PART I: General Information

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Education:

Year	*Degree*	*Institution*
1996	B.S.	Electrical and Electronics Engineering, Bogazici University, Istanbul, Turkey
1997	M.S.	Electrical and Electronics Engineering, Bogazici University, Istanbul, Turkey
2002	Ph.D.	Electrical Engineering, University of Nebraska-Lincoln, USA

Academic Appointments:

Year	*Title*	*Institution*
1996-1997	Teaching Asst.	Bogazici University, Department of Electrical and Electronics Engineering
1997-2000	Teaching Asst.	University of Nebraska-Lincoln, Department of Electrical Engineering
2000-2002	Instructor of EE	University of Nebraska-Lincoln, Department of Electrical Engineering
2002-2003	Research Fellow	Harvard Medical School, Boston, MA
2003- 2012	Instructor of Medicine	Harvard Medical School, Boston, MA
2010-2013	Assistant Prof.	Istanbul Bilgi University Department of Bioengineering, Istanbul, Turkey
2013-	Professor	University of Nebraska-Lincoln, Department of Electrical Engineering (Tenure 2013)

Visiting and Other Academic Appointments:

Year	*Title*	*Institution*
2005- 2008	Adjunct Instructor	Boston Uni. Bioinformatics Program, Boston, MA
2005- 2006	Teaching Instructor	Northeastern University Department of Biology, Graduate Program in Bionformatics, Boston, MA
2006-2007	Assistant Prof.	Yeditepe University Department of Genetics and Bioengineering, Istanbul, Turkey
2008	Assistant Prof.	Sabanci University Department of Biological Sciences and Bioengineering, Istanbul, Turkey

Major Administrative Responsibilities:

Year	*Title*	*Institution*
2003-2007	Director	Bioinformatics Core, BIDMC Genomics Center
2004-2012	Associate Director	Dana-Farber/Harvard Cancer Center Proteomics Core
2006-2008	Steering Committee	Biotechnology Institute, Yeditepe University
2007-2012	Associate Director	Bioinformatics Core, BIDMC Genomics Center
2010-2013	Founding Chair	Department of Bioengineering, Istanbul Bilgi U.
2016-	Advisory Committee	Department of Bioengineering, Istanbul Bilgi U.
2017-2022	Executive Committee	Department of Electrical and Computer Engineering, University of Nebraska-Lincoln (Member 2017-2019, Chair 2020-2022)
2023-	Senator	Faculty Senate, University of Nebraska-Lincoln

Professional Societies:

Year	*Role*	*Society*
2004-	Member	American Association for the Advancement of Science
2004-	Member	International Society for Computational Biology

Editorial Boards and Program Committees:

Year	*Role*	*Journal/Conference*
2000-	Ad hoc reviewer	IEEE Transactions on Communications, Bioinformatics, Systematic Biology, Journal of Computational Chemistry, Journal of Molecular Modeling, Cancer Informatics, Journal of Molecular Evolution, BMC Bioinformatics, BMC Medical Genomics, Journal of Computational Biology, Molecular Simulation, The Computer Journal, African Journal of Biotechnology, European Journal of Human Genetics, Journal of Theoretical Biology, Acta Biotheoretica, Journal of Heredity, IEEE/ACM Transactions on Computational Biology and Bioinformatics, Anatolian Journal of Cardiology, Biometrical Journal, Data Compression Conference, Entropy, Electro-Information Technology Conference, Nature Scientific Reports, PLOS One, Statistical Bioscience, Current Bioinformatics
2010-2017	Associate Editor	EURASIP Journal on Bioinformatics and Systems Biology
2011	PC Co-chair	The 6th International Symposium on Health Informatics and Bioinformatics, (HIBIT)
2012	Organizer	Workshop, “Bioinformatics Approaches for Analysis of High-throughput Biological Data”, International Centre for Genetic Engineering and Biotechnology
2013-2017	Associate Editor	Advances in Biology

2014-2019	Editor in Chief	Journal of Bioinformatics, Computational and Systems Biology
2014-	Associate Editor	Journal of Bioinformatics, Proteomics and Imaging Analysis
2017	Member	Technical Program Committee Electro-Information Technology Conference
2017	Member	Program Committee International Symposium on Integrative Bioinformatics
2018-2020	Associate Editor	Advances in Bioinformatics
2020-	Associate Editor	Cells
2023-	Editorial Board Member	Frontiers in Plant Science - Plant Bioinformatics

