**Xianjun Dong, PhD**

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Education

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| --- | --- | --- | --- |
| 2002 | B.Sc. | Biomedical Engineering | Southeast University, China |
| 2005 | M.Sc. | Biomedical Engineering | Southeast University, China |
| 2010 | Ph.D. | Bioinformatics & Genomics (Advisor: Dr. Boris Lenhard) | University of Bergen, Norway |

Postdoctoral Training

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| 09/10 - 09/13 | Postdoc Fellow | Program of Bioinformatics and Integrative Biology | University of Massachusetts Medical School |

Faculty Academic Appointments

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| --- | --- | --- | --- |
| 11/13 – 03/20 | Instructor | Neurology | Harvard Medical School |
| 04/20 - present | Assistant Professor | Neurology | Harvard Medical School |
| 07/20 - present | Faculty member | HMS Initiative for RNA Medicine | Harvard Medical School |
| 08/20 - present | Associate member | Broad Institute | Harvard and MIT |

Appointments at Hospitals/Affiliated Institutions

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| --- | --- | --- | --- |
| 09/13 - present | Assistant Scientist | Ann Romney Center for Neurologic Diseases | Brigham and Women’s Hospital |

Major Administrative Leadership Positions

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| --- | --- | --- | --- | --- |
| 2016 – present | Director of Computational Neuroscience | Center for Advanced Parkinson Research | Brigham & Women’s Hospital | |
| 2020 – present | Director | Genomics and Bioinformatics Hub | Brigham and Women’s Hospital |

Professional Societies

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| --- | --- |
| 2006 – present | International Society for Computational Biology (ISCB), Member |
| 2013 – present | American Society for Human Genetics (ASHG), Member |
| 2015 | The 10th Annual DNA Day Essay Contest, Judge |
| 2016 – present | American Academy of Neurology (AAN), Member |
| 2021 | MJFF/ASAP Data Repository Working Group, Chair |

Grant Review Activities

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| 2021 | NIH NINDS Special Emphasis Panel study section |

Editorial Activities

- Ad-hoc Reviewer –

General: *Nature Biotechnology*, *Nature Communication*, *Genome Research*, *Genome Biology*, *PloS Genetics*, *International Journal of Biological Sciences*, *The Pharmacogenomics Journal*, *Nucleic Acids Research*

**Bioinformatics**: *Bioinformatics*, *PloS Computational Biology*, *Evolutionary Bioinformatics*, *Journal of Biomedical Informatics*, *Current Bioinformatics, Journal of Bioinformatics and Computational Biology*

**Neurology:** *Movement Disorders*, *Neurogenetics*

- Editorial Roles –

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| 2017 – present | *Personalized Medicine* (Editorial Board) |
| 2017 – present | *PeerJ* (Academic Editor) |
| 2018 – present | *Frontiers in Neuroscience, Frontiers in Genetics* (Academic Editor) |
| 2019 – present | *iScience (*Editorial Board) |

Honors and Prizes

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| 2000 | Distinguished Student with 1st grade Scholarship, Southeast University, China |
| 2000 | 2nd prize of the National Undergraduate Mathematical Contest in Modeling |
| 2000 | *Liu Yonglin* Fellowship Award, Southeast University, China |
| 2001 | 1st prize of 2001 “Sony Cup” National Undergraduate Electronic Design Contest, China (winning by designing a self-driving electronic toy car) |
| 2001 | Meritorious winner (top 10%) in the International Mathematical Contest in Modeling (MCM) (winning by modeling the growth control of zebra mussels in the Great Lakes) |
| 2001 | Distinguished Student with 1st grade Scholarship, Southeast University, China |
| 2002 | Distinguished Graduate Student Award, Southeast University, China |
| 2009 | Full Scholarship, “Chromatin Domains and Insulators” Workshop, Spain |
| 2009 | Travel Fellowship, MCB Research School, University of Bergen, Norway |
| 2010 | Chinese Government Award for Outstanding Self-financed Students Abroad, Ministry of Education, China (1 of 500 annual awardees worldwide) |
| 2015 | Reviewers’ Choice – top 10% best posters in the American Society of Human Genetics (ASHG) meeting, US |
| 2018 | Finalist of the PacBio Structural Variant SMRT Grant program |
| 2018 | Research Excellence Award, Brigham and Women’s Hospital |
| 2019 | Advanced Center for Parkinson’s Disease Research (ACEPD) Seed Award |

