



Yale SCHOOL OF MEDICINE

FACTS AND FIGURES 2017-18

medicine.yale.edu/facts



Brief chronology

- 1701** Yale College founded
- 1810** Medical Institution of Yale College chartered
- 1833** The State Hospital, precursor to the New Haven Hospital, opens
- 1857** First African American student graduates
- 1915** Department of Public Health established and later accredited as a school of public health
- 1916** First female students admitted
- 1924** School moves from 150 York Street to Sterling Hall of Medicine at 333 Cedar Street
- 1941** Yale Medical Library is dedicated
- 1965** Medical school and hospital revise their affiliation, creating Yale New Haven Hospital
- 1970** Physician Associate Program founded
- 1974** Yale Cancer Center established
- 2003** Anlyan Center completed
- 2007** Amistad Street building opens
- 2007** West Campus acquired
- 2009** Smilow Cancer Hospital at Yale New Haven opens
- 2010–11** Medical school celebrates 200th anniversary
- 2012** YNHH acquires the Hospital of Saint Raphael
- 2018** Physician Assistant online program launches

OVERVIEW AND HISTORY

The Yale School of Medicine is one of the world's leading centers for biomedical research, advanced clinical care, and medical education. It ranks sixth among medical schools receiving funds from the National Institutes of Health (NIH) and seventh in NIH dollars per faculty member. More than 1,400 Yale physicians provide care to patients from across the region and around the world. The Yale system of medical education, with its emphasis on critical thinking and independent student research, has produced leaders in every field of academic medicine.

The sixth-oldest medical school in the United States, it was chartered by the Connecticut General Assembly in 1810 as the Medical Institution of Yale College, located first on Grove Street, then at 150 York Street. Since 1924, it has occupied Sterling Hall of Medicine at 333 Cedar Street and surrounding buildings. It has awarded 8,979 medical degrees since 1814. There are 5,549¹ living alumni with MD degrees, 4,481 with MPH degrees, and 1,180 alumni of the Physician Associate Program with the PA-C certificate or MMSc degree.



Members of each year's incoming class are welcomed to the School of Medicine at the annual White Coat Ceremony.

¹ Living alumni figures reflect a new tracking system. All data in Facts & Figures as of 6/30/17 unless otherwise noted.



The School of Medicine increasingly uses technology and interactive learning to enhance the education of medical students.

Students by degree program

| | |
|-------------------------|--------------|
| MD program ² | 560 |
| MD | 362 |
| MD/PhD | 134 |
| MD/MHS | 48 |
| MD/MBA | 15 |
| MD/MPH | 1 |
| MD/JD | 0 |
| MMSc (PA-C) | 76 |
| MPH | 357 |
| PhD | 321 |
| Total | 1,314 |

MD program details

CLASS OF 2021 PROFILE

| | |
|----------------------------------|----------|
| Applicants | 4,700 |
| Class size | 104 |
| Acceptance rate | 5.7 % |
| Median cumulative GPA | 3.84 |
| MCAT median of sections for 2017 | 12.00 |
| MCAT2016 median total for 2017 | 20.5 |
| Male-to-female ratio | 55 to 49 |
| Faculty-to-student ratio | 3.6 to 1 |

Finances

| | |
|-------------------------------------|-----------|
| Tuition, 2017-2018 | \$59,360 |
| Average debt, 2017 graduates w/debt | \$121,522 |

Medical Library³

| | |
|--------------------------|---------|
| Volumes | 436,873 |
| Journals | 22,597 |
| Online books, biomedical | 42,560 |

EDUCATION

In its MD and other degree programs, the School of Medicine educates future leaders in medicine, public health, and biomedical science. The MD program follows a unique educational philosophy, the Yale system of medical education, which was established in the 1920s by Dean Milton C. Winternitz, MD. No course grades or class rankings are given in the first two years, examinations are limited, and students are expected to engage in independent investigation. Since 1839 Yale medical students have written a thesis based on original research. The thesis requirement grew out of the recognition that the scientific process of investigation, attentive observation, interpretation of data, and critical evaluation of literature are fundamental to the practice of medicine.

