

EDOARDO MARCORÀ, PH.D.

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EDUCATION AND TRAINING

- 2013 **Coursera Specialization: Data Science**
Johns Hopkins University · Baltimore, MA (USA)
Topics: Concepts and tools throughout the entire data science pipeline.
- 2013 **Coursera Course: Machine Learning**
Stanford University · Stanford, CA (USA)
Topics: Machine learning, data mining, and statistical pattern recognition.
- 2002 **Doctor of Philosophy in Molecular, Cellular and Developmental Biology**
University of Colorado at Boulder · Boulder, CO (USA)
Dissertation: Huntingtin as a scaffold for NeuroD signalling.
- 1995 **CSHL Course: Early Development of *Xenopus laevis***
Cold Spring Harbor Laboratory · Cold Spring Harbor, NY (USA)
- 1994 **Dottore in Scienze Biologiche, Valedictorian**
University of Pavia · Pavia, PV (ITA)
Dissertation: N-(4-hydroxyphenyl)retinamide: A potent inducer of apoptosis in human neuroblastoma cells.
- 1993 **EU Course: Developmental and Functional Aspects of Human Brain**
University of Udine · Udine, UD (ITA)
- 1992 **Erasmus Course: Molecular Approaches to Genetic Analysis**
University of Paris VII · Paris (FRA)

RESEARCH EXPERIENCE

- 2015-Present **Visiting Associate Professor · Associate Professor**
*Department of Neuroscience and Department of Genetics and Genomic Sciences
Icahn School of Medicine at Mount Sinai · New York, NY (USA)*
Concentration: Systems genetics and integrative genomics analysis of whole-exome and genome sequencing association data for late-onset Alzheimer's disease.
- 2011-2015 **Principal Investigator Scientist (Neuroscience Discovery Research)**
Amgen · San Francisco, CA (USA)
Concentration: Leading cross-functional teams for the identification and validation of drug targets for Alzheimer's disease and other neurological disorders (particularly in the area of lipid/lipoprotein metabolism, innate immunity and lysosomal function) using a diversified and innovative toolset based on: 1) systems genetics and integrative genomics; 2) targeted genome editing and reprogramming using engineered nucleases and transcription factors; 3) high-content screening and analysis of modifiers of complex cell behaviors (e.g., phagocytic cell clearance) using high-throughput flow and image cytometry. Managing external academic and CRO collaborations. Evaluating in-licensing opportunities.
- 2009-2011 **Programmer and Computational Biologist (Vertebrate Genomics Team)**
European Bioinformatics Institute (EMBL-EBI) · Cambridge (UK)
Concentration: Development of [BioMart](#), a federated database system for genomics data mining, integration and sharing.

- 2009-2011 **Visiting Scientist**
California Institute of Technology · Pasadena, CA (USA)
Concentration: Differential gene expression analysis across several brain regions from Htt knock-out and Huntington's disease mice by next-generation sequencing of the whole transcriptome (RNA-Seq).
- 2008-2009 **Senior Research Fellow**
California Institute of Technology · Pasadena, CA (USA)
Concentration: Generation and initial phenotypic characterization of a novel mouse model to study the effects of wild-type Huntingtin gene inactivation in the adult brain.
- 2003-2007 **Postdoctoral Scholar**
California Institute of Technology · Pasadena, CA (USA)
Supervisor: Prof. Mary B. Kennedy
Concentration: Normal function of Huntingtin in synapses; defective synapse-to-nucleus transport of NF- κ B in the molecular pathogenesis of Huntington's disease.
- 1996-2002 **Graduate Student Researcher**
University of Colorado at Boulder · Boulder, CO (USA)
Supervisor: Prof. Jackie E. Lee
Concentration: NeuroD protein-protein interactions; post-translation control of NeuroD activity; NeuroD signaling and Huntington's disease.
- 1995 **Research Scholar**
University of Colorado Health Sciences Center · Denver, CO (USA)
Supervisor: Prof. Jackie E. Lee
Concentration: NeuroD expression pattern in the developing and adult mouse.
- 1993-1994 **Undergraduate Student Researcher**
University of Pavia · Pavia, PV (ITA)
Supervisor: Prof. Giuliano Della Valle
Concentration: Use of synthetic retinoids for the treatment of neuroblastoma.