Awards and Honors:

Year	*Name of Award*
1992	Turkish Government scholarship for undergraduate studies (Ranked 27th Nationwide)
1997	Turkish Oil Foundation monetary award for graduate studies
2001	Ranked 1st in Graduate Student Research Paper Competition, Department of Electrical Engineering, University of Nebraska-Lincoln
2001	Travel Award, 3rd Georgia Tech-Emory International Conference on Bioinformatics
2003	Cited by the National Physical Laboratory of the United Kingdom in its recommendations to the UK government as work that should be studied in order to meet future challenges in the bioinformatics area in NPL Report CMSC 23/03 Report to the National Measurement System Directorate, Department of Trade and Industry New Directions – Software Issues in Bioinformatics
2003	Invited Presentation and Travel Award, International Stem Cell Conference, Singapore
2003	Best Study Award, "Transcriptional Profiling for Detection of a Gene Signature in Renal Cell Cancer" 55th Congress of the German Urological Society, Hamburg.
2004	Second Best Study Award, "Gene expression profiles in Renal Cell Cancer: Characterization of gene signatures in various histological subtypes and application of a metastatic signature" 56th Congress of the German Urological Society, Hamburg.
2008	Research Grant Award, Dubai Harvard Foundation for Medical Research
2017	Outstanding Paper, Second Place Award, The International Conference on Electro-Information Technology.

Part II: Research, Teaching, and Clinical Contributions

A. Narrative Report of Research, Teaching, and Clinical Contributions.

My career to date has involved research in Information Theory and Bioinformatics developing computational methods to analyze biological and clinical data. My earlier work was in the areas of image compression and joint source/channel coding. With the availability of genomic sequences, my interest shifted into bioinformatics by trying to understand how information is organized in DNA sequences. Using Information Theory, I developed characterizations of this organization, with applications to fragment assembly and phylogeny reconstruction which led to two US patents.

My research at Harvard Medical School (HMS) focused on management and analysis of high-throughput biological data (HTBD) in the context of functional genomics and proteomics. These included, but were not limited to, transcription profiling, proteomics, and genotyping efforts targeting

questions in computational biology, systems biology, cancer, stem cells, heart disease, diabetes, and obesity. As the director of Bioinformatics Core at BIDMC Genomics Center, I managed the core to establish a state-of-the-art computer infrastructure and a research web portal, which functioned as the front end for automated experiment ordering, data storage and analysis. As part of this portal, we designed databases for various omics data types and developed embedded analysis tools and analytical methods for HTBD. Specifically, I focused on problems regarding data normalization, differential expression, clustering, functional group/pathway analysis and biomarker discovery.

During my post at Turkey and UNL, I focused on analysis of HTBD with two pillars: (i) use of network science as a common, intuitive language bridging computational and life scientists, and (ii) incorporation of existing biological and clinical knowledge in our analysis workflows. We used probabilistic graph models to identify active known pathways given experimental data, to reconstruct molecular interaction networks based on observed data, to infer multiomics interactivity, and to identify biomarkers based on network connectivity. In addition to omics analysis, I have also led sequencing projects that involved whole genome sequencing and metagenomics, such as the first-ever identification of the transcriptome of the Arabian camel, first-ever whole genome sequencing of a Turkish individual, and analysis of the gut microbiome.

Currently, I am developing methods that combine probabilistic graphs, e.g. Bayesian Networks (BN), and Artificial Intelligence (AI), e.g. Artificial Neural Networks (ANN), to build predictive models for biological and clinical data. Our goal is to reduce the complexity and data size requirements of ANN models using BNs, which are the main bottlenecks in AI. My research efforts have resulted in 6 US patents, 14 software packages, and ~140 journal articles and conference proceedings.