Report of Funded and Unfunded Projects

Funding Information

Past Grants:

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| --- | --- |
| 2011 – 2016 | *Epigenetic Markers in Huntington’s Disease Brain*  NIH R01 NS073947  Role: Co-Investigator (PI: Richard H. Myers)  The goal of this project is to map genome-wide HD disease-related changes in histone methylation markings in prefrontal neurons. |
| 2012 – 2016 | *EDAC: ENCODE Data Analysis Center*  NIH U41 HG007000  Role: Co-Investigator (PI: Zhiping Weng)  The goal of this project is to perform integrative analysis on ChIP-Seq, CAGE, and RNA-Seq data as a part of the ENCODE data analysis center. |
| 2012 – 2018 | *Biomarkers for Early Intervention in Parkinson Disease*  U01 NS082157  Role: Director, Computational Neuroscience Core (PI: Clemens Scherzer)  The goal of this project is to discover, confirm, and translate viable non-coding RNA biomarkers useful for the early detection of high-risk individuals. |
| 2015 – 2017 | *The PD Brain Map: From Genome to Function*  Department of Defense USAMRMC W81XWH-15-1-0007  Role: Director, Bioinformatics Core  The specific aims of this project are: Aim 1, we will characterize the landscape of bidirectionally transcribed enhancer RNAs in laser-captured nigral dopamine neurons. In Aim 2, we will clarify the genetic control of non-coding transcription in nigral dopamine neurons. In Aim 3, we will translate expression traits into potential precision markers. |
| 2018 – 2018 | *Identification of Gene Modifiers of Disease Penetrance and Age at Onset (Planning Grant)*  Michael J. Fox Foundation  Role: Co-Investigator (PI: Clemens Scherzer)  The goal of this project is to develop a project plan for the identification of gene modifiers of disease penetrance and age at onset. |
| 2017 – 2019 | *Cracking the Code of chr17q21 for Parkinson: From GWAS to Novel Drug Targets*  American Parkinson Disease Association (APDA) Research Grant - $50,000  Role: **Principal Investigator**  The goal of this project is to discover the causal variants in the chr17q21 locus and validate them in iPSC-derived neurons. |
| 2016 – 2019 | *Parkinson Disease: Predicting the Future*  NIH U01 NS095736  Role: Co-investigator (PI: Clemens Scherzer)  The goal of this project is to identify genetic variants in susceptibility loci and familial genes that predict cognitive or motor progression and to replicate and verify forwarded genetic variants in independent populations. |
| 2018 – 2019  (NCE 2020) | *Bioinformatics Club: A Weekly Meetup to Learn and Share Bioinformatics at BWH*  *Brigham Research Institute (BRI) NextGen Awards - $5,000*  *Role: Principal Investigator*  *This award is for my leadership in the Bioinformatics Club to further improve the bioinformatics education environment in Brigham and Women’s Hospital.* |
| 2019 – 2020  (NCE 2021) | *Circular RNAs: A novel link between genetic susceptibility and Parkinson’s disease?*  American Parkinson Disease Association (APDA) Research Grant - $75,000  Role: **Principal Investigator**  The goal of this project is to identify the role of the novel class of circular RNAs (circRNAs) in the early development of Parkinson’s disease and their linkage to the susceptibility of PD. |

Active grants (*9* in total):