TEACHING AND MENTORING EXPERIENCE

- 2008 **Mentor**
California Institute of Technology · Pasadena, CA (USA)
Program: Caltech Summer Undergraduate Research Fellowship (SURF)
Student: Martina DeSalvo (UC Berkeley)
Project: Generation and initial phenotypic characterization of a novel mouse model to study the effects of wild-type Huntingtin gene inactivation in the adult brain.
- 2007 **Mentor**
California Institute of Technology · Pasadena, CA (USA)
Program: Caltech Summer Undergraduate Research Fellowship (SURF)
Student: Martina DeSalvo (UC Berkeley)
Project: Development of a novel synapse-to-nucleus transport assay to probe the normal function of Huntingtin and its role in the etiology of Huntington's disease.
- 2006 **Mentor**
California Institute of Technology · Pasadena, CA (USA)
Program: Caltech Summer Undergraduate Research Fellowship (SURF)
Student: John Yong (Chinese University of Hong Kong)
Project: Development of a Huntingtin knock-down model in primary neuronal cultures to study wild-type Huntingtin function.

- 2001-2002 **Mentor**
University of Colorado at Boulder · Boulder, CO (USA)
Program: MCDB Departmental Undergraduate Honors Program (UROP)
Student: Zhi Mao (CU Boulder)
Project: Generation of a Huntingtin-associated protein 1 (HAP1) mouse knock-out model by gene targeting.
- 1997 **Teaching Assistant and Lab Instructor**
University of Colorado at Boulder · Boulder, CO (USA)
Course: Developmental Biology, MCDB Undergraduate Program
Lecturer: Prof. William B. Wood
- 1997 **Teaching Assistant and Lab Instructor**
University of Colorado at Boulder · Boulder, CO (USA)
Course: Cell Biology, MCDB Undergraduate Program
Lecturer: Prof. Bradley B. Olwin

PROFESSIONAL EXPERIENCE

- 2007-2008 **Consultant, Software Development**
JournalFire.com · Pasadena, CA (USA)
LabMeeting.com · Princeton, NJ (USA)
Concentration: Client and server web application development.
- 1989-1993 **Director, Computer Operations and Software Development**
Plastovacuum · Varese, VA (ITA)
Concentration: Management of computer, networking, database, and backup systems; development of office automation and accounting software.

GRANTS AND AWARDS

- 2009-2010 **CHDI Early Discovery Initiative Research Grant (principal investigator)**
CHDI Foundation · New York, NY (USA)
Project: Comparative analysis of loss of Htt and mutant Htt effects on gene expression by RNA-Seq
- 2008-2009 **CHDI Early Discovery Initiative Research Grant (principal investigator)**
CHDI Foundation · New York, NY (USA)
Project: Generation and initial phenotypic characterization of a novel mouse model to study the effects of wild-type Huntingtin gene inactivation in the adult brain.
- 2007 **HDSA Research Grant (co-investigator)**
Huntington's Disease Society of America · New York, NY (USA)
Project: NF- κ B signaling from synapse to nucleus in Huntington's Disease.
- 2005-2006 **E. S. Gosney Postdoctoral Fellowship (recipient)**
California Institute of Technology · Pasadena, CA (USA)
- 2003-2004 **Milton Wexler Award (recipient)**
Hereditary Disease Foundation · New York, NY (USA)
- 2003-2004 **John J. Wasmuth Postdoctoral Fellowship (recipient)**
Hereditary Disease Foundation · New York, NY (USA)
Project: Normal function of Huntingtin in synapses.