I have actively been teaching since 2000, performed in seven higher education institutes. I have developed 7 courses anew: Bioinformatics, Computational and Systems Biology, Bayesian Networks, Medical Informatics, Principles of Bioengineering (and associated lab), Microarrays, Engineering and Sciences, in addition to existing classes I've taught in the areas of Electrical and Computer Engineering, Computer Science, Bioengineering, Bioinformatics, Biostatistics, and Physics. I have co-authored seven book chapters and one textbook on Bioinformatics. I have participated in developing Bioengineering undergraduate curricula at Yeditepe and Bilgi Universities (as the founding chair in the latter) as well as graduate/undergraduate curricula for Biotechnology, Bioinformatics, and Complex Biosystems programs at Yeditepe U. and UNL. As part of my teaching and research efforts, I have supervised and trained summer interns, IT personnel, BS/MS/PhD students, post-docs and research scientists totaling around 50 people over the last 23 years.

B. Funding Information

2002-2003	NIH/NIDDK; Project No: 5U24DK058739-03; "NIDDK Biotechnology Center"; Libermann (PI); $595,856; Role: Investigator
2002-2007	NIH/NCI; Project No: PO1 CA92664-03; "Spatial and Temporal Regulation of Angiogenesis"; Dvorak (PI); $141,237; Role: Investigator
2003-2005	NIH/NIAID; Project No: P01 AI041521; "Costimulation and Cytokines in Tolerance"; Turka (PI); $1,459,884; Role: Investigator
2003-2005	NIH/NCI; Project No: 1R21 CA108303-01; "Proteomics and Biomarkers for Hepatocellular Cancer"; Afdahl (PI); $100,000; Role: Investigator
2004-2009	NIH/NCI; Project No: P01 HL076540; "Endothelial Cell Phenotypes in Health and Disease", Aird (PI); $80,000; Role: Investigator

2005-2007 NIH/NIAID; Project No: R21 CA107352-01; "Novel Approaches to Gene Profiling in Ovarian Cancer"; Libermann (PI); $86,000; Role: Investigator

2006-2010 Michigan State University-NAY Project; Project No: MSU 95464; "Direct Dedifferentiation of Primary Somatic Cells", Cibelli (PI); Role: Consultant

2007-2010 King Abdulaziz City for Science and Technology; Project No: 26-64; "Camel Genome Project Phase I"; Al-Swailem (PI), Otu (Co-PI); $519,281.

2009-2012 The Dubai Harvard Foundation for Medical Research; "Analysis of high-throughput genomic data using an integrated approach; Otu (PI); $182,000

2011-2013 Istanbul Bilgi University Research Fund; "Human Whole Genome Sequencing" Otu (PI); $25,000

2011-2013 The Scientific and Technological Research Council of Turkey; Project No: 111E042; "Bayesian Network Analysis of High Throughput Biological Data: A Systems Biology Approach"; Otu (PI); $85,000

2016-2021 NIH/NIA; Project No: R01AG051658; "Advancing the Understanding of Postoperative Delirium Mechanisms via Multi-Omics"; Marcantonio/Libermann (MPI's), Otu (Co-PI); ~$2.3M

2018-2021 NIH/NLM; Project No: R21LM012759; "Identification and characterization of interaction atlases in human"; Otu (PI); $443,862

2018-2024 NIH/NIA; Project No: P01AG031720; "Delirium, Dementia, and the Vulnerable Brain: An Integrative Approach"; Inouye (PI); ~$15M – "The role of inflammation in the pathophysiology of delirium and its associated long term cognitive decline (Project 2)"; Marcantonio/Libermann (MPI's), Otu (Co-PI); ~2M

2020-2021 The University of Nebraska Foundation, Jane Robertson Layman Fund; "Integrating Meta-Multiomic Data Using Probabilistic Graph Representations"; Otu (PI); $10,000

2022-2027 NIH/NIA; Project No: R01AG051658; "AD/ADRD and biological aging proteomic signatures in the etiopathology of delirium and its associated long-term cognitive decline"; Marcantonio/Libermann (MPI's), Otu (Co-PI); ~$4.2M

2025-2026 DARPA; eX Virentia (eXVi), "Plants as Silent Sentinels"; Cutler (Teledyne), Boehm (UNL) (MPIs); Otu (Co-PI); ~2.1M

Pending/In Preparation:

Identification of Bacterial Interaction and Association Networks Using Genomic and Multi-Omic Data (To be resubmitted as NSF/BIO 21-509, Otu – PI)