Many Yale medical students opt to take a tuition-free fifth year to pursue additional study. Some conduct in-depth research or explore clinical electives and subinternships. A significant number each year are awarded fifth-year research fellowships and earn the MHS degree.

Each year, approximately 20 students enroll in the school's MD/PhD Program, one of the original Medical Scientist Training Programs established and funded by the NIH. Graduate students in the Combined Program in the Biomedical and Biological Sciences (BBS) earn a PhD degree through the Faculty of Arts and Sciences. The School of Medicine also offers joint degree programs with other professional schools including Public Health, Law, Management, and Divinity.

² Of the 560 students enrolled in the MD program, 63 are currently on extended study pursuing a joint degree, completing a fully funded year of research, or a combination of research and clinical rotations.

³ The medical library is now using the library management system to gather this data.

Academic departments

| | |
|---------------|----|
| Basic science | 10 |
| Clinical | 18 |
| Public Health | 5 |

Total **33**

Programs and centers 7

Active patents

| | |
|----------------------|-----|
| U.S. | 453 |
| World (59 countries) | 898 |

Yale-founded biotech companies 77

Faculty⁴

| | |
|---------------------|--------------|
| Teaching (ladder) | 1,598 |
| Clinician | 248 |
| Research | 720 |
| Lecturer/Instructor | 441 |
| <i>Subtotal</i> | <i>3,007</i> |
| Visiting | 296 |
| Emeritus/Retired | 134 |
| Voluntary/Adjunct | 1,714 |
| <i>Subtotal</i> | <i>2,144</i> |
| Total | 5,151 |

Postgraduate fellows and associates 1,621

Memberships⁵

| | |
|------------------------------|----|
| National Academy of Sciences | 63 |
| National Academy of Medicine | 47 |
| HHMI investigators | 14 |

Faculty with endowed professorships 124

Research activity

2,592 awards
totaling \$638.4 million

NIH

| | |
|---|-----------------|
| Awards | \$387.1 million |
| Rank among medical schools (total grant dollars) ⁶ | 6th |
| Rank, grants per faculty member ⁷ | 7th |
| Centers and program grants | 32 |

Laboratory space (net assignable sf)

Medical School 651,041

BASIC AND TRANSLATIONAL RESEARCH

Research at the medical school covers a broad spectrum, from fundamental studies in the life sciences, including cell biology, genetics, immunobiology, microbial pathogenesis, neuroscience, pharmacology, physiology, biophysics and biochemistry, to translational and clinical studies aimed at improving the diagnosis and treatment of human diseases. Important research collaborations bring together scientists on the medical campus, Science Hill, and the West Campus. Funding for research at YSM has increased over the past decade, rising from \$511.6 million in 2008 to \$638.4 million in 2017.

The school's core research resources are built around the newest technologies:

- State-of-the-art tools for genomics and proteomics, including whole-genome sequencing and mass spectrometry
- High-resolution imaging and image analysis at every scale, from electron and light microscopy to fMRI and PET
- 7-Tesla MR spectroscopy
- High-throughput screening, including RNAi and chemical screens
- Construction and analysis of animal models of disease



Scientists perform research in every area of the biomedical sciences, including immunology, neuroscience, and genetics.

⁴ Faculty, associates, and fellows data as of 6/30/17.

⁵ Includes faculty across Yale University.

⁶ NIH ranking is for the federal fiscal year ending 9/30/17.

⁷ Per faculty rank averaged over 2016 and 2017.

The National Clinician Scholars Program at Yale was established in 2016 to prepare future clinician leaders to improve health and health care. Graduates of the two-year interprofessional fellowship earn a master of health sciences (MHS) degree.

The School of Public Health offers training and conducts research in biostatistics, chronic disease epidemiology, environmental health sciences, epidemiology of microbial diseases, and health policy and administration.

The Investigative Medicine Program awards a PhD degree to holders of MD degrees who pursue training in either laboratory-based or clinically based human investigation.