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| 2018 – 2023 | *Translating GWAS peaks into novel drug targets*  APDA Advanced Center for Parkinson’s Disease Research (ACEPD) Seed Award  Role: **Co-Principal Investigator ($10,000)**  The ACEPD Seed Award is “for young rising stars in Parkinson’s research to study precision neurology of Parkinson from basic neuroscience to clinical.” Working together with a yeast genetic scientist, I will integrate the powers of human genomics, transcriptomics, and epigenomics data to identify novel, potentially druggable mechanisms for PD. |
| 2017 – 2022 | *Integrative Multi-omic Discovery of Proximal Mechanisms Driving Age-Dependent Neurodegeneration*  NIA RF1AG057331  Role: **Bioinformatics Director** (PIs: Mel Feany, Ernest Fraenkel, Clemens Scherzer)  I will lead the analysis of computational transcriptomics in this multi-institutional grant and test my hypothesis that Alzheimer’s disease risk loci specifically in human pyramidal neurons drive age-dependent neurodegeneration through dysregulation of variant-associated genes and networks in AD. |
| 2019 – 2021 | *400 Virtual Clinical Trials for Parkinson’s Disease.*  The Michael J. Fox Foundation for Parkinson’s Disease  Role: **Lead Bioinformatics Investigator** (PIs: Clemens Scherzer, Trond Riise)  The goal is to discover and confirm candidate drugs with a known safety profile that can be repurposed and developed for patients with PD. I will lead the bioinformatics analysis done at Harvard site in this dual-institute grant. |
| 2020 – 2021 | *AI2AMP-PD: Accelerating Parkinson’s Diagnosis Using Multi-Omics and Artificial Intelligence*  NIH 1U01NS120637-01  Role: **Principal Investigator** (PIs: Dong, Scherzer) **$300,000**  The goal is to leverage the harmonized, large-scale dataset in the AMP PD consortium to build a multi-omics classifier for Parkinson’s diagnosis using advanced machine learning data analytic methods. |
| 2020 – 2023 | *Parkinson5D: Deconstructing Proximal Disease Mechanisms across Cells, Space and Progression*  The Michael J. Fox Foundation for Parkinson’s Disease  Role: **Principal Investigator** (PIs: Scherzer, Dong, Feany, Levin, Zhang) **$9,000,000**  The goal is to reveal the complex human genetics of Parkinson’s disease through a dynamic, five-dimensional view of proximal cellular mechanisms across brain cells (1D), brain space (3D), and disease stage (1D). |
| 2022 – 2023 | *An inverse translational research project for identifying new treatments for Parkinson’s disease: The Epi-screening project*  The Research Council of Norway  Role: **Subcontract Instructor** (Subcontract PI: Clemens Scherzer)  The goal of this study is to evaluate whether existing drugs (molecules) can be repurposed as an effective treatment of PD. I will lead the analysis of computational pharmacome analysis based on Harvard Biomarkers Study longitudinal data. |
| 2021 – 2022 | *Developing RNA biomarkers of early PD pathology from brain organoids and extracellular vesicles*  American Parkinson Disease Association (APDA) Research Grant **- $75,000**  Role: **Principal Investigator**  The goal of the study is to develop RNA biomarkers of early PD pathology from brain 3D organoids and extracellular vesicles (EV). |
| 2021 - 2022 | *EXODUS-enabled High-throughput Multi-omics Profiling of Extracellular Vesicles for Diagnosis of Preclinical Alzheimer's Disease*  NIH R41 AG076098-01  Role: **Principal Investigator** (PIs: Chen, Dong) - **$250,000**  The goal of this STTR is to develop a platform and workflow for biomarker discovery and diagnosis of preclinical Alzheimer's disease (AD) based on multi-omics profiling of circulating extracellular vesicles. |
| 2021 – 2026 | *Systematic study of extracellular vesicles and their integrative analysis with Parkinson’s organoids MAP*  NIH R01 NS124916-01  Role: **Principal Investigator** (PIs: Dong, Lee) - **$2,500,000**  The goal of this study is to develop a new 3D mini-brain microphysiological analysis platform (MAP) to recapitulate the dopamine neurons’ interconnectivity and study molecular neurodegeneration systematically. |