C. Report of Current Research Activities

Project	*Role*
Gene Interaction Atlas Generation	Method Development/Supervision
Applications of Random Matrix Theory on Biological Networks	Method Development/Supervision
Predictive Models for Methylation Disposition of CpG Islands	Method Development/Supervision
Probabilistic Graph Representations for Multi-omic Data Integration in Human and Bacteria	Method Development/Supervision
Comparative Analysis of Gastrointestinal Cancers using Network Theory	Method Development/Supervision

Correlation Network/Pathway Analysis using Network Pruning, Bisociation, and Compressive Sensing	Method Development/Supervision
Biomarker discovery in NASH disease	Method Development/ Data Analysis (w/Harvard Medical School)
TGFB3 involvement in cleft palate	Method Development/ Data Analysis (w/UNMC)
Effect of Simvastatin in Bone Regenaration Following Dental Grafts	Method Development/ Data Analysis (w/UNMC)
Exosome Proteomics	Method Development/ Data Analysis (w/Harvard Medical Scool)
Multi-omics of Delirium	Method Development/ Data Analysis/Leadership/Training (w/Harvard Medical School)
Mechanisms of Cellular Reprogramming	Method Development/Data Analysis (w/Michigan State University)
Probiotic Identification Using Bacterial Interaction and Association Networks	Method Development/ Data Analysis
Proteomics of IBD	Method Development/ Data Analysis (w/Harvard Medical School)

D. Report of Teaching

Graduate and Undergraduate Courses

i. Bogazici University, Istanbul, Turkey

1996 Department of Electrical and Electronics Engineering. EE 374 Communication Engineering (current listing). Lecturer. ~20 senior EE students. Teaching: 2 hrs/week. Preparation: 3hrs/week. Duration: Fall Semester.

1997 Department of Electrical and Electronics Engineering. EE 477 Digital Communications (current listing). Lecturer. ~20 senior EE students. Teaching: 2 hrs/week. Preparation: 3hrs/week. Duration: Spring Semester.

1997 Department of Electrical and Electronics Engineering. EE 210 Introduction to Electrical Engineering (current listing). Lecturer. ~50 sophomore/junior EE students. Teaching: 2 hrs/week. Preparation: 3hrs/week. Duration: Spring Semester.

ii. University of Nebraska-Lincoln, Lincoln, NE USA

2000-2002 Department of Electrical Engineering ELEC 464/864 Digital Communication Systems. Core Faculty. ~10 senior Electrical Engineering students and ~10 Electrical Engineering graduate students. Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Spring Semester (each year).

2000-2002	Department of Electrical Engineering. ELEC 462/862 Communication Systems. Core Faculty. ~10 senior Electrical Engineering students and ~10 Electrical Engineering graduate students. Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Fall Semester (each year).
2013-	Department of Electrical and Computer Engineering. ELEC 450/850 Bioinformatics. Core Faculty. ~15 senior/graduate engineering students. Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Fall Semester (each year).
2013-	Department of Electrical and Computer Engineering. ELEC 498/898 (later received the permanent course number ELEC 453/853) Computational and Systems Biology. Core Faculty. ~15 senior/graduate engineering students. Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Spring Semester (each year).
2016-	Department of Electrical and Computer Engineering. ELEC 996 Bayesian Networks. Core Faculty. ~15 graduate engineering/sciences students, Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Spring Semester (each odd year).
2017-	Department of Electrical and Computer Engineering. ECEN 215 Electronics and Circuits I. Core Faculty. ~90 undergraduate engineering/sciences students, Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Fall Semester (each year).

iii. Northeastern University, Boston, MA USA

2005	Biology Department, Graduate Program in Bioinformatics. BIO G385, Seminar in Bioinformatics. Core Faculty. ~5 Bioinformatics graduate students. Teaching: 2hrs/week. Preparation: 5hrs/week. Duration: Fall Semester.

iv. Yeditepe University Istanbul, Turkey

2006	Department of Genetics and Bioengineering GBE 313, Experimental Bioengineering Lab. Core Faculty. 6 GBE undergraduate students. Teaching: 4hrs/week. Preparation: 5hrs/week. Duration: Fall Semester.
2007	Department of Genetics and Bioengineering GBE 311, Principles of Bioengineering. Core Faculty. 13 GBE undergraduate students. Teaching: 3hrs/week. Preparation: 5hrs/week. Duration: Spring Semester.

