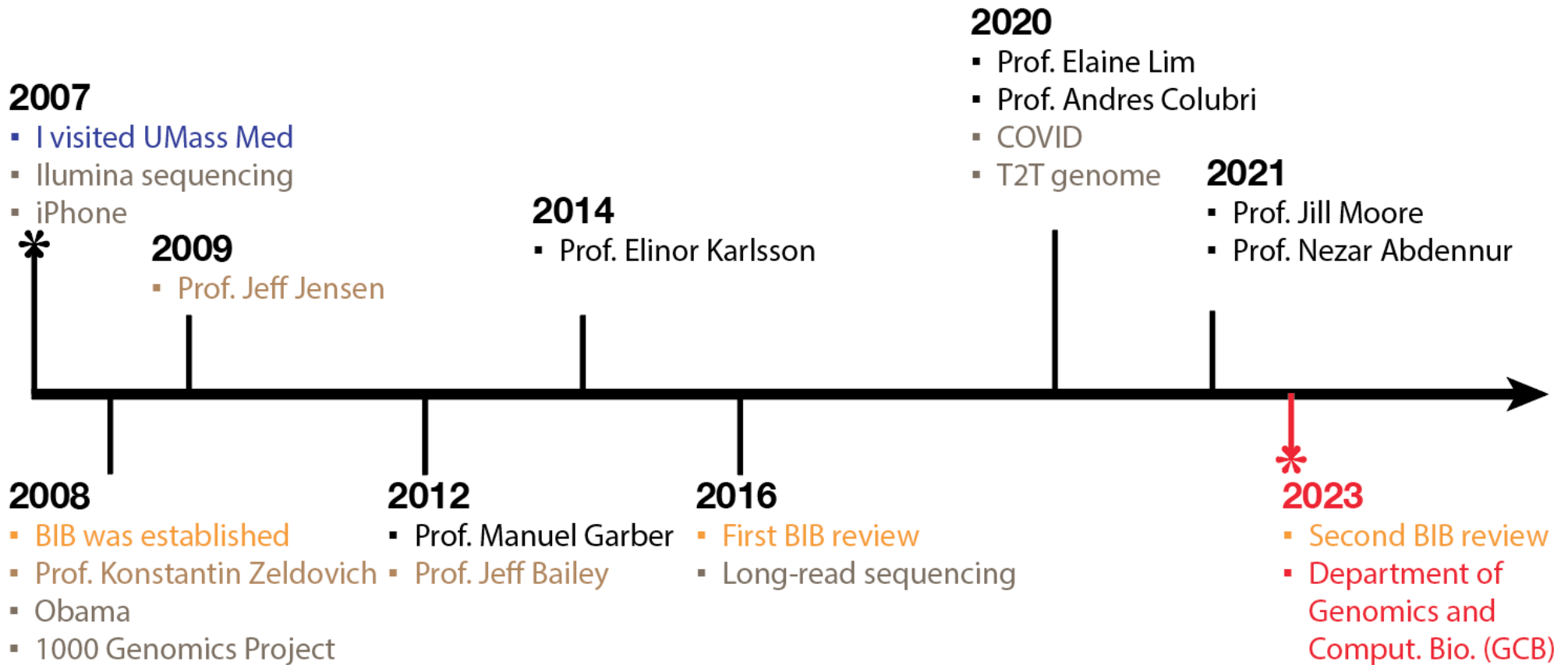


Establishment of Department of Genomics and Computational Biology (GCB)

Zhiping Weng, Professor and Director
Program in Bioinformatics and Integrative Biology (BIB)

September 2023

We started as a Program
Program in Bioinformatics and
Integrative Biology (BIB)



Current affiliations:

Bailey, associate prof. at Brown

Jesen, prof. at Arizona State

Zekdovich, head of computational antigen design at Sanofi





Program in
Bioinformatics
and Integrative
Biology (BIB)

BIB Tenured and Tenure-track Faculty

Professor and Director
Zhiping Weng

Professor
Manuel Garber

Associate Professor
Elinor Karlsson

Assistant Professor
Nezar Abdennur
Andrés Colubri
Elaine Lim
Jill Moore

Affiliated Faculty

Athma Pai, Assistant Professor,
RTI

Rigel Chan, Assistant Professor,
Neurology

Bioinformatics Core

Manuel Garber, Director
Alper Kucukural, Associate
Professor, Co-director

Morningside GSBS Program in Bioinformatics and Computational Biology (BCB)