Projects Submitted for Funding

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| 2022 - 2027 | *MIA: Multi-omics Interface for Alzheimer’s disease related dementias*  NIH R01 - **$2,500,000**  Role: **Principal Investigator**  The goal of this study is to harmonize the existing brain multi-omics datasets relevant to Alzheimer’s disease related dementias (ADRD) to identify ADRD-associated RNAs, their regulatory networks, and genetic association in expression, splicing, and chromatin accessibility, and from there to develop a comprehensive, cloud-based, interactive web portal -- Multi-omics Interface for ADRD (MIA). |
| 2022 - 2027 | *Regulation mechanism and functional genomics of LINE1 RNA in TDP-43 linked neurodegeneration*  NIH R01 - **$2,500,000**  Role: **Principal Investigator** (PIs: Sun, Dong)  The goal of this project is to study the regulation mechanism and functional genomics of LINE1 RNA in TDP-43 linked neurodegeneration. |

Report of Local Teaching and Training

Teaching of Students in Courses

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| 2007 | “Ensembl in a Nutshell” bioinformatics workshop, University of Bergen, Norway  Bioinformatics students and researchers, 1-hr sessions per day for five days |
| 2017 – present | Lecture in the Bioinformatics Club, Brigham and Women’s Hospital  Bioinformatics students and researchers, 1 hour per lecture for six lectures |
| 2021 | Single-cell RNA-seq analysis, Brigham and Women’s Hospital  40 students and researchers, a 2-day in-person course |

Laboratory and Other Research Supervisory and Training Responsibilities

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| 2013 – present | Supervision of Harvard learners (incl. HMS graduate students and postdoctoral fellows with a formal appointment at BWH) for bioinformatics in the Lab of Neurogenomics, Brigham and Women’s Hospital (average of 2 students per year)  1:1 supervision one hour per week per student |
| 2013 – present | Informal mentorship and consultancy to non-Harvard visiting scholars and summer interns in the Lab of Neurogenomics, Brigham and Women’s Hospital (average of 3 students per year)  1 hour per week per student |

Formally Mentored Harvard Medical and Graduate Students

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| 2014 – 2016 | Alyssa Ehrlich (Medical student in Harvard Medical School)  Conducted her rotation in the bioinformatics team. Presented a poster titled “Discovering Circular RNAs in Dopamine Neurons of Human Brain: Implications for Parkinson’s Disease” at the 2016 Soma Weiss Student Research Day in Harvard Medical School. She got all “Excellent” assessments for her PiM funding proposal. |
| 2015 -2016 | Ellen DeGennaro (PhD student in Harvard-MIT HST PhD program)  Conducted her internship in the laboratory and worked on a Huntington’s disease project. Co-authored a manuscript. |
| 2016 – 2016 | Rebeca Borges Monroy (PhD student in the BIG program at Harvard University)  Conducted her PhD rotation in the laboratory and worked together on a circRNA project. Drafting a co-authored manuscript. |
| 2020 – 2020 | Varshini Odayar (Freshman at Harvard College)  She chose us from the HUROS Fair as her first laboratory for research and participated in a top-secret project in the lab. |