v. Sabanci University Istanbul, Turkey

2008	Department of Biological Sciences and Bioengineering BIO 512, Advanced Computational Biology. Core Faculty. 3 graduate students; 9 participants. Teaching: 3hrs/week. Preparation: 7hrs/week. Duration: Spring Semester.

vi. Acibadem University Istanbul, Turkey

2010 Medical School, MED 106, Medical Informatics. Core Faculty. 23 undergraduate students. Teaching: 5hrs/week. Preparation: 5hrs/week. Duration: Spring Semester.

vii. Istanbul Bilgi University Istanbul, Turkey

2010 College of Engineering, ENG 179, Engineering in Society. Guest Lecturer. 12 undergraduate students. Teaching: 3hrs lecture on Human Genome Project. Duration: Fall Semester.

2011 College of Engineering, ENG 180, Engineering and Sciences. Adjunct Faculty. 43 undergraduate students. Teaching: 10hrs lecture on Introduction to Bioengineering. Duration: Spring Semester.

2011 College of Engineering, PHYS 101 Physics I. Adjunct Faculty. 43 undergraduate students. Teaching: Problem Sessions 2hrs/week. Duration: Spring Semester.

2011 College of Engineering, PHYS 100 Physics for Scientists and Engineers. Faculty. ~60 undergraduate students. Teaching: Lecture, 2 sections, 3 hrs/week per section. Problem Sessions / Laboratory, 3 sections, 2hrs/week per section. Duration: Fall Semester.

2012 College of Engineering, PHYS 100 Physics for Scientists and Engineers. Faculty. ~45 undergraduate students. Teaching: Lecture, 3 hrs/week. Duration: Spring Semester.

2012 College of Engineering, ENGR 230 Probability and Random Processes. Faculty. ~30 undergraduate students. Teaching: Lecture, 2 hrs/week. PS / Lab, 2hrs/week. Duration: Spring Semester.

2012 College of Engineering, PHYS 100 Physics for Scientists and Engineers. Faculty. ~65 undergraduate students. Teaching: Lecture, 3 hrs/week. Duration: Fall Semester.

2012 College of Engineering, BIOE 341 Bioinformatics. Faculty. ~10 undergraduate students. Teaching: Lecture, 2 hrs/week. PS / Lab, 2hrs/week. Duration: Fall Semester.

2013 College of Engineering, BIOE 346 Microarrays. Faculty. 8 undergraduate students. Teaching: Lecture, 3 hrs/week. Duration: Spring Semester.

2013 College of Engineering, BIOE 241 Fundamentals of Biostatistics and Experimental Design. Faculty. ~30 undergraduate students. Teaching: Lecture, 3 hrs/week. PS / Lab, 2hrs/week. Duration: Spring Semester.

Local Invited Teaching Presentations

2002 Characterization of DNA Sequences. BIDMC Genomics Center Invited Lecture. Attending: ~20 HMS Faculty, Post-doctoral Fellows and Residents. Presentation and Follow-up: 5 hrs. Preparation: 20 hrs.

2003 Networks. BIDMC Genomics Center Core Meeting. Attending ~15 Post-doctoral Fellows and Residents. Presentation: 1 hr. Preparation: 10 hrs.

2004	Bioinformatics Core at BIDMC Genomics Center. MIT CSBI BioMicro Center. ~50 Faculty, Post-doctoral fellows and graduate students. Presentation and Follow-up: 2 hrs. Preparation: 10 hrs.
2005	Progress of Challenges in Bioinformatics: From Sequence to Function to Networks. Boston University Bioinformatics Program. ~20 Faculty, Post-doctoral fellows and graduate students. Presentation and Follow-up:5 hrs. Preparation: 20 hrs.