By the numbers

| | |
|---|-----|
| RWJ Scholars since 1974 | 187 |
| NCSP Scholars since 2016 | 13 |
| PhDs awarded by Investigative Medicine Program since 2003 | 39 |
| YCCI Scholars trained since 2006 | 123 |

CLINICAL INVESTIGATION

Clinical investigation at Yale bridges the gap between the basic and translational sciences and the practice of medicine. Research is focused on the factors that affect health and illness in populations, the evaluation of therapeutic interventions, and the assessment of health outcomes based on analysis of large data sets. The School of Medicine sponsors a wide range of clinical trials, with more than 1,600 active trials in 2017 with more than 7,465 volunteers enrolled (see yalestudies.org). The school offers superb training for clinical investigators in a number of settings, including the Yale Center for Clinical Investigation, the National Clinician Scholars Program at Yale (the evolution of the Robert Wood Johnson Foundation Clinical Scholars Program), the Yale School of Public Health, and the Investigative Medicine Program, along with discipline-specific training initiatives in selected departments.

The **Yale Center for Clinical Investigation** facilitates the training of clinical and translational scientists and provides infrastructure for innovative and collaborative research directed at improving patient care. It funds up to 22 YCCI Scholars yearly and supports investigators in the areas of biostatistics, bioinformatics, study design, core technologies, regulatory review, patient recruitment, and community-based research.



Children participated in a clinical trial to test an “artificial pancreas”—a closed-loop system that combines blood sugar monitoring and insulin delivery—in real-world settings.

Patient care overview

Income \$883.3 million

Yale Medicine

Patient encounters 2,717,775

Physicians

Full-time 1,160

Part-time 256

Allied Providers 754

Medical residents 841

Clinical fellows 373

Yale New Haven Hospital⁸

Patient discharges 76,258

Emergency visits⁹ 151,524

Outpatient encounters (including ED) 1,400,000

Total licensed beds 1,541

PATIENT CARE

More than 1,400 Yale physicians provide primary and specialty care for patients through Yale Medicine. The practice delivers advanced care in more than 100 specialties and subspecialties, and has centers of excellence in such fields as cancer, cardiac care, minimally invasive surgery, and organ transplantation. Yale physicians have made many historical contributions, including the first use of cancer chemotherapy, the first artificial heart pump, and the first insulin infusion pump for diabetes. Today they provide such groundbreaking procedures as an “invisible incision” surgery to remove a woman’s appendix, and the use of genome-scale DNA sequencing technology to diagnose suspected genetic diseases and birth defects. Yale Medicine is a major referral center for Connecticut and New England, and a national referral site for inherited liver diseases such as Gaucher’s disease and Wilson’s disease. Our physicians treat patients from around the world.



Yale Medicine, the School of Medicine’s clinical practice, has more than 1,400 physicians who deliver advanced care in more than 100 specialties and subspecialties.

⁸ Yale New Haven Hospital data as of 9/30/17; includes the Children’s Hospital, Psychiatric Hospital, Smilow Cancer Hospital, and the former Hospital of Saint Raphael, which was acquired by YNH on 9/12/12. Licensed beds include bassinets.

⁹ Number of patients treated and released from the ED. This does not include those ED visitors who were admitted.

Medical center institutions

Yale School of Medicine

Yale Medicine

Yale School of Public Health

Yale School of Nursing

Yale New Haven Health System, which consists of:

Yale New Haven Hospital, including the Saint Raphael Campus

Yale New Haven Children's Hospital

Yale New Haven Psychiatric Hospital

Smilow Cancer Hospital at Yale New Haven

Bridgeport Hospital

Greenwich Hospital

Lawrence + Memorial Hospital

Westerly Hospital

Yale Health

Connecticut Mental Health Center

John B. Pierce Laboratory

Facts and Figures

2017-18 was produced by the Office of Communications.

To order copies, contact us at 1 Church Street, Suite 300, New Haven, CT 06510, or (203) 785-5824, or by email at facts.med@yale.edu.

On the Web: medicine.yale.edu/facts.