Other Mentored Trainees and Faculty

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| 2009 – 2012 | Yogita Sharma (Graduate student at University of Bergen, Norway)  Mentor, co-supervisor for her research project & thesis, and co-author of an article in *BMC Bioinformatics* |
| 2013 – 2014 | Carmen Portenkirchner (Medical student in Paracelsus Medical University, Austria)  Thesis co-advisor, research advisor |
| 2013 – 2014 | Dr. Shuilin Jin (Visiting research scholar from Harbin Institute of Technology, China)  Co-supervisor, Bioinformatics trainer |
| 2014 – 2015 | Ruoting Wang (Undergraduate in University of Massachusetts)  Supervisor, research advisor for his summer internship in the Neurogenomics Laboratory |
| 2014 – 2016 | Dr. David Gritsch (Postdoc in BWH Neurogenomics laboratory)  Research advisor for his research in the laboratory, and co-authored an article published in *Nature Neuroscience* and a manuscript |
| 2015 – 2015 | Will Nemirovsky (Junior high school student in Buckingham Browne & Nichols School)  Supervisor, research advisor for his summer bioinformatics training at Harvard |
| 2015 – 2017 | Kristy Abo (Medical student in School of Medicine, Boston University)  Supervisor and project manager for her summer bioinformatics training at Harvard |
| 2015 – 2018 | Tao Wang (PhD Joint Training Program student, Harbin Institute of Technology, China)  Supervisor, research advisor for his three-year bioinformatics training in Harvard, and co-authored an article published in *Nature Neuroscience* and a manuscript |
| 2016 – 2018 | Zhuo Wang (PhD Joint Training Program student, Harbin Institute of Technology, China)  Supervisor, research advisor for her two-year bioinformatics training in Harvard, and co-authored a manuscript |
| 2016 – 2018 | Dr. Miguel E. Renteria (Postdoc in QIMR Berghofer Medicine Research Institute, Australia)  Supervisor, research advisor for his two-year bioinformatics training in the lab, and drafting a co-authored manuscript |
| 2018 – 2019 | Yaiza Van Waes Rubio (M.S. student in Universidad Complutense of Madrid, Spain)  Supervisor, research advisor for her five-month research traineeship in Bioinformatics, and co-authored a manuscript. |
| 2018 – 2020 | Dr. Jiajie Peng (Associate Professor in Northwest Polytechnical University, China)  Co-supervisor, research advisor for his two-year visiting scholarship in Brigham |
| 2018 – 2020 | Dr. Young Eun Huh (Assistant Professor of Neurology at CHA University School of Medicine, South Korea)  Supervisor, research advisor for her two-year bioinformatics training at Harvard |
| 2018 – 2019 | Haotian Liao (Graduate student in West China Medical School, Sichuan University, China)  Supervisor, research advisor for his two-year bioinformatics training at Brigham |
| 2019 – 2019 | Carmen Domínguez (Undergraduate student from National Autonomous University of Mexico, Mexico)  Career stage: postgraduate 5-month internship.  Mentoring role: research advisor and mentor.  Accomplishments: awarded a Summer Student Fellowship from the Parkinson’s Foundation; invited to give an oral presentation on the “Genomics of Brain Disorders 2020” conference (Wellcome Genome Campus, Cambridge, UK); published a first-author paper in *Scientific Reports*. |
| 2020 - 2021 | Xiaoqi Li (Undergraduate student from University of Wisconsin–Madison)  Career stage: postgraduate 11-month internship.  Mentoring role: research advisor and mentor.  Accomplishments: implemented an R shiny application in 1 month; led two innovative projects (PD imaging genetics based on UK Biobank data; SARS-Cov-2 circRNAs); three poster presentations in local and national scientific conferences; published one co-first author paper in the journal of *Bioinformatics*; received Data Science Internship Program award ($20,800) by Massachusetts Life Sciences Center; three manuscripts in preparation |
| 2021 - 2021 | Ariela Buxbaum Grice(Undergraduate student from Connecticut College) Career stage: postgraduate 8-month internship.  Mentoring role: research advisor and mentor.  Accomplishments: Led an exploratory project (pathogen detection in AD brain); prepared a first-author manuscript. |
| 2021 - 2021 | Mrinal Subash (Master student in Northeastern University) Research advisor and mentor for his 5-months co-op internship in bioinformatics. |
| 2021 - | Dr. Tingting Zhao(Full-time research scientist in the Bioinformatics Hub) Career stage: transition from molecular biologist to bioinformatics specialist.  Mentoring role: supervisor  Accomplishments: leading the bioinformatics analysis for three collaborative projects; two poster presentations in the local conference; TA in the Single-cell RNA-seq course |
| 2021 - | Dr. Ruifeng Hu(Postdoctoral Research Fellow) Mentoring role: supervisor  Accomplishments: leading an NIH-sponsored research project (AMP PD); one poster presentation at the local conference; preparing a first-author manuscript |
| 2021 - | Dr. Jie Yuan(Postdoctoral Research Fellow) Mentoring role: supervisor  Accomplishments: leading an ASAP-sponsored research project (Parkinson5D); two poster presentations in the local and international conference; preparing a first-author manuscript |