Zhiping Weng, Director



Program in
Bioinformatics
and Integrative
Biology (BIB)

Staff

Heidi Beberman
Head of Staff



Elona Naco
Grants and Contracts Specialist



Abigail Miller
Executive Assistant to Director



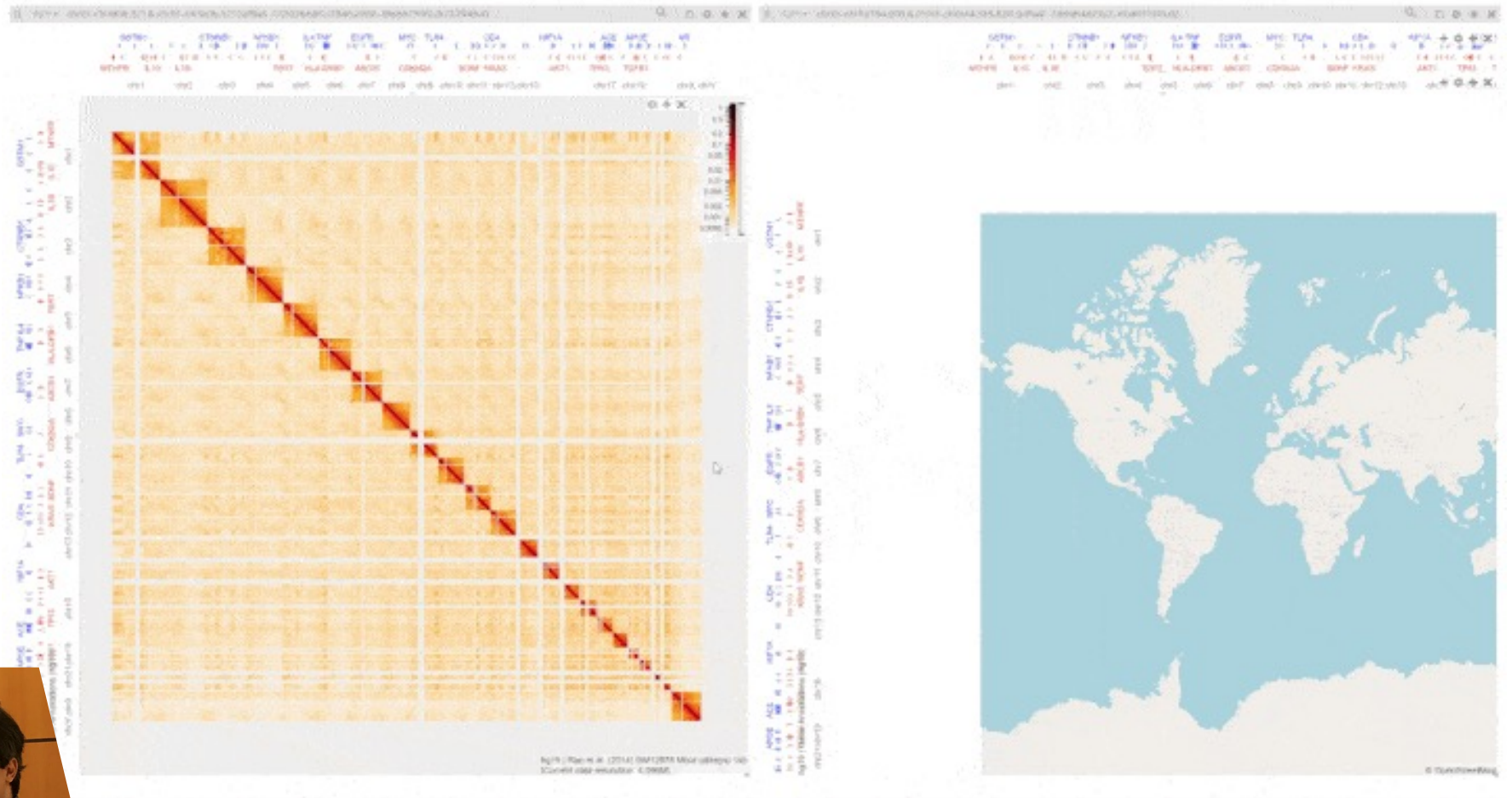
Josh Somers
Administrative Assistant II



**Innovative science is the
essence of BIB**



Jill Moore: Gene regulation, Multi-omics, Machine Learning



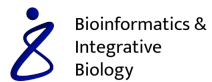
Nezar Abdennur: Data Science for Genomics

