

Boston University College of Engineering

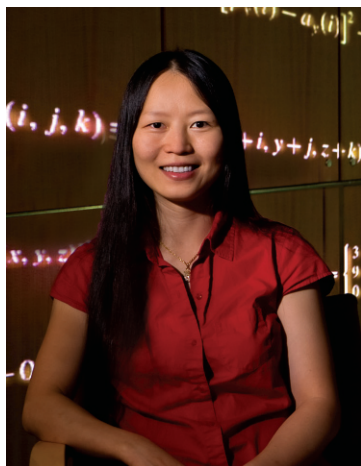
Charles DeLisi
Distinguished Scholar
Award & Lecture



Zhiping Weng
(ENG'97)

2022 Recipient

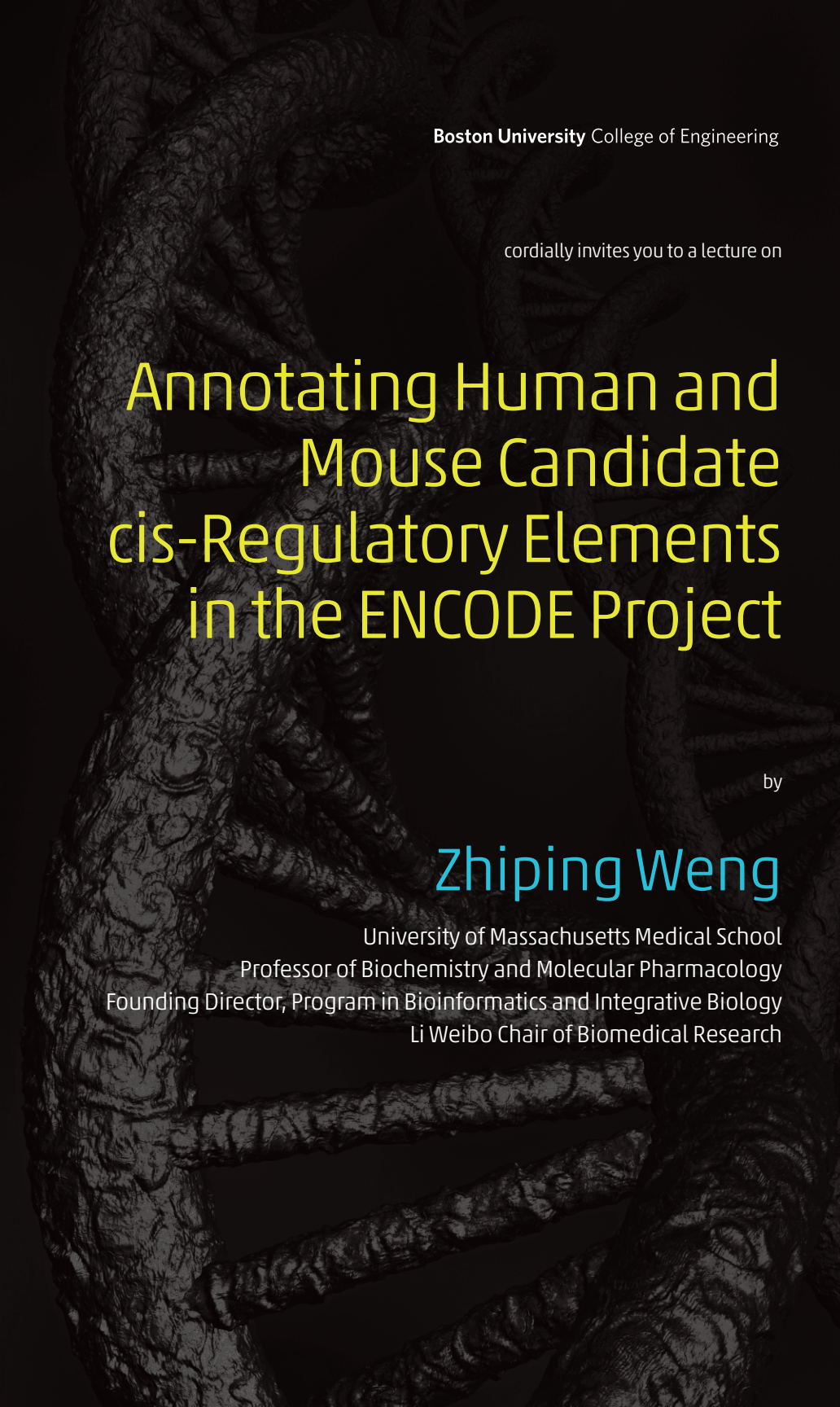
BOSTON
UNIVERSITY



Zhiping Weng is a distinguished alumna of Boston University. After earning her doctorate, and then teaching, in the BU College of Engineering's Biomedical Engineering program, Weng was recruited to be the founding director of the University of Massachusetts Medical School's program in bioinformatics and integrative biology. She is the Li Weibo Chair of Biomedical Research and a professor of biochemistry and molecular pharmacology at the UMass Medical School.