Formal Teaching of Peers (e.g., CME and other continuing education courses)

No presentations below were sponsored by outside entities

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| --- | --- | --- |
| Year(s) | Title(s) or topic(s) of talks | Number of talks in a single course |
|  | Course Name (Sponsor, if any) | Location(s) (city or country) |
| 2017 | Make Interactive Web Applications Using Shiny  Bioinformatics Club, Brigham and Women’s Hospital | Single presentation  Boston |
| 2017 | Introducing the UCSC Genome Browser  Bioinformatics Club, Brigham and Women’s Hospital | Single presentation  Boston |
| 2018 | Using *reshape2* and *tidyr* for Data Transformation  The “Mini R Camp” talk series, Brigham and Women’s Hospital | Single presentation  Boston |
| 2019 | Introducing Artificial Intelligence (AI) and the AI Camp  The “2019 AI Camp” talk series, Brigham and Women’s Hospital | Single presentation  Boston |
| 2019 | Making Your First AI Program Using CoLab and TensorFlow  The “2019 AI Camp” talk series, Brigham and Women’s Hospital | Teaching assistant  Boston |
| 2019 | Unsolved Problems and Future Challenges of Using AI in Medicine  The “2019 AI Camp” talk series, Brigham and Women’s Hospital | Single presentation  Boston |

Local Invited Presentations

No presentations below were sponsored by outside entities

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| --- | --- |
| 2011 | Correlate histone modifications and gene expression / BIB seminar  Program of Bioinformatics and Integrative Biology, UMass Medical School |
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| 2012 | Redefining the piRNA-producing loci of the mouse testis as genes / Bioinformatics Seminar Program of Bioinformatics and Integrative Biology, UMass Medical School |
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| 2014 | From ENCODE to PD Brain Map: Bioinformatics in Big Data Research / ADPD seminar Center of Neurologic Diseases, Brigham and Women’s Hospital |
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| 2015 | BRAINCODE: Decoding neuronal genome function in human brain / ADPD seminar  Center for Neurologic Diseases, Brigham and Women’s Hospital |
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| 2016 | Barcodes of neuronal genome function in human brain / ADPD seminar  Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
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| 2017 | An encyclopedia of transcribed elements in human brain dopamine neurons / ADPD seminar  Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
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| 2018 | Enhancers active in dopamine neurons are a primary link between genetic variation and neuropsychiatric disease / ADPD seminar  Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
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| 2018 | BRAINcode: An encyclopedia of human neuron transcriptomes in health and disease  **Award Speaker** ofDiscover Brigham Day Brigham and Women’s Hospital |
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| 2018 | Enhancers active in dopamine neurons are a primary link between genetic variation and neuropsychiatric disease  **Featured Speaker** 2018 HMS Epigenetics Symposium Department of Genetics, Harvard Medical School |
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| 2019 | Circular or not: Cell specificity of circRNAs in human brain neurons / ADPD seminar Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
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| 2020 | Exploring the dark matter in the human brain neurons  **Invited Speaker** Harvard Initiative of RNA Medicine seminar Beth Israel Deaconess Medical Center (BIDMC) |
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| 2020 | Circular RNAs: Challenging linear thinking of neurodegenerative diseases / ADPD seminar Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
|  |  |
| 2021 | Making Every Bit Count in Your RNA Sequencing Data / ADPD seminar Ann Romney Center for Neurologic Diseases, Brigham and Women’s Hospital |
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Report of Regional, National, and International Invited Teaching and Presentations