2022



Andrés Colubri

Creating virtual microbes
to experimentally test
outbreak response strategies



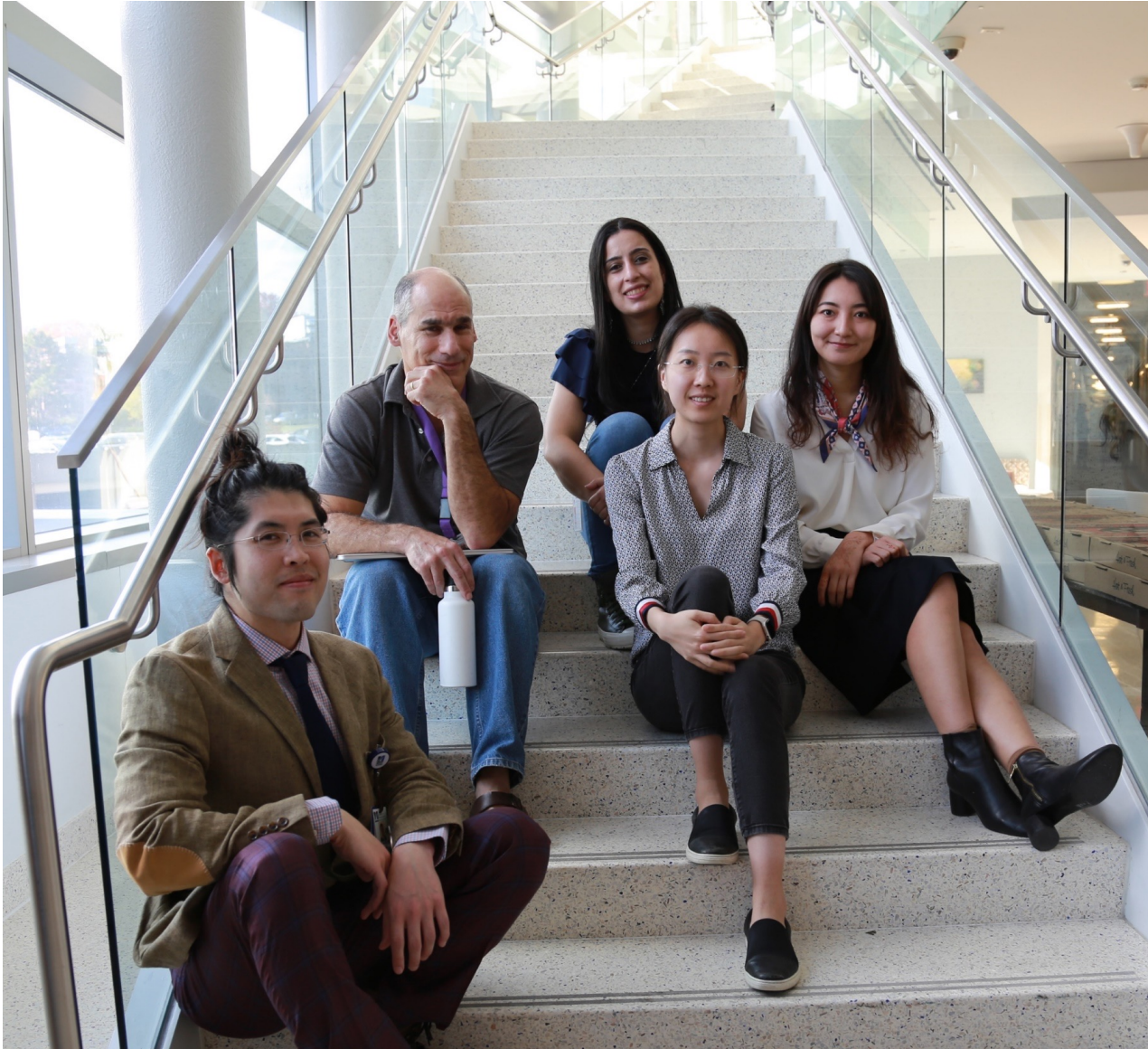
2020

Elaine Lim:
Genomics of
Neurodegenerative
Diseases

Collaborating Lab:
Rigel Chan
(Neurology)

