



# The Full Spectrum Biomedical and Health Informatics Education at Oregon Health & Science University

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# The full spectrum

- Informaticians
  - Academic  $\leftrightarrow$  Professional
- Informatics domains
  - Bio  $\leftrightarrow$  Clinical
- Educational experience
  - Primary  $\leftrightarrow$  Continuing
- Beyond informaticians

# Education of informaticians

- OHSU Biomedical Informatics Graduate Program
  - Aims to train future professionals, researchers, and leaders
- Two Majors
  - Health & Clinical Informatics (HCIN)
  - Bioinformatics & Computational Biomedicine (BCB)

Degree/Certificate	PhD	MS thesis	MS non-thesis	Graduate Certificate
Major				
HCIN	On-campus	On-campus	On-campus On-line	On-campus On-line
BCB	On-campus	On-campus	On-campus	

# Curriculum building block approach

		<u>PhD</u> <ul style="list-style-type: none"><li>- Courses in domains:<ul style="list-style-type: none"><li>- HCIN</li><li>- BCB</li></ul></li><li>- Knowledge Base</li><li>- Advanced Research Methods</li><li>- Biostatistics</li><li>- Cognate</li><li>- Doctoral Symposium</li><li>- Mentored Teaching</li><li>- Dissertation</li></ul>
<u>Masters</u> <ul style="list-style-type: none"><li>- Courses in domains:<ul style="list-style-type: none"><li>- HCIN</li><li>- BCB</li></ul></li><li>- Thesis or Capstone/Internship</li></ul>		
<u>Graduate Certificate</u> <ul style="list-style-type: none"><li>- Courses in domains:<ul style="list-style-type: none"><li>- HCIN</li></ul></li></ul>		
<u>10x10</u> <ul style="list-style-type: none"><li>- Or introductory course</li></ul>		

# OHSU Biomedical Informatics Graduate Program

- Most students tuition-paying but with two key fellowship programs
  - NLM T15 Training Grant
    - Since 1992
    - Renewed in 2017 for another 5 years (with additional funding from NIEHS)
  - ACGME-accredited Clinical Informatics Fellowship
    - 4<sup>th</sup> program (of 34 now) to receive accreditation, launched in 2015
    - Funded by OHSU, Portland VA Medical Center, and OCHIN
- Master's program accredited by CAHIIM
- <http://www.ohsu.edu/informatics-education>

# HCIN Major

- Focused on informatics applied to health, healthcare, and public health
- Available online at Graduate Certificate and Master's levels
- Physician subspecialty fellowship
  - Master's program accepted for board eligibility – now extended to 2022
  - Six fellowships, including OHSU's, use courses in their programs



International students from:  
Argentina, Singapore, Thailand,  
Egypt, Israel, Saudi Arabia,  
Zimbabwe, China, and other  
countries

# Alumni numbers, accomplishments, and employers

Major*	Health & Clinical Informatics**	Bioinformatics & Computational Biomedicine***	Total
Certificate/Degree			
Graduate Certificate	422	N/A	422
MS with Thesis****	74	21	95
MS without Thesis*****	196	17	213
PhD	18	9	27
Total	710	47	757
Number of students receiving degrees and certificates: 691			

\* Formerly Track

\*\* Includes formerly Clinical Informatics and Health Information Management Tracks

\*\*\* Includes formerly Bioinformatics & Computational Biomedicine Track

\*\*\*\* Includes formerly Master of Science

\*\*\*\*\* Includes formerly Master of Biomedical Informatics and Master of Medical Informatics

## Accomplishments of our alumni

- Faculty leaders at many institutions
  - Regenstrief Institute
  - Harvard Medical School
  - Children's Hospital of Philadelphia
- 11% (15 of 130) of newly anointed Fellows of AMIA (FAMIA)

## Employers

- OHSU
- OHSU Knight Cancer Institute
- Providence Health System
- Kaiser-Permanente
- OCHIN
- Intelligent Medical Objects
- Impact Advisors
- Deloitte
- Epic
- Cerner
- Jefferson Health Information Exchange
- National Library of Medicine
- WebMD
- Institute for Systems Biology

# How have OHSU students and graduates done?

- Over 20 years of experience...
- General observation: What people do when they graduate is partially dependent on what they did when they entered, e.g.,
  - Physicians, nurses, public health, etc. draw on their clinical/professional background
  - Information technology professionals draw on their unique background and experience
- Graduates have obtained jobs in a variety of settings, e.g., clinical, academic, and industry
- Growing number of opportunities in data science/analytics