No presentations below were sponsored by outside entities

Regional

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| --- | --- |
| 2013 | Studying gene regulation using comparative genomics and epigenomics  Dana-Farber Cancer Institute, Boston, MA |
| 2017 | 7th Bioinformatics Strategy Meeting USA (East Coast) |
|  | The Westin Boston Waterfront, Boston, MA |

National

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| --- | --- |
| 2007 | Remnants of lost bystander genes under non-coding selection pressure in human-zebrafish synteny blocks  Bioinformatics Research and Education Workshop (BREW) 2007, Norway |
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| 2011 | Modeling gene expression with chromatin features  ENCODE conference, Stanford University |
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| 2012 | Modeling gene expression using chromatin features in various cellular contexts  ENCODE conference, MIT |
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| 2013 | Long-range gene regulation in the vertebrate genome  Berkeley Lawrence Laboratory, CA |
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| 2017 | From the known world to an expanding universe of genomic dark matter  **Invited Speaker** NIH Huntington’s Disease Biomarkers Workshop  National Institute of Health, Bethesda, MD |
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| 2018 | Update on current PD brain transcriptomics analysis  **Invited Speaker** NIH Accelerating Medicine Partnership (AMP) – Parkinson’s Disease Conference  National Institute of Health, Bethesda, MD |
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| 2019 | Bioinformatics Strategy Meeting USA East Coast 2019  **Invited Panelist**  The Le Meridien Cambridge, Boston, MA |
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| 2021 | Online sandboxes and tools for open science: AMP-PD, BRAINcode, power-eQTL  ASAP Collaborative Research Network (CRN) Tech 1 meeting Aligning Science Across Parkinson’s (ASAP) foundation |

International

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| --- | --- |
| 2010 | Translog, a web browser for studying the expression divergence of homologous genes  The 8th Asia Pacific Bioinformatics Conference  Bangalore, India |
| 2010 | Web resources to study the long-range gene regulation  Huazhong Agricultural University, Wuhan, China |
| 2010 | Evolutionary mechanisms of developmental long-range gene regulation in vertebrate genomes  Genome Institute of Singapore, Singapore |
| 2013 | Studying gene regulation using comparative genomics and epigenomics  Tongji University, Shanghai, China |
| 2015 | NGS and its application in translational medicine  Huazhong University of Science and Technology, Tongji Hospital, Wuhan, China |
| 2019 | Dark matter in the human genome and its regulation in complex diseases  **Invited Speaker**  The 2nd Academic Symposium of Rare Disease  Sichuan Medical Association, Chengdu, China |
| 2020 | Exploring the Dark Matters in the Human Brain Neurons  **Invited Speaker and Panelist**  NextGen Omics Series – the 6th Single Cell Analysis Congress  Boston, USA |
|  |  |
| 2021 | Decoding the dark matters in the human genome **Invited Speaker** The 11’th International Forum on Post-Genome Technologies (11’IFPT) -- virtual Nanjing, China |

**Report of Activities and Innovations**

Technological and Other Scientific Innovations

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| Synorth | A website designed for genome research, allowing to explore the evolution of synteny and long-range regulatory interactions between vertebrate genomes  URL: http://synorth.genereg.net  Published as first author on *Genome Biology* (Impact factor: 11.91), 25 citations |
| Translog | A website designed to study the expression divergence of homologous genes  URL: http://translog.genereg.net  Published as the first author on *BMC Bioinformatics* (Impact factor: 2.21) |
| Factorbook | A Wiki-based database for transcription factor-binding data generated by ENCODE  URL: http://factorbook.org  Published as co-author on *Nucleic Acid Research* (Impact factor: 10.16), 158 citations |
| BRAINcode | A web resource allowing users to query the gene expression profile and eQTL result in human brain neurons.  URL: http://humanbraincode.org |
| powerEQTL | An R package and shiny application for sample size and power calculation of bulk tissue and single-cell eQTL analysis URL: [https://bwhbioinfo.shinyapps.io/powerEQTL](https://bwhbioinfo.shinyapps.io/powerEQTL/) Published as the first author on *Bioinformatics* (Impact factor: 6.94) |