SELECTED PUBLICATIONS

- 2015 Huang K, Jin SC, Harari O, Kapoor M, Bertelsen S, Czajkowski J, Renton A, Budde J, Lambert JC, Chouraki V, Bellenguez C, Grenier-Boley B, the IGAP Consortium, Harold D, Hollingworth P, Mayeux R, Haines JL, Farrer LA, Pericak-Vance MA, Seshadri S, Williams J, Amouyel P, Schellenberg GD, Borecki I, Marcora E, Cruchaga C, Goate A
Genome-wide survival and combinatorial analyses suggest novel loci that modify age at onset of Alzheimer's disease.
(In preparation)
- 2015 Marcora E and Kennedy MB
Comparative analysis of the cortical and striatal transcriptomes of Huntington's disease and Huntingtin loss-of-function mouse models by next-generation sequencing.
(In preparation)
- 2014 Miller S, Hill della Puppa G, Reidling J, Marcora E, Thompson LM, Treanor J
Comparison of Phosphodiesterase 10A, Dopamine receptors D1 and D2 and Dopamine Transporter ligand binding in the striatum of the R6/2 and BACHD mouse models of Huntington's disease.
Journal of Huntington's Disease 3(4):333–341
- 2010 Marcora E and Kennedy MB
The Huntington's disease mutation impairs Huntingtin's role in the transport of NF- κ B from the synapse to the nucleus.
Human Molecular Genetics 19(22):4373–4384
- 2008 Marcora E, Carlisle HJ, Kennedy MB
The role of the postsynaptic density and the spine cytoskeleton in synaptic plasticity.
Learning and Memory: A Comprehensive Reference, Elsevier, edited by Byrne JH, Eichenbaum H, Menzel R, Roediger H and Sweatt D ISBN: 0123705045
- 2008 Carlisle HJ, Manzerra P, Marcora E, Kennedy MB
SynGAP regulates steady-state and activity-dependent phosphorylation of cofilin.
Journal of Neuroscience 28(50):13673–13683
- 2008 Kennedy MB, Marcora E, Carlisle HJ
Scaffold proteins in the postsynaptic density.
Structural and Functional Organization of the Synapse, Springer, edited by Hell JW and Ehlers MD ISBN: 0387772316
- 2005 Marcora E and Jamitzky F
Implementing an ImageJ plugin in Jython.
Python Cookbook, 2nd ed., O'Reilly, edited by Martelli A, Ravenscroft A and Ascher D ISBN: 0596007973
- 2005 Itkin-Ansari P, Marcora E, Geron I, Tyrberg B, Demeterco C, Hao E, Padilla C, Ratineau C, Leiter A, Lee JE, Levine F
NeuroD1 in the endocrine pancreas: localization and dual function as an activator and repressor.
Developmental Dynamics 233(3):946–953
- 2005 Dufton C, Marcora E, Chae JH, McCullough J, Eby J, Hausburg M, Stein GH, Khoo S, Cobb MH, Lee JE
Context-dependent regulation of NeuroD activity and protein accumulation.
Molecular and Cellular Neuroscience 28(4):727–736

- 2003 Marcora E and Lee JE
NeuroD interaction with HAP1 and MLK2: Huntingtin as a scaffold for NeuroD signalling.
Proceedings of the National Academy of Sciences 100(16):9578–9583
- 1999 Sharma A, Moore M, Marcora E, Lee JE, Qiu Y, Samaras S, Stein R
The NeuroD1/BETA2 sequences essential for insulin gene transcription colocalize with those necessary for neurogenesis and p300/CREB binding protein binding.
Molecular and Cellular Biology 19(1):704–713
- 1997 Marcora E and Lee JE
The expression pattern of NeuroD suggests it plays a role in the development of neural, endocrine, and neuroendocrine structures.
Developmental Biology 186(300):A220
- 1994 Mariotti A[§], Marcora E[§], Bunone G, Costa A, Veronesi U, Pierotti MA and Della Valle G[§] equal contribution
N-(4-hydroxyphenyl)retinamide: A potent inducer of apoptosis in human neuroblastoma cells.
Journal of the National Cancer Institute 86(16):1245–1247

INVITED TALKS

- 2011 “How can RNA Profiling Best Provide Pathogenic Insights and Pharmacodynamic Biomarkers for Huntingtons Disease (HD)?”, CHDI Foundation Workshops Program
Los Angeles, CA (USA)
- 2009 “Synapses: From Molecules to Circuits & Behavior”, Cold Spring Harbor Laboratory Meetings & Courses Program
Cold Spring Harbor, NY (USA)
- 2009 Neurobiology Department Seminar Series, Institut de Géniomique Fonctionnelle
Montpellier (FRA)
- 2008 Biology Department Seminar Series, Penn State
University Park, PA (USA)
- 2008 Neuroscience 2008, 38th Annual Meeting of the Society for Neuroscience
Washington, DC (USA)
- 2008 Neuroscience Research Colloquia, The Brain Research Centre, University of British Columbia
Vancouver, BC (CAN)
- 2008 41st Winter Conference on Brain Research
Snowbird, UT (USA)
- 2007 11th Annual HDSA Coalition/Scientific Meeting
Boston, MA (USA)
- 2007 The Mountain School of Arts: Topics in Science and Technology
Los Angeles, CA (USA)
- 2006 The Mountain School of Arts: Topics in Science and Technology
Los Angeles, CA (USA)
- 2005 Gordon Research Conference: CAG Triplet Repeat Disorders
Mount Holyoke, MA (USA)