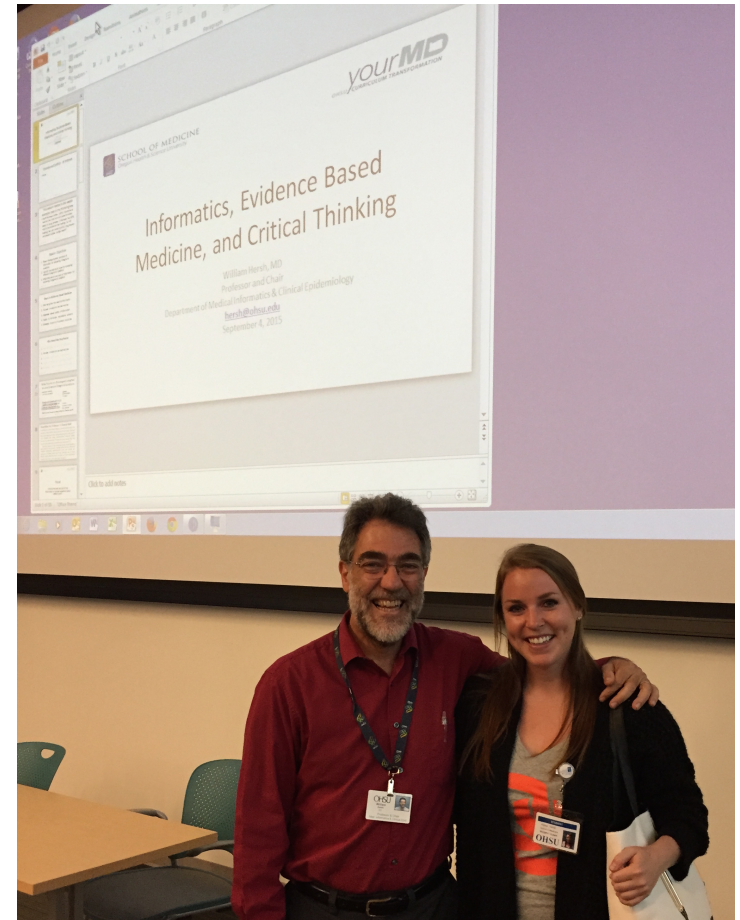


# Continuing education

- 10x10 (“ten by ten”)
  - In partnership with AMIA, original and still largest 10x10 offering
    - Currently 2517 by 2018
  - Standalone version of introductory course
  - Allows entry into OHSU Graduate Program
  - <https://dmice.ohsu.edu/hersh//10x10.html>
- Update in Health IT: Healthcare Data Analytics
  - Based on materials developed by grant from Office of the National Coordinator for Health IT (ONC)
  - Offered CME, CNE, and MOC-II credit for clinical informatics subspecialists
- More CE, CME, MOC-II to follow

# Other happenings at OHSU

- Dr. Frank Naeymi-Rad and Dr. Theresa Kepic Scholarship for Biomedical Informatics
- Teaching of informatics in other programs
  - MD curriculum
  - Basic science graduate programs
  - Undergraduate health informatics course at Portland State University
- National Center for Data to Health (CD2H) part of NIH CTSA program



# What about data science?

- First data analytics course launched three years ago
- Funding from NIH BD2K, ONC, and NLM aiding in development of curricular content
  - <https://dmice.ohsu.edu/bd2k/>
  - Data science for basic science PhD students and postdocs
  - Internship for college undergraduates

## INFORMATICS PROFESSOR

THIS BLOG MAINTAINS THE THOUGHTS ON VARIOUS TOPICS RELATED TO BIOMEDICAL AND HEALTH INFORMATICS BY DR. WILLIAM HERSH, PROFESSOR AND CHAIR, DEPARTMENT OF MEDICAL INFORMATICS & CLINICAL EPIDEMIOLOGY, OREGON HEALTH & SCIENCE UNIVERSITY.

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### What is the Difference (If Any) Between Informatics and Data Science?

I am increasingly asked to describe the difference between data science and biomedical informatics. Distinguishing these disciplines takes on added importance with the recent publication of the NIH Advisory Committee to the Director, National Library of Medicine (NLM) Working Group, [report on the future of the NLM](#), which calls for NLM to become a leader in data science at NIH. NLM has of course [historically been a leader in research and training in biomedical informatics](#).

What is, if any, the difference between informatics and data science?

WILLIAM HERSH



<http://www.billhersh.info/>



# For more information

- Bill Hersh
  - <http://www.billhersh.info>
  - [@williamhersh](#)
- Informatics Professor blog
  - <http://informaticsprofessor.blogspot.com>
- OHSU Department of Medical Informatics & Clinical Epidemiology (DMICE)
  - <http://www.ohsu.edu/informatics>
  - <http://www.ohsu.edu/blogs/health-data/>
  - <http://www.youtube.com/watch?v=T-74duDDvwU>
  - <https://www.youtube.com/channel/UCCekPERb6i3xXE>  
[DQxwlCeIA](#)
  - [@OHSUInformatics](#)