Advisees and trainees

2003	Jian Li	PhD student at Baylor College of Medicine
2003	Charles Bailey	Student at Tufts School of Veterinary Medicine
2003	Chris Porter	Children's Hospital IT department
2003	Osman Osman	Student at MIT EECS Dept.
2003-2006	Shakir A. Kolia	Research Associate at BIDMC Genomics Center Bioinformatics Core
2005-2006	Taehyun Park	Research Associate at BIDMC Genomics Center
2006-2008	Al-Arawi MS, Al-Khider AY, Al-Muhaimeed AN, Al-Qahtani FH, Al-Manee MM, Al-Shomrani BM (KACST Bioinformatics Group)	
2007-2013	Senol Isci	PhD student at Bogazici University Biomedical Engineering Institute
2007-2009	Caner Akdemir	Undergraduate student at Yeditepe University Department of Computer Engineering and Department of Genetics and Bioengineering
2007-2011	Cem Meydan	PhD student at Sabanci University Department of Biological Sciences and Bioengineering
2007-2011	Aydin Albayrak	PhD student at Sabanci University Department of Biological Sciences and Bioengineering
2007-2011	Yasin Bakis	PhD student at Sabanci University Department of Biological Sciences and Bioengineering
2010-2013	Haluk Dogan	Teaching Assistant at Istanbul Bilgi University, Department of Bioengineering and MS student at Bogazici University Department of Computer Engineering
2011-2013	Umut Agyuz	MS Student, Bogazici University Institute of Biomedical Engineering
2011-2013	Melike Korucuoglu	MS Student, Bogazici University Department of Computer Engineering
2013-2016	Haluk Dogan	PhD student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering
2014-2016	Zeynep Hakguder	PhD student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering

2014-2020	Dicle Yalcin	PhD student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering
2016-	Undergrad RA (Fund)	Jemimah Ndugwa (UNL), Beibei Xiong (UCARE), Ege Ozcan (UNL), Nirmitee Gite (UNL), Jenna Knudtson (UNL), Kyle Hancock (UCARE), Parker Brown (SNERP), Tate Anderson (SNERP), Adam Sauer (UNL), Sam Goddard (UCARE), Elizabeth Westfall (UCARE), Jacob Ashman (UCARE)
2016-	Sree Chanumolu	Postdoctoral researcher at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering
2017-	Mustafa Albahrani	Adjunct Research Scientist
2017-2023	Bridget Tripp	PhD student at University of Nebraska-Lincoln, Program in Complex Biosystems
2018	Yu Shi	PhD student at University of Nebraska-Lincoln, Program in Complex Biosystems (rotation)
2020-2022	Dillon Burgess	MS student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering
2022-2023	Jacob Abaare	PhD student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering
2023-	Cooper Schmer	MS student at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering

Regional, national, or international contributions

1997	A Compression Algorithm that Preserves NDVI and NDWI Values. Conference Presentation. Asilomar Conference on Circuits, Systems and Computers. Monterey, California, USA.
1998	A Joint Source Channel Coder with Block Constraints. Conference Presentation. IEEE International Conference on Acoustics, Speech, and Signal Processing. Seattle, Washington, USA.
1999	Issues in Joint Source Channel Coding. Seminar. UNL EE Dept. Journal Club. Lincoln, NE USA.
2001	A New Approach to Sequence Assembly Using Divide and Conquer Algorithms. Conference Presentation. 3rd Georgia Tech-Emory International Conference on Bioinformatics. Atlanta, Georgia, USA.
2002	An Information-theoretic Sequence Distance Measure with applications to Phylogeny Analysis. Seminar. UNL EE Dept. Journal Club. Lincoln, NE USA.
2004	A Seminar in Bioinformatics: Looking for Familiar Faces in the Neighborhood. Invited Lecture. Bogazici University, Institute of Biomedical Engineering, Istanbul, Turkey.

2004 Challenges in Bioinformatics: DNA Sequence Analysis and Frontiers in Functional Genomics. Invited Lecture. Sabanci University, Faculty of Engineering and Natural Sciences, Istanbul, Turkey.

2004 From Sequence to Function: Issues in Computational Biology. Invited Lecture. Koc University, Department of Chemical and Biological Engineering, Istanbul, Turkey.

2006 Progress of Challenges in Bioinformatics: From Sequence to Function to Networks. Invited Lecture. Yeditepe University, Department of Genetics and Bioengineering, Istanbul, Turkey.

2007 Challenges in Bioinformatics: Invited Lecture. King Abdulaziz City for Science and Technology, Riyadh, KSA.

2007 Experimental Design and Analysis of High-Throughput Biological Data. Invited Lecture. Sabanci University, Faculty of Engineering and Natural Sciences, Istanbul, Turkey.

