DARTMOUTH

DARTMOUTH

PhD in Quantitative Biomedical Sciences

Welcome to the presentation!

What we will cover today

DARTMOUTH

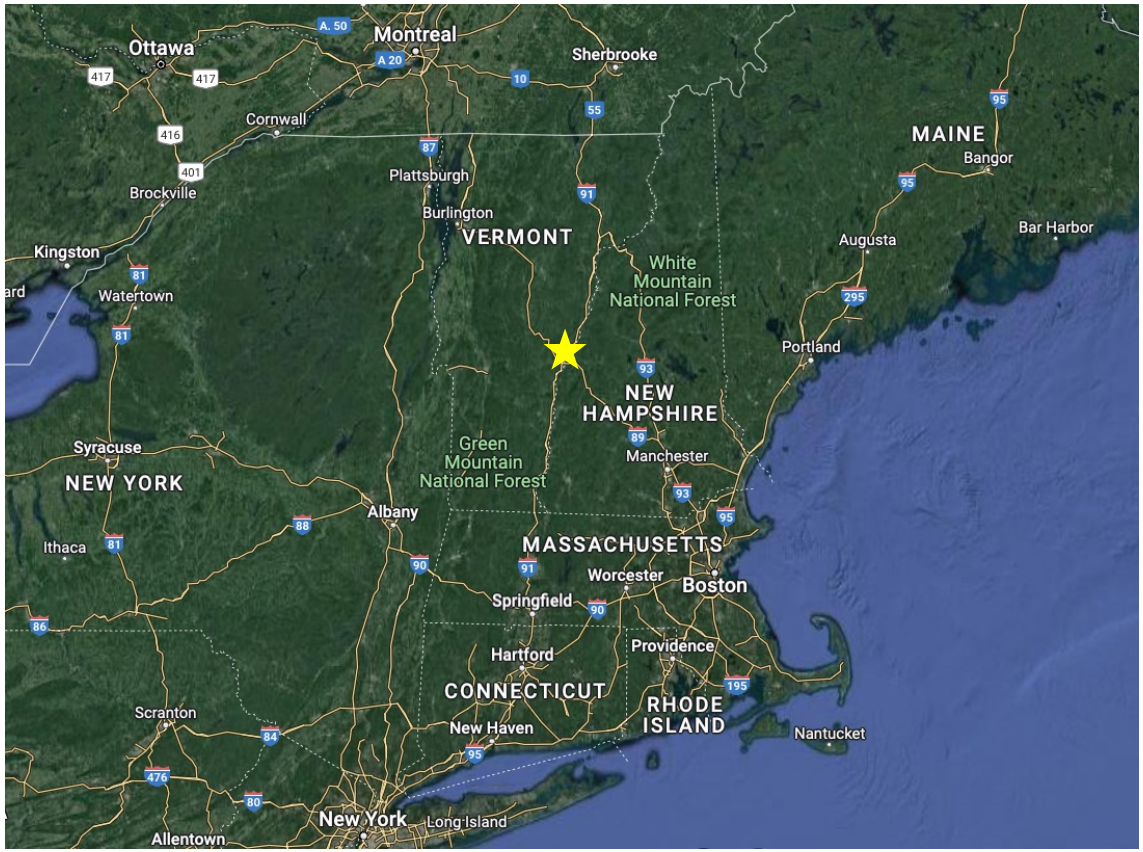
- Dartmouth College and Quantitative Biomedical Sciences program overview
- Degree requirements and timeline
- Application and admissions
- Program training and academics
- Q & A

Where is Dartmouth College?

We are on the border of New Hampshire and Vermont

Easy access major cities:

- Boston
- New York
- Burlington
- Montreal



About Dartmouth

Founded in 1769, Dartmouth is a member of the Ivy League and is a liberal arts college with 4 professional schools.