2020





Manuel Garber: Evolutionary Immuno Genomics

Collaborating labs:

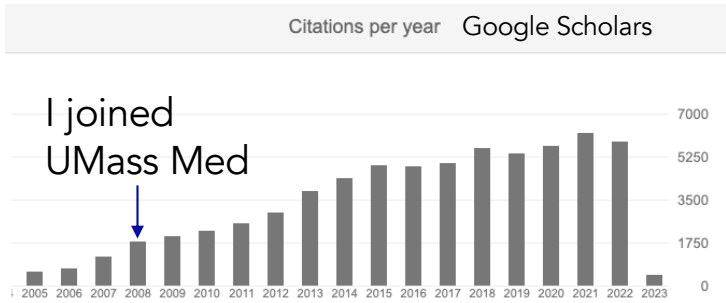


John Harris Mehdi Rashighi
Department of Dermatology

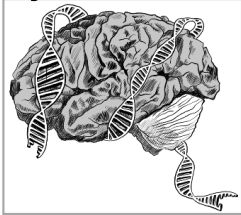
2012



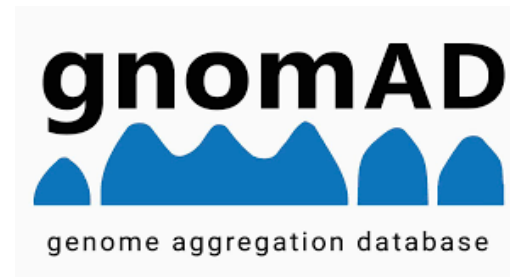
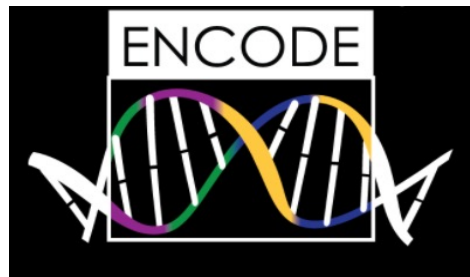
Zhiping Weng: Genomics, Epigenomics, Small-RNA Biology



PsychENCODE

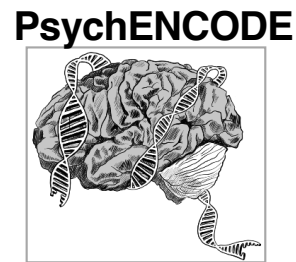


Big question: what positions in the genome are functional / important in human health / good therapeutic targets?



Impact of Genomic Variation on Function (IGVF) Consortium

The IGVF will develop a framework for systematically understanding the effects of genomic variation on genome function and how these effects shape phenotypes.



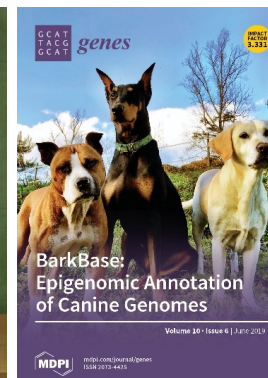
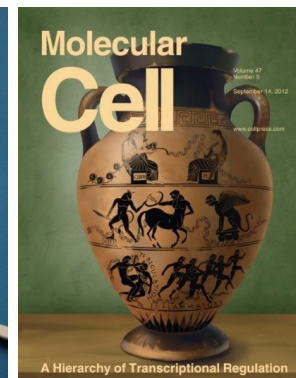
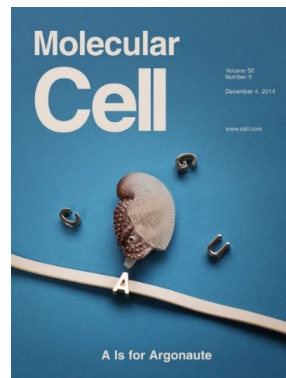
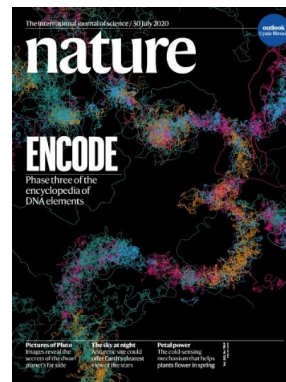
Our faculty brought in \$50 M funding during in 2016-2022