Educational Activities to the Community

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| 2008 – present | Owner of the bioinformatics blog, “*One Tip Per Day*” (<http://onetipperday>.sterding.com), which has 200 visits per day on average and more than 1,000,000 visits in total |
| 2012 | Innovation Month in the Worcester Public Schools: How to extract DNA from an onion  Claremont Academy, Worcester  <http://www>.umassmed.edu/news/2012/education/gsbs-students-take-science-on-road.aspx |
| 2017 – present | Founder and Director of the *Bioinformatics Club* (<http://bioinformatics>.bwh.harvard.edu/training), which is a weekly forum for learning and sharing bioinformatics at the whole hospital level. To date, we have already scheduled over 70 talks, serving more than 1000 persons. |
| 2021 | Lecture in the course of “Single-cell RNA-seq Analysis” (<https://singlecellcourse.org>) at Brigham and Women’s Hospital, with 40 participants |

Media Coverage

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| --- | --- |
| ENCODE consortium et al. *Nature*, 2012 | CNN: http://www.cnn.com/2012/09/05/health/encode-human-genome/  BBC: http://www.bbc.com/news/health-19202141  Scientific American: http://www.scientificamerican.com/article/junk-dna-encode/  Evolution News: http://www.evolutionnews.org/2012/09/junk\_no\_more\_en\_1064001.html  New York Times: http://www.nytimes.com/2012/09/06/science/far-from-junk-dna-dark-matter-proves-crucial-to-health.html  LA Times: http://articles.latimes.com/2012/sep/05/science/la-sci-dna-encode-20120906  The Guardian: http://www.theguardian.com/science/2012/sep/05/genes-genome-junk-dna-encode |
| Dong et al. *Genome Biology*, 2012 | GenomeWeb: http://www.genomeweb.com/blog/week-genome-biology-59  Biomed Central: http://blogs.biomedcentral.com/bmcblog/2012/09/07/human-genomics-comes-of-age-encode-open-access-and-biomed-central/  UmassMed News: http://www.umassmed.edu/news/news-archives/2012/09/umms-faculty-integral-to-consortium-decoding-human-genome/ |
| Dong et al. *Nature Neuroscience*, 2018 | EurekAlert!: https://www.eurekalert.org/pub\_releases/2018-09/bawh-gdm092018.php  Alzforum: https://www.alzforum.org/news/research-news/noncoding-rnas-evince-world-gene-regulation-dopaminergic-neurons  Neurology Today: https://journals.lww.com/neurotodayonline/Fulltext/2018/11010/Disease\_Mechanisms\_Parkinson\_s\_Disease\_\_Activity.2.aspx  R&D: https://www.rdmag.com/news/2018/09/laser-capture-method-investigates-parkinsons-and-psychiatric-diseases |

**Report of Scholarship**

Peer-Reviewed Scholarship in print or other media:

In total, 34 publications, over 17,000 citations, H-index = 21, 60% articles with Impact Factor > 10

* **Research Investigation** (including **9** first-author publications\* and **3** corresponding-author publications**+**)

1. Mungpakdee S, Seo HC, Angotzi AR, **Dong X**, Akalin A, Chourrout D. Differential evolution of the 13 Atlantic salmon Hox clusters. ***Molecular Biology and Evolution***. 2008; 25(7):1333-43. PMID: 18424774 **(IF = 14.8)**

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\*\* **Dong X is listed as “Lead Analyst” among the authorship**

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