- Geisel School of Medicine
- Thayer School of Engineering
- Tuck School of Business
- Guarini School of Advanced and Graduate Studies

Organization

DARTMOUTH
Guarini School of Graduate and Advanced Studies

- Oversees all non-professional graduate programs (PhD and MS)
- Ratifies new and modified curricula
- Confers degrees
- Sponsors student activities and events
- Empowers graduate student council

Organization

Dartmouth
GEISEL SCHOOL OF
MEDICINE

- Establishes program structure
- Administers programs
- Hires faculty and empowers research
- Provides staff and facilities

QBS degrees

Doctor of Philosophy (PhD)

- Interdisciplinary training in Biostatistics, Bioinformatics, and Epidemiology
- First class in 2011

Master of Science (MS)

- Concentrations in Health Data Science, Epidemiology, Medical Informatics
- First class in 2018

QBS leadership

Scott Gerber, PhD

- Director, Quantitative Biomedical Sciences
- Professor of Molecular and Systems Biology
- Kenneth E. and Carol L. Weg Distinguished Professor
- Director, Cancer Signaling, Genomes & Networks Research Program, Dartmouth Cancer Center

QBS leadership

Rob Frost, PhD

- Associate Director, Quantitative Biomedical Sciences
- Assistant Professor of Biomedical Data Science
- Member, Dartmouth Cancer Center
- Investigator, Center for Quantitative Biology

QBS administration

Susan Diesel, PhD
Program and Operations Director

Rosemary White
Program Coordinator

Kristine Giffin, PhD
Director of Academic and Student Affairs

QBS mission and philosophy

The QBS PhD programs seek to provide rigorous quantitative training to develop professionals qualified for productive careers in biomedical research and teaching through the completion of an interdisciplinary doctoral degree in bioinformatics, biostatistics and epidemiology.

The modern quantitative career in industry or academia relies upon speaking more than one language to successfully collaborate in a highly multidisciplinary environment.

Six reasons to join QBS at Dartmouth

- Community
- Interdisciplinary
- Careers
- Ivy League experience
- Faculty
- Alumni






The QBS program is

- 53 faculty members
- 35 second-year MS students, 28 first-year MS students
- 35 PhD students
- Interdepartmental and collaborative across Dartmouth programs, schools, and departments

QBS faculty

53 faculty members in an interdepartmental program, with collaborations between faculty of QBS and other Dartmouth PhD programs

Geisel School of Medicine at Dartmouth

- Department of Epidemiology
- Department of Biomedical Data Science
- Department of Molecular and Systems Biology
- The Dartmouth Institute for Health Policy and Clinical Practice (TDI)
- Clinical departments

The Thayer School of Engineering

QBS faculty

53 faculty members in an interdepartmental program, with collaborations between faculty of QBS and other Dartmouth PhD programs

Dartmouth College of Arts and Sciences

- Biological Sciences, Computer Science, Mathematics

Centers at Dartmouth-Hitchcock Medical Center and Geisel School of Medicine

- Dartmouth Cancer Center
- Dartmouth Synergy (Clinical and Translational Science Award; CTSA)
- Children's Environmental Health Center
- COBRE Center for Quantitative Biomedical Research and Molecular Epidemiology
- COBRE Center for Quantitative Biology

2022 cohort demographics

- International: 38%
- Male: 50%
- Female: 50%
- Average age: 28

Bachelor’s degree majors, current PhD students

- Anthropology
- Applied Mathematics
- Applied Statistics
- Biochemistry
- Biological Chemistry
- Biology
- Biomedical Engineering
- Preventive Medicine
- Computational Biology
- Ecology
- Economics
- Engineering
- Evolutionary Biology
- Genetics
- German
- Integrative Neuroscience
- Laboratory Medicine
- Mathematics
- Medicine
- Microbiology and Immunology
- Molecular and Cellular Biology
- Music
- Neuroscience
- Physics
- Political Economy
- Psychology
- Quantitative Biology
- Statistics

Admissions timeline

Application deadline December 1, 2022

3 letters of recommendation

Personal statement

CV/resume

Unofficial transcripts

Coursework requirements

- 1 course in calculus
- 1 course in statistics or equivalent experience
- 1 course in programming or equivalent experience

Test scores

- Unofficial scores are submitted with your application, official scores if you accept an offer of admission
- GRE is optional this year
- TOEFL or IELTS is required for international students unless you have received a degree from an English-language institution

Holistic application review

We look at all your submitted materials in our evaluation of your application

- Grades and test scores
- Research and work experience
- Relevant course work
- Mentor, supervisor, manager references
- Personal essay and statements

Institutional support

- Full tuition scholarship
- Annual stipend $35,196
- Paid health insurance
- You are responsible for fees
  - Health access fee $103 per term
  - Annual student activity fee $60
  - One-time student record fee $50
  - International student fee $107 per term
- We do not offer financial aid beyond the QBS fellowship

