by **Hamid Khoshfekr Rudsari** at Prof. Christopher Contag's lab at Michigan State University, MI USA:
   Bio-nano Communication and Control in Extracellular Vesicle-Mediated Intercellular Communication Systems.

5. Presented by **Hamid Khoshfekr Rudsari** at Intervention Center, Oslo University Hospital, Oslo, Norway: *Bio-nano Communications and Control in Extracellular Vesicle Inspired Communication Systems.*

Book chapters

1. J. J. Uv, L. Myklebust, **H. K. Rudsari**, H. Welle, H. Arevalo, (2022). 3D Simulations of Fetal and Maternal Ventricular Excitation for Investigating the Abdominal ECG. In: McCabe, K.J. (eds) Computational Physiology. Simula SpringerBriefs on Computing, vol 12. Springer, Cham. https://doi.org/10.1007/978-3-031-05164-7_2

Experience

1. **The University of Texas M.D. Anderson Cancer Center** (Houston, Texas, USA)

   - **Postdoctoral Fellow** (September 2024 - current)
     - High-dimensional genetics/bioinformatics
     - Early cancer detection
     - Spatial transcriptomics
     - Proteomics
     - Multi-omics

2. **Oslo University Hospital** (Oslo, Norway)

   - **Postdoctoral Fellow** (September 2023 - September 2024)

     (a) PREVENT JIA: Prospective evaluation of early-life modifiable environmental factors and genetic risk in juvenile idiopathic arthritis, funded by Health-South East (HSØ) RHF
     - Statistical genetics and Bioinformatics research for understanding the underlying genetic factors leading to juvenile idiopathic arthritis (JIA)
     - Big data analysis on Norwegian Mother, Father and Child Cohort Study (MoBa)
     - Finding statistical associations of genomic risk with JIA in the MoBa cohort using epidemiological approaches
     - Finding novel genomic risk loci for juvenile idiopathic arthritis using GWAS meta-analysis
     - Finding novel shared genomic risk loci between juvenile idiopathic arthritis and other autoimmune diseases using conjunctional false discovery rate
     - Publishing peer-reviewed journal and conference papers
     - Statistical analysis for JIA, rheumatic arthritis and other relevant immune disorders based on:
       * Polyegenic Risk Score (Genetic Risk Score)
       * Genome-Wide Association Studies (GWAS)
       * Conjunction false discovery rate (conjFDR)
       * Meta-analysis of GWAS for JIA
       * Gene-environment (GXE) interactions
       * HLA imputation

     (b) Cooperation in writing grants for PhD positions from Health South East Norway (Helse Sør-Øst RHF)

     Skills acquired:

     - Python
     - R
     - C
     - Linux
     - High-performance Computing
     - Statistics
     - Biostatistics
     - Statistical Genetics
     - Bioinformatics
     - Epidemiology
     - Polygenic/genomic Risk Score (PRS)
     - Genome Wide Association study (GWAS)
     - Machine Learning
     - Data Science
     - PRSice (PRS toolset)
     - Regenie (GWAS toolset)
     - PLINK (whole-genome analysis toolset)
     - Metal (GWAS meta-analysis toolset)
     - SNP2HLA (HLA imputation toolset)

   - **PhD Research Fellow** (September 2020 - September 2023)

     (a) Communication Theoretical Foundation of Wireless Nanonetworks (CIRCLE) funded by the Research Council of Norway (RCN), grant number: 287112

- Mathematical modeling of biological systems using machine learning algorithms, data-driven models and computational biology systems
- Computer-aided cardiovascular disease treatment using nanoparticles
- Publishing peer-reviewed journal and conference papers
- Cooperation in preparing annually reports to the Research Council of Norway

(b) Writing 3 funding grants for Health South East Norway (Helse Sør-Øst RHF), Norwegian Cancer Society, and the Research Council of Norway (funding has been granted for one proposal).