2007 DNA Sequence Analysis and Applications in Functional Genomics. Seminar. Bogazici University, Institute of Biomedical Engineering, Istanbul, Turkey.

2007 Algorithmic and practical approaches to issues in Bioinformatics. Seminar. Izmir Institute of Technology, Izmir, Turkey.

2008 Computational Approaches in DNA Sequence Analysis and Functional Genomics and Proteomics. Seminar. Bilgi University, Istanbul, Turkey.

2008 Computational Approaches in DNA Sequence Analysis and Functional Genomics and Proteomics. Seminar. Halic University, Istanbul, Turkey.

2009 Biomarker Discovery – Pregnancy Success. Seminar. Michigan State University, East Lansing, MI USA

2009 Analysis and Applications of High-throughput Biological Data. Seminar. University of Nebraska Medical Center, Lincoln/Omaha, NE USA

2009 Bioinformatic Approaches for High-throughput Biological Data Analysis. Seminar. Middle East Technical University, Ankara, Turkey

2010 Looking for Familiar Faces in the Old Neighborhood. Invited Lecture. Bogazici University, Department of Electrical and Electronics Engineering, Istanbul, Turkey.

2010 From Sequence to Function to Networks: Analysis Issues in Bioinformatics. Istanbul Technical University, Program in Biomedical Engineering, Istanbul, Turkey.

2010 Sequence, Function, and Networks based Analysis Issues in Bioinformatics. Istanbul University, Institute for Experimental Medicine, Istanbul, Turkey. Similar talk is given at N.K.U. Faculty of Engineering Corlu, Tekirdag, Kadir Has University, Fatih University, Bogazici University (Department of Computer Engineering), Bilgi University, Pakize Tarzi Laboratories, all in Istanbul, Turkey

2010 Algorithms in Bioinformatics, 9th National Medical Genetics Congress, Istanbul Turkey

2011 Contemporary Issues in and Applications of Computational Biology, Inonu University, School of Medicine, Malatya, Turkey

2011	Bioengineering Education in Turkey, Yildiz Technical University, Bioengineering Days.
2011	Bayesian Network based pathway analysis of microarray data, European Biotechnology Congress, Istanbul, Turkey
2012	Systems Biology, Bogazici University, Molecular Biology and Genetics Weekend, Istanbul, Turkey
2012	Bioinformatics, ITU Biotech, Istanbul, Turkey
2012	A Crash Course on Microarray Data Analysis, DONE Genetics and Bioinformatics, Istanbul, Turkey
2012	Bayesian Pathway Analysis, Sabanci University, Istanbul, Turkey
2012	HTBD Analysis within a BN Framework, Istanbul University, Institute for Experimental Medicine, Istanbul, Turkey.
2014	Pathway Analysis of Biological Data using Bayesian Networks. University of Nebraska Medical Center, Omaha, NE USA
2018	Keynote Speaker, UNL Plant Science Retreat Network Analysis of Multiomic Data Using Probabilistic Graph Representations
2019	Probabilistic Graph Models for Biological Data Analysis Using External Knowledge, Northwestern University, Evanston, IL USA
2019	Bioinformatics @ ECE, External Advisory Board Meeting, Electrical and Computer Engineering, UNL, Lincoln, NE USA
2020	Omic Data Analysis Using Network Science, Istanbul Bilgi University, Department of Genetics and Bioengineering
2020	Network-based approaches for biological data analysis, Mini-symposium on AI/machine learning, Northwestern University
2021	Omics Data Analysis in Systems Biology, Biotech Conference, Bogazici University
2021	Utilization of Bayesian Networks in Systems Biology, ICGEB International Seminar Programme, South Africa
2023	Computational and Systems Biology, IEEE/UNL
2025	An Integrated Clinical Multiomics Platform for Preventative, Predictive, and Personalized Medicine, Istinye University

Description of major curriculum offerings, teaching cases or innovative educational programs developed

2007	Development of Undergraduate Curriculum at Yeditepe University, Department of Genetics and Bioengineering, Istanbul, Turkey.
2007	Development of Graduate Curriculum (both MS and PhD) at Yeditepe University, Bioengineering Institute, Istanbul, Turkey.
2010	Development of Undergraduate Curriculum at Istanbul Bilgi University, Department of Bioengineering, Istanbul, Turkey.
2013	Development of Bioinformatics Program at University of Nebraska-Lincoln, Department of Electrical and Computer Engineering.
2017	Development of the Complex Biosystems PhD Program at University of Nebraska-Lincoln.