Working at Dartmouth

Research lab opportunities

Student employment office

Teaching assistant positions

PhD Students regulated to 10 hrs/week employment with PI and Guarini approval

Internship opportunities (QBS 185)

Pre-matriculation preparation

- Techniques of calculus
- Procedural and object-oriented programming in R and Python
- Concepts of algorithms and data structures
- Basic probability and statistical concepts

Curriculum

- QBS 700 Responsible and Ethical Conduct of Research
- QBS 110 Integrative Biomedical Sciences Seminar
- QBS 103 Foundations of Data Science
- Foundational courses in Bioinformatics, Biostatistics, Epidemiology
- 3 research rotations during the first year

Curriculum

- 9 Total Journal clubs
- Supervised teaching
- Electives
- Oral qualifying exam
- Annual Research In Progress presentations
- Satisfactory completion of a significant research project and preparation of a thesis describing this research
- Successful defense of the thesis in an oral examination and presentation of the work in a public lecture

Important factors

- Cohort size around 10 PhD students, 30 MS students
- MS and PhD students take courses together
- Faculty teach every course
- Strongly encourage and welcome interaction with faculty
- Diverse applied opportunities: breadth and depth
- Dartmouth has abundance of resources
- Access to graduate level courses in engineering and business

What will I learn in the Dartmouth QBS program?

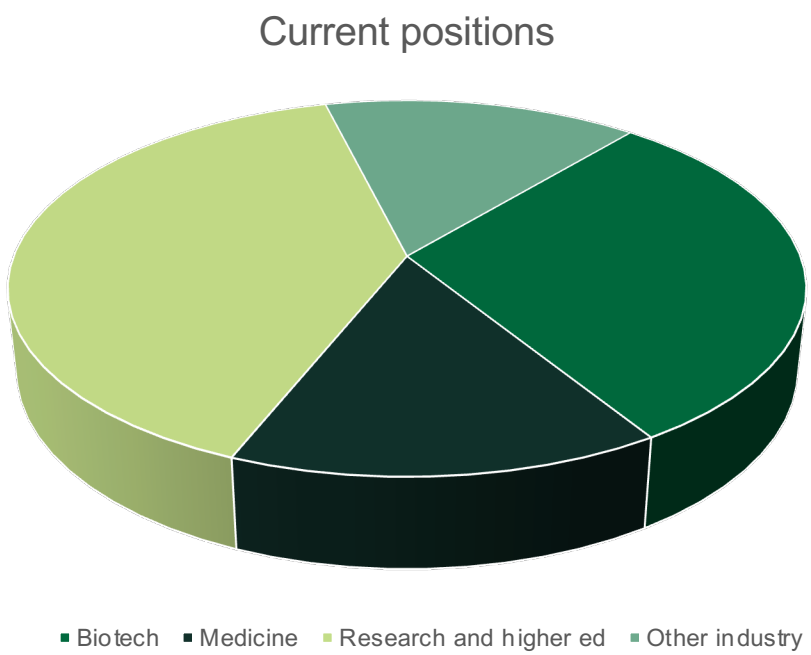
The Dartmouth QBS program trains highly-qualified students in Bioinformatics, Biostatistics, Epidemiology, and Health Data Science for careers in academia and industry.

Examples of data sets you will encounter

- Electronic medical records
- Randomized trials
- Genetic and genomic data
- Social media and network data
- Mobile device data
- Imaging data
- Other “omics” data
- Medical claims data

2021-22 alumni

- Computational biologist
- Biostatistician
- MD student
- Consultant
- Data scientist
- Postdoctoral research fellow
- Bioinformatics scientist
- Academic Faculty



Spring checklist

Prepare

Think

Review

DARTMOUTH

- Prepare for your first courses
- Think critically about personal goals, academics, and career goals
- Review the QBS website and identify course offerings that may support your goals

COVID-19 and Dartmouth

See Dartmouth's Health and Prevention page for up-to-date information about

- Arriving on campus
- Ongoing prevention
- Campus resources
- https://covid.dartmouth.edu/

Questions?

DARTMOUTH

quant.biomed.sci@dartmouth.edu

https://geiselmed.dartmouth.edu/qbs/

Thank you