Weng's research focuses on genomics, epigenomics, transcriptomics, and molecular recognition. She is a computational genomicist who leverages the power of big data to understand the mysteries of the human genome. She has developed a systematic approach to define regulatory elements in the human and mouse genomes based on a select set of predictive epigenetic signals, and to annotate the activities of these elements across hundreds of cell and tissue types. These efforts might result in gene therapies that will correct or alleviate disease symptoms.

Weng leads data analysis centers in two consortia funded by the NIH to identify the core regulatory circuitry of human cells. She has published more than 200 papers and is a fellow of the American Institute for Medical and Biological Engineering. She is also a co-founder of Rgenta Therapeutics, which uses RNA targeting platforms to discover small molecules for the treatment of cancer and neurological disorders.



Boston University College of Engineering

cordially invites you to a lecture on

Annotating Human and Mouse Candidate cis-Regulatory Elements in the ENCODE Project

by

Zhiping Weng

University of Massachusetts Medical School
Professor of Biochemistry and Molecular Pharmacology
Founding Director, Program in Bioinformatics and Integrative Biology
Li Weibo Chair of Biomedical Research

CHARLES DELISI DISTINGUISHED SCHOLAR AWARD

The Charles DeLisi Distinguished Scholar Award annually honors a researcher who has helped move his or her field and society forward through outstanding, high-impact research, and provides the recipient with a forum to discuss his or her work before the Boston University academic community and the general public.

ABSTRACT

The Encyclopedia of DNA Elements (ENCODE) Project has generated tens of thousands of DNase-seq, ChIP-seq, and RNA-seq data sets in human and mouse tests. As part of the ENCODE consortium, Weng and colleagues developed a registry of 926,535 human and 339,815 mouse candidate cis-regulatory elements (cCREs), covering 7.9 and 3.4 percent of their respective genomes, by integrating selected data types associated with gene regulation. They built a web-based server named SCREEN (<http://screen.encodeproject.org>) to provide flexible, user-defined access to the registry of cCREs and related genomic annotations generated by ENCODE. The team created a similar resource called Factorbook (<https://factorbook.org>), focused on transcription factors and their binding sites and motifs derived from ENCODE ChIP-seq data.

Recently, Weng and colleagues leveraged the genomes of 240 mammals sequenced by the Zoonomia consortium to annotate further cCREs and transcription factor binding sites. In this lecture, Weng will describe how these resources aid our interpretation of human variants associated with traits and diseases.





ROBERTO TRON, 2022 EARLY CAREER RESEARCH EXCELLENCE AWARD

Mechanical Engineering Assistant Professor Roberto Tron's research interests combine elements of systems and control theory, robotics, and computer vision, with an emphasis on multiple robotic agents and human-robot interactions. He has made significant contributions in addressing questions of safety and performance of teams in complex environments and managing the computation load incurred when agents perform cooperative tasks. Tron has received, as a principal investigator, more than \$3 million in funding, including from the National Science Foundation and the National Institutes of Health. He has graduated four PhD students, his research has been cited more than 3,000 times, and he is an associate editor for *IEEE Transactions on Robotics*.



GIANLUCA STRINGHINI, 2022 EARLY CAREER RESEARCH EXCELLENCE AWARD

Electrical and Computer Engineering Assistant Professor Gianluca Stringhini's research uses data-driven approaches to better understand malicious activity online, with the goal of developing better mitigation techniques to keep users safe. He has worked on topics such as malware, online fraud, and spam, developing groundbreaking software and even helping to take down online criminal operations. In this work, he combines techniques from signal processing, image processing, machine learning, and computational social science. Stringhini has received several NSF grants and published more than 120 papers, and his research has been featured in the BBC, the *New York Times*, *The Atlantic*, and other prominent news outlets.



Charles DeLisi

Widely considered the father of the Human Genome Project, Charles DeLisi was an early pioneer in computational molecular biology, and made seminal contributions to theoretical and mathematical immunology. He currently serves as Metcalf Professor of Science and Engineering, and continues to direct the Biomolecular Systems Laboratory, where more than 100 undergraduate, graduate and post-doctoral students have trained.

As Dean of the College of Engineering from 1990 to 2000, he recruited leading researchers in biomedical, manufacturing, aerospace and mechanical engineering, photonics and other engineering fields, establishing a research infrastructure that ultimately propelled the College into the top ranks of engineering graduate programs. In 1999 he founded—and then chaired for more than a decade—BU's Bioinformatics Program, the first such program in the nation.

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44 Cummington Mall
Boston, MA 02215

bu.edu/eng