Faculty	Date joined BIB	Date Departed BIB	# of grants awarded (2016-2022)	\$ total awards (2016-2022)
Zhiping Weng	1/1/08		21	\$31,833,893
Konstantin Zeldovich	8/31/08	11/21/17	4	\$1,075,190
Jeffrey Bailey	10/9/12	10/15/18	7	\$2,846,096
Manuel Garber	9/1/12		20	\$5,865,078
Elinor Karlsson	9/29/14		12	\$5,909,394
Elaine Lim	8/30/20		1	\$2,198,697
Andres Colubri	8/2/20		3	\$1,154,203
Jill Moore	5/2/22		2	\$98,014
Nezar Abdennur	6/2/22		1	\$40,500
Totals			71	\$51,021,065

Grant funding has grown from \$898,988 in the first six months in FY08, to \$8,622,149 in 2022.

BIB publications

- From 2008-2022, BIB labs published over **354** papers.
- Papers from the current faculty were the subject of **13,592 tweets** by 9,705 unique Twitter users.
- BIB faculty research was also the subject of **2,040 news stories** from 886 distinct news outlets.





Mentioned by

497 news outlets
17 blogs
1694 tweeters
15 Facebook pages
2 Wikipedia pages
4 Redditors
1 video uploader

200,845 downloads,
ranking it #41 out of
78,143 *Science* papers



Kathleen Morrill

Morrill et al. ... Karlsson
"Ancestry-inclusive dog
genomics challenges popular
breed stereotypes."
Science (2022)



BIB students and postdocs won many awards

Trainee	Year	Award	Degree	Lab
Jill Moore	2014	Student Award for Outstanding Mentoring	PhD	Weng
Jill Moore	2018	Class Speaker	PhD	Weng
Elisa Donnard	2019	Chancellor's Award for Excellence in Mentoring	Post Doc	Garber
Pranitha Vangala	2019	GSBS Student Mentoring Award	PhD	Garber
Pranitha Vangala	2020	Class Speaker	PhD	Garber
Pranitha Vangala	2020	Dean's Award for Best Thesis	PhD	Garber
Xue (Shirley) Li	2021	Riccio Travel Award	PhD	Karlsson
Kathleen Morrill	2022	Class Speaker	PhD	Karlsson
Kathleen Morrill	2022	Dean's Award for Best Thesis	PhD	Karlsson
Kathleen Morrill	2022	Riccio Travel Award	PhD	Karlsson
Kathleen Morrill	2023	Fred Hutch Harold M. Weintraub Graduate Student Award	PhD	Karlsson
Shuo (Crystal) Shan	2022	Student Community Leadership Award	In Progress	Garber
Yuqing Wang	2023	Riccio Travel Award	In Progress	Garber
Gaurav Chauhan	2023	Riccio Travel Award	In Progress	Karlsson



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THE BIOINFORMATICS CORE: DYI INFORMATICS



Alper Kucukural (since 2014)

Associate Professor

Co-director



Onur Yukselen

Bioinformatician III

The engineer



Artur Manukyan (since 2020)

Postdoc

Requirements gathering, single cell consultant, DProfiler

VIA SCIENTIFIC— A COMPANY FUNDED TO ACCELERATE THE CORE'S FUNCTION

UMass Chan Medical School licenses data processing and analysis technology to Via Scientific

Platform streamlines complex bioinformatics analytics while amplifying insights and speeding biomedical research

By Jim Fessenden | February 02, 2023



Alper Kucukural, PhD, and Manuel Garber, PhD

UMass Chan Medical School has licensed its bioinformatics data processing and analysis technology to Via Scientific Inc. for commercial development. The software platform, developed by UMass Chan researchers Alper Kucukural, PhD, and Manuel Garber, PhD, and colleagues in the Bioinformatics Core at UMass Chan, is a flexible and scalable, web-based bioinformatics system that empowers biomedical researchers to perform complex analysis of extremely large data sets from multiple experimental samples. The software, called Foundry, allows investigators to automate the majority of intensive bioinformatics work, such as verifying and collating data or writing new code, allowing them to focus on interpreting scientific data and research.