Skills acquired:

- Python
- MATLAB
- High-performance Computing
- Machine Learning
- Biological Modeling
- Analytical Skills
- Mathematical Modeling
- Computer Simulation
- Auto-regressive Models
- Computational Biology
- Digital Signal Processing
- Applied Mathematics

3. **Michigan State University** (East Lansing, Michigan, USA)

- **Visiting Scholar** (September 2022 - March 2023)

(a) Interdisciplinary research by wet lab *in vitro* experiments on Human Heart Organoids-derived extracellular vesicles

(b) Research on finding the biodistribution of extracellular vesicles in heart using computational biology, biological and mathematical modeling approaches

Skills acquired:

- Mathematical Modeling
- Computer Simulation
- Computational Biology
- Nanoparticle Tracking Analysis (NTA)
- Western Blotting
- Cell Culturing
- Optical Imaging
- Microscopy Imaging

4. **Tarbiat Modares University** (Tehran, Iran)

- **Research Assistant** (September 2018 - August 2020)

(a) Transmitter and Receiver Design in Molecular Communication (TRDMC) funded by the Iran National Science Foundation (INSF), grant number: 98004841
- Digital image processing for detection of blood cancer cells engineering applications
- Biomedical signal processing for molecular communication and computational biology applications
- Cooperation for preparing the proposal of the TRDMC project
- Publishing peer-reviewed journal papers as the first author

(b) Molecular Communication Nanonetworks (MCN) funded by INSF, grant number: 99008922
- Machine learning-based models for computational biology and biomedical engineering applications
- Cooperation for preparing the proposal of the MCN project
- Publishing peer-reviewed journal papers as the first author

Skills acquired:

- Python
- MATLAB
- C++
- Artificial Intelligence
- Machine Learning
- Medical Technology
- Biomedical Engineering
- Mathematical Modeling
- Computer Simulation
- Data Science
- Computational Biology
- Image Processing
- Biomedical Signal Processing
- Optimization
- Digital Signal Processing

Visiting Scholar/Appointment

1. **Stanford University**, CA USA (One week, March 2023)

- Participating in pig studies for extracellular vesicles injection for chronic heart disease treatments at the Institute of Cardiovascular Medicine, Stanford University

- Networking, discussion, and presentation on the research on extracellular vesicles and computer modeling and simulations for treatment of cardiovascular diseases

2. **California Institute of Technology**, CA USA (One day, March 2023)
   - Networking, presentation and discussions at the Division of Chemistry and Chemical Engineering, CalTech, on the research on extracellular vesicles, gas-vesicles, and other nano-sized vesicles for diagnostic and therapeutic applications
3. **Michigan State University**, MI USA (Six months, September 2022 - March 2023)
   - Visiting Scholar position working on wet-lab experiments, and computer modeling of human heart organoid-derived extracellular vesicles for treatment of congenital heart defects
   - networking, presentations, and discussions with faculty members and researchers at the Institute of Quantitative Health Science and Engineering of Michigan State University
4. **NORMENT: Norwegian Centre for Mental Disorders Research, University of Oslo & Section for Precision Psychiatry, University of Oslo and Oslo University Hospital**, Oslo, Norway (One year, September 2023 - September 2024)
   - The post-doctoral research with Oslo University Hospital was being done with NORMENT collaboration.

Professional Services

1. **Graduate Superviser**
   - Master's Student: Ulrikke Espinoza
     Institution: Norwegian University of Science and Technology (NTNU)
     Thesis Title: "Computational Modeling and Analysis of Extracellular Vesicle-Mediated miRNA Delivery for Cardiomyocyte Reprogramming Post-Myocardial Infarction"
     Duration: 2024 - 2025
     Role: Co-supervisor
2. **Technical Reviewer (number of reviewed papers including the multiple reviews for the same manuscript)**
   - Journals:
     - IEEE Transactions on Communications (IEEE TCOM) (1 paper)
     - IEEE Communications Letters (IEEE CL) (1 paper)
     - Computational and Structural Biotechnology Journal | Elsevier (1 paper)
     - Journal of the Royal Society Interface (2 paper)
     - IEEE Communications Magazine (IEEE COMMAG) (2 papers)
     - IEEE Transactions on NanoBioscience (IEEE TNB) (6 papers)
     - Nano Communications Networks, Journals | Elsevier (7 papers)
     - IEEE Transactions on Molecular, Biological, and Multi-Scale Communications (IEEE T-MBMC) (12 papers)
   - Conferences & Workshops:
     - IEEE-EMBS International Conference on Biomedical and Health Informatics (IEEE BHI) (7 papers)
     - ACM International Conference on Nanoscale Computing and Communication (ACM NANOCOM) (2 papers)
     - The Workshop on Molecular Communications (MolCom–endorsed by IEEE T-MBMC) (2 papers)
3. **Leadership and Organizational Experience**
   - Social Chair at The 8th Workshop on Molecular Communication (endorsed by IEEE T-MBMC of IEEE COMSOC) in Oslo University Hospital, Oslo, Norway.
4. **Membership**
   - European Cooperation in Science and Technology (COST), Brussels, Belgium
     - Working Group (WG) Member of "the Maternal Perinatal Stress and Adverse Outcomes in the Offspring: Maximising infants´ development (TREASURE)", CA22114 - WG3 & WG6
     - WG Member of "the Information, Coding, and Biological Function: the Dynamics of Life (DYNALIFE)", CA21169 - WG3