Part III: Bibliography

Books

1. Bioinformatics: A One Semester Course, Khalid Sayood and Hasan H. Otu, Springer, 1st Edition (2023) ISBN: 978-3-031-20016-8.

Original Articles

1. Otu HH, Sayood K. "A joint source/channel coder with block constraints" *IEEE Transactions on Communications* 1999; 47(11):1615-1618.
2. Sayood K, Otu HH, Demir N. "Joint source/channel coding for variable length codes" *IEEE Transactions on Communications* 2000; 48(5):787-794.
3. Otu HH, Sayood K. "A divide and conquer approach to fragment assembly" *Bioinformatics* 2003; 19(1):22-29.
4. Fortunel NO*, Otu HH*, Ng HH*, Chen J, Mu X, Chevassut T, Li X, Joseph M, Bailey C, Hatzfeld JA, Usta F, Vega VB, Long PM, Liberman TA, Lim B. "Comment on 'Stemness: Transcriptional Profiling of Embryonic and Adult Stem Cells' and 'A Stem Cell Molecular Signature'" *Science* 2003; 302:393b.
5. Otu HH, Sayood K. "A new sequence distance measure for phylogenetic tree construction" *Bioinformatics* 2003; 19(16):2122-2130.
6. Bastola DR, Otu HH, Doukas SE, Sayood K, Hinrichs SH, Iwen PC. "Utilization of the relative complexity measure to construct a phylogenetic tree for fungi" *Mycological Research* 2004; 108(2):117-125. [This journal is called "Fungal Biology" as of Jan. 2010].
7. Voisine P, Ruel M, Khan TA, Bianchi C, Xu SH, Kohane I, Libermann TA, Otu HH, Saltiel AR, Sellke FW "Differences in gene expression profiles of diabetic and non-diabetic patients undergoing cardiopulmonary bypass and cardioplegic arrest" *Circulation* 2004; 110:II-280-286.
8. von Stechow D, Zurakowski D, Pettit AR, Muller R, Gronowicz G, Otu HH, Libermann TA, Alexander JM "Differential transcriptional effects of PTH and estrogen during anabolic bone formation" *J. Cell. Biochem.* 2004; 93:476-490.
9. Aivado M, Spentzos D, Alterovitz G, Otu HH, Grall F, Porter C., Cho JY, Giagounidis AAN, Germing U, Ramoni M, Libermann TA "Optimization and evaluation of surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF MS) with reversed-phase protein arrays for protein profiling" *Clinical Chemistry and Laboratory Medicine* 2005; 43(2), 133-140.
10. Jones J, Otu HH, Spentzos D, Kolia S, Inan M, Beecken WD, Fellbaum C, Gu X, Joseph M, Jonas D, Libermann TA. "Gene signatures of progression and metastasis in Renal Cell Cancer" *Clinical Cancer Research* 2005; 11:5730-5739.
11. Spentzos D, Levine DA, Kolia S, Otu HH, Boyd J, Libermann TA, Cannistra SA. "Unique gene expression profile based upon pathologic response in epithelial ovarian cancer" *Journal of Clinical Oncology* 2005; 23(31):7911-7918.
12. Wada Y, Otu HH, Wu S, Abid R, Okada H, Libermann TA, Kodama T, Shih S-C, Minami T, Aird WC. "Preconditioning of primary human endothelial cells with inflammatory mediators alters the "set point" of the cell" *FASEB Journal* 2005; 19(13):1914-1916.
13. Ijiri K, Zerbini LF, Peng H, Correa RG, Lu B, Walsh N, Zhao Y, Taniguchi N, Huang XL, Otu HH, Hong W, Wang JF, Komiya S, Ducy P,. Rahman MU, Flavell RA, Libermann TA,

*These authors contributed equally to this work

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Abstracts (over 50, not listed)