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Zhiping Weng, Director

Graduate School of Biological Sciences (GSBS) Program in Bioinformatics and Computational Biology (BCB)

- BBS 706: An Empirical Introduction to Statistical Modeling
Manuel Garber, Fall 2021, 2019, 2017
- BBS 741: Advanced Topics in Bioinformatics
Zhiping Weng, Fall 2022, 2020, 2018, 2016

UMassMed-BBS741

#lectures

BB5741 class google sheet:

December 9th, 2020

Lecture 16 PPT:
https://www.dropbox.com/s/482..._BS741%20Hidden%20Markov%20Mo dels.pptx?dl=0

December 10th, 2020

Zhiping Weng 9:10 AM
Lecture 15 video:
<https://www.dropbox.com/s/07gc1rogdxhjog8/15.%20BB5741.%20Expectation%20maximizat ion%20video.mp4?dl=0>

December 16th, 2020

Zhiping Weng 12:55 PM
Lecture 16 video:
<https://www.dropbox.com/s/7srpvh3bxfkqy/16.%20BB5741.%20Hidden%20Markov%20Mo dels%20Video.mp4?dl=0>

December 22nd, 2020

Zhiping Weng 9:29 AM
Lecture 17 (Project 4) video:
<https://www.dropbox.com/s/5ij7oiw8b3xrgmw/17.%20Project%204%20-%20Graphical%20learning%20techniques%20Video.mp4?dl=0>
Lecture 17 (Project 4) PPT:
<https://www.dropbox.com/s/jikgge5doelrgcd/17.%20Project%204%20-%20Graphical%20learning%20techniques.pptx?dl=0>

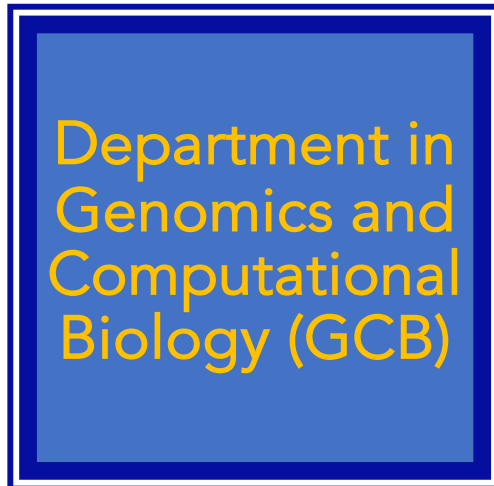
Thomas Reimonn 9:58 AM
Yes, I can

Yesterday

Jill Moore 9:01 AM
Final Presentation Slides:
https://docs.google.com/presentation/d/1SRVbk_acOhkBayDuCWfIzzayDNVr5M/edit#slide=id.g78a0f5536f_2_75

Zhiping Weng 10:11 AM
Thanks, everyone, for your presentation today! Video for th
<https://www.dropbox.com/s/twaqkell03lmxve/18.%20>

Establishment of
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Neurology

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Alper Kucukural, Associate
Professor, Co-director

Morningside GSBS Program in Systems, Computational and Quantitative Biology (SCQB)

Hyun Youk, co-Director
Manuel Garber, co-Director

Department of Genomics and Computational Biology (GCB)

- Do great science and train future leaders.
- Grow to 15 tenured/tenure-track faculty at the steady rate (8 now).
- New faculty hires will be in sub-areas of genomics and computational biology that complement existing research labs.
- Remain in Albert Sherman because we love our space.
- Work with the Dean, Chancellor, and other UMass Chan units to achieve academic excellence.
- Expand our infrastructure to support our scientific and educational needs.

Department of Genomics and Computational Biology

Our department is dedicated to advancing scientific knowledge and innovation at the intersection of genomics and computational biology.

We strive to unravel the complexities of biological systems, drive breakthroughs in understanding genetic mechanisms, and harness the power of data-driven computational approaches to address fundamental biological questions and shape the future of genomic medicine.