Honors, Awards & Grants

1. **September 2024, The University of Texas M.D. Anderson Cancer Center**:
   Awarded Post-doctoral Scholarship (65,000 USD annual salary) for doing research on early cancer detection using biostatistical and bioinformatics tools and large datasets of spatialc transcriptomics and proteomics.

2. **June 2024, European Cooperation in Science and Technology (COST)**:
   Awarded travel grant (1,234 USD) from COST Action-DYNALIFE:
   Travel grant for DYNALIFE Interaction Meeting on Data driven evidence: theoretical models and complex biological data, Aristotle University of Thessaloniki, Thessaloniki, Greece.

3. **May 2024, European Cooperation in Science and Technology (COST)**:
   Awarded travel grant (1,256 USD) from COST Action-DYNALIFE:
   Travel grant for training school The Riddle of the Genetic Code, at Mannheim University of Applied Sciences, Mülheim an der Ruhr, Germany.

4. **September 2023, Oslo University Hospital**:
   Awarded Post-doctoral Scholarship (61,000 USD annual salary) for doing research on the genetic factors leading to juvenile idiopathic arthritis (JIA) using statistical genetics and bioinformatics tools.

5. **August 2023, Norwegian University of Science and Technology (NTNU)**:
   Awarded workshop and travel grant (1,200 USD) for participation in AI in Neuroscience Summer School at the University of Stavanger, Norway.

6. **May 2023, European Cooperation in Science and Technology (COST)**:
   Awarded travel grant (1,309 USD) from COST Action-DYNALIFE
   Travel grant for 80, 70, 20 Conference: Towards Excellence and Convergence Research in Theoretical Biology, at Aula Magna of the Ca Foscari University, Ca' Dolfin, Venice, Italy.

7. **September 2022, Research Council of Norway**:
   Awarded funding (13,200 USD) for Research Stays Abroad for Doctoral Fellow granted by the Research Council of Norway.
   The research stays abroad has been conducted in the Institute of Quantitative Health Science and Engineering at the Michigan State University, East Lansing, MI USA, under the supervision of Prof. Christopher Contag.

8. **November 2021, the 19th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys 2021)**:
   Best Work-in-Progress (WiP) Paper Award at The 2nd ACM International Workshop on Nanoscale Computing, Communication, and Applications.

9. **September 2020, Oslo University Hospital**:
   Awarded three years PhD Scholarship (49,500 USD annual salary) from Oslo University Hospital for doing a PhD at the Faculty of Medicine at the University of Oslo, Oslo, Norway.

10. **Other Scholarship Offers:**
    - *Three years Post-doctoral Scholarship (55,000 USD annual salary) from the State Department Of The Working Environment (STAMI), Oslo, Norway.*
    - *PhD Scholarship from York University, Toronto, Canada.*
    - *PhD Scholarship from Ghent University, Ghent, Belgium.*

Workshops Attended

1. **Wellcome Connecting Science, Wellcome Genome Campus, Hinxton, Cambridge, UK**
   - Genetic Analysis of Population-based Association Studies (September 2024)
     - Learning state-of-the-art statistical methods and softwares for analysis of genetic association studies including both small-scale disease-specific studies and large-scale collaborative projects such as those that can be used for analysis of multiple complex traits.

2. **Mannheim University of Applied Sciences, Mülheim an der Ruhr, Germany**
   - COST Action Dynalife Training School: The Riddle of the Genetic Code (May 2024)
     - Developing and testing the various models and theories on genetic coding with state-of-the-art biological data and modern methods from statistics and data science.
3. **University of Oslo, Oslo, Norway**
   - Genome-Wide Association Studies: Why, How and then What? (Auditted - March 2024)
     - Developing GWAS framework, covering key stages from genotype processing to result interpretation, with hands-on training in relevant tools and advanced analysis strategies. The course also explored public resources, polygenic risk assessment, and the clinical implications of GWAS.
4. **University of Stavanger, Stavanger, Norway**
   - 2023 Summer School, AI in Neuroscience (August 2023)
     - In-depth knowledge and hands-on experience in the use of AI within neuroscience
5. **Oslo University Hospital, Oslo, Norway**
   - Statistics in Randomized Controlled Trials (October 2023)
     - Learning about methodological issues and challenges in the design and statistical analysis of randomized controlled trials