- 2004 HD 2004: Changes, Advances, and Good News (CAG)_n
Cambridge, MA (USA)
- 2003 HDF Electrophysiology and NMDA Workshop
Playa del Rey, CA (USA)
- 2002 HD 2002: Changes, Advances, and Good News (CAG)_n
Cambridge, MA (USA)

PROFESSIONAL SKILLS

Molecular and Cellular Biology Preparation and analysis of DNA; enzymatic manipulation of DNA and molecular cloning; site-directed mutagenesis of DNA; PCR (traditional, real-time, and digital); construction and screening of genomic and cDNA libraries; preparation and analysis of RNA; gene knock-down by RNA interference; gene knock-out by targeted genome editing using engineered TALE nucleases; next-generation sequencing of DNA (RNA-Seq, CHIP-Seq).

Preparation and analysis of proteins; design and preparation of viral particles; bacterial and insect cell protein expression; affinity protein purification; HPLC; antibody production and characterization; analysis of protein phosphorylation; analysis of protein-protein interactions (yeast two-hybrid system, coimmunoprecipitation, ELSA); *in vitro* kinase activity assays; transcription factor activity assays (EMSA, ELISA).

Bacterial, yeast and mammalian cell culture and transfection (including primary neuronal and myeloid cell cultures, and establishment of stable cell lines); subcellular fractionation by differential and density gradient centrifugation; immunocytochemistry; wide-field and laser confocal microscopy (including live cell imaging of neurons and photo-manipulation of single synapses using two-photon infrared laser); flow and image cytometry (including high-content screening and analysis); cell line engineering using TALEN technology.

Developmental and Organismal Biology Gene targeting in mouse ES cells; injection of mRNA in *Xenopus laevis* embryos; *in situ* hybridization and immunohistochemistry (sections and whole-mount); anatomical analysis of gene expression patterns in the developing and adult mouse.

Programming and Computational Biology Operating Systems (Linux, Apple OS X, MS Windows); programming and other languages (Python, Ruby, Java, Javascript, HTML/XML, SQL, R, MATLAB, LaTeX, and others); software design and development (including OOD and TDD); high-content image processing and analysis (ImageJ, PerkinElmer Acapella and Columbus, MATLAB, AutoQuant); SQL and NoSQL database servers (Google Cloud Datastore, ZopeDB, MongoDB, CouchDB, Neo4J, SQLite, MySQL, and others); web client and server frameworks (Google App Engine; MapReduce; Amazon AWS; Ruby On Rails; Zope/Plone; Google Web Toolkit; jQuery; Ext JS; development of Chrome and Firefox extensions).

Genomics data munging, integration and mining (including development of [BioMart](#)); machine learning (including supervised and unsupervised learning using Python, R, and MATLAB); data visualization (GraphViz, Processing, TIBCO Spotfire, and others); next-gen sequencing (including differential gene expression analysis using Bowtie, Tophat, Cufflinks, and Bioconductor); systems genetics (including gene and geneset burden analysis of disease susceptibility GWAS SNP datasets using PLINK, VEGAS, Ingenuity IPA, and others) for drug target identification, validation and prosecution with emphasis on neurological disorders and immunometabolism.

Scientific and Technical Writing Author of successfully funded fellowship and grant applications; author of scientific and technical book chapters (*Learning and Memory: A Comprehensive Reference*, Elsevier, 2008 and *Python Cookbook*, O'Reilly, 2005) and scientific journal articles.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Affiliations Society for Neuroscience (SfN)
International Brain Research Organization (IBRO)
American Association for the Advancement of Science (AAAS)

Ad Hoc Reviewer Journal of Neurochemistry
Alzheimer's Association International Conference
Packt Publishing

ADDITIONAL INFORMATION

Leadership President of the Caltech Italian Club (2004–2007)

Hobbies Flying helicopters, riding motorcycles. Playing and composing electronic music.

Languages Italian, English

VISA Status Permanent resident (green card)