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Pedagogical Experience

1. Supervision Courses
   - University of Oslo (March 2024)
     - Developing the professional competence in research supervision within graduate and postgraduate education.
2. Teaching Assistant
   - Teacher Assistant to Digital Image Processing (Tarbiat Modares University, January 2019 - June 2019)

Related Courses Attended

1. **University of Oslo, Simula Research Laboratory, and The University of California, San Diego**
   - Introduction course to cardiovascular research and medicine
   - 2021 Summer School in Computational Physiology
   - Essentials of neurophysiology: From neurons to circuits to behaviours
   - Introductory Machine learning course in R (Audited)
2. **Tarbiat Modares University**
   - Pattern Recognition (Machine Learning)
   - Biomedical Signal Processing
   - Ultrasound in Biomedical Engineering
   - Biomedical Image Processing
   - Stochastic Processes
   - Biomedical Instrumentation
3. **K. N. Toosi University of Technology**
   - Communication Systems Principals
   - Digital Signal Processing
   - Digital Systems
   - Numerical Computations
   - Electronics
   - Electric Machines
   - Control Systems
   - Economics

Skills & Interests

1. **Research interests**

- Biostatistics
- Bioinformatics
- AI/Machine learning in health and medicine
- Computational biology
- Biomedical signal processing
- Mathematical modeling of biological systems
- Data science in health and medicine
- Clinical data analysis
- Statistical genetics
- Applied mathematics for health, medicine and biology
- Epidemiology

2. **Technical skills**

- Big data
- Computer simulation
- Biostatistics
- Statistical genetics
- Mathematical modeling
- Machine learning
- Epidemiology
- Statistics
- Signal processing
- Pattern recognition
- Image processing
- Wet lab *in vitro* skills
- GWAS
- Polygenic/genomic risk score
- Meta-analysis of GWAS
- GWAS imputation
- THUNDER imaging system
- Data science
- RNA-seq analysis
- Microscopy imaging
- Analytical skills
- Optimization
- Data visualization
- High-performance computing
- Epidemiology

3. **Computer skills**

- MATLAB programming
- Python programming
- R (Programming Language)
- PLINK (whole-genome analysis toolset)
- Regenie (GWAS toolset)
- PRSice (Genetic Risk Score toolset)
- Metal (GWAS Meta-Analysis toolset)
- Data analysis and visualization (Pandas, NumPy, Matplotlib, dplyr, glmnet, ggplot2, biopython)
- Machine learning (Scikit-learn, TensorFlow)
- SNP2HLA (HLA imputation toolset)
- Microsoft Office
- LaTeX

4. **Soft skills**

- Communication
- Teamwork
- Problem solving
- Creativity
- Adaptability
- Time management
- Leadership
- Critical thinking
- Flexibility

5. **Language skills**

- English (Full professional proficiency)
- Norwegian (Intermediate proficiency)
- Persian (Native)
- Gilaki (Native)

References

1. **Kim-Anh Do, Ph.D., FASA, FRSS, FAAAS** (Role: M.D. Anderson Cancer Center Postdoc Main Supervisor)
   Professor of Biostatistics & Electa C. Taylor Chair for Cancer Research
   Department of Biostatistics
   The University of Texas M.D. Anderson Cancer Center
   7007 Bertner Avenue, Houston, TX 77030-3403
   Email: kimdo@mdanderson.org
   Phone: +1 713-794-4155

2. **Helga Sanner, M.D., Ph.D.** (Role: Oslo University Hospital Postdoc Main Supervisor)
   Group Leader for Epidemiology and outcomes in rheumatic diseases
   Department of Rheumatology, Dermatology and Infectious Diseases, Oslo University Hospital, N-0027 Oslo, Norway
   Email: helga.sanner@medisin.uio.no
   Phone: +47 412 56 664

3. **Ilangko Balasingham, Ph.D.** (Role: PhD Main Supervisor)
   Head of Section for Medical ICT Research
   Intervention Center, Oslo University Hospital, N-0027 Oslo, Norway
   Professor of Medical Signal Processing and Communications
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Declaration

- I hereby declare that the above mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of this CV.

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October 18, 2024