Photos: John Curtis, Robert Lisak, Harold Shapiro

MEDICAL CENTER

An affiliation agreement between the medical school and Grace-New Haven Hospital in 1965 created Yale New Haven Hospital (YNHH), which expanded in 1993 with the opening of the Children's Hospital, and again in 2000 with the acquisition of the Psychiatric Hospital. The 14-story Smilow Cancer Hospital opened in 2009, and in 2012 YNHH acquired the Hospital of Saint Raphael, adding 533 beds and making it one of the largest hospitals in the United States. The medical campus has grown over the years to include or abut the institutions listed at left. Four miles away in West Haven, the affiliated VA Connecticut Healthcare System maintains active clinical, research, and education programs in conjunction with many medical school departments. Extensive maps and directions to medical center destinations are available online at medicine.yale.edu/maps.

HOW TO REACH US

- **To find a Yale doctor**, visit Yale Medicine online at yalemedicine.org, or call (877) YALEMDS or (203) 785-4851.
- **For information on medical school admissions**, visit medicine.yale.edu/admissions, or call (203) 785-2643.
- **For news about the school**, visit medicine.yale.edu. Media inquiries should be directed to the Office of Public Affairs and Communications at communications.yale.edu/about-opac or (203) 432-1345.
- **To find a person at Yale University**, consult the online directory at directory.yale.edu, or call directory assistance at (203) 432-4771. To find a person at Yale New Haven Hospital, call (203) 688-4242.
- **To make a gift in support of the School of Medicine**, please visit yale.edu/givemedicine or contact Charles Turner at charles.turner@yale.edu.

New Haven

Population (2016) 129,934

Distance from:

NYC 80 miles

Boston 137 miles

University profile

Yale totals include YSM

FACULTY

Yale 4,483

YSM 3,007

STAFF

Yale 9,676

YSM 3,369

STUDENTS

Yale 12,458

YSM 1,314¹⁰

Community service

The majority of students volunteer for at least one of the school's many community service projects, including:

Columbus House

Downtown Evening
Soup Kitchen

HAVEN (student-
run free clinic)

Health Professionals
Recruitment and
Exposure Program

Hill Regional Career
High School Anatomy
Teaching Program

Hunger and
Homelessness
Auction

Neighborhood
Health Project

Youth Science
Enrichment Program

YALE UNIVERSITY AND NEW HAVEN

The School of Medicine is located on the main campus of Yale University, one of the world's great institutions of higher learning. With a residential college system modeled after those of Cambridge and Oxford, the undergraduate school is complemented by the Graduate School of Arts and Sciences and 12 professional schools, including Architecture, Art, Divinity, Drama, Engineering and Applied Science, Forestry and Environmental Studies, Law, Management, Music, Nursing, and Medicine, which includes the School of Public Health. In 2007, Yale acquired the 136-acre West Campus in West Haven.

Established in 1638, New Haven was the first planned municipality in America, organized geographically in nine squares, including a picturesque Green. Today, New Haven is a vibrant coastal city located on Long Island Sound between New York and Boston. Cultural opportunities abound, from dance, theater, and music to the treasures of Yale's art and natural history museums.



HAVEN, the student-run clinic that provides free medical care to uninsured patients in New Haven, relocated to renovated space in the Yale Physicians Building.

¹⁰ The breakdown for this number can be found on the Education page.

Yale Office of International Affairs offers support to faculty in establishing and maintaining collaborations abroad, drawing on existing relationships on six continents. It maintains an online faculty research database.

Yale/University College London Collaborative was established in 2009 to launch joint projects in basic biomedical research, medical education, and clinical care and has subsequently expanded into other disciplines.

Fudan-Yale Biomedical Research Center provides a locus for cutting-edge research in the fields of genetics and molecular medicine in collaboration with Fudan University in Shanghai.

The Yale Global Health Initiative is part of the university's Jackson Institute for Global Affairs, which supports and coordinates the efforts of students and faculty.

Yale Institute for Global Health is a joint effort of the Schools of Medicine, Nursing, and Public Health that serves as a focal point for training, collaboration, and engagement of global partners to improve the health of individuals and populations worldwide.

By the numbers (2015-16)

International students at Yale (%)

| | |
|----------------|-----|
| MD | 15% |
| MPH | 24% |
| PhD (Sciences) | 27% |

Yale students/trainees abroad¹¹

| | |
|---------------|----|
| MD | 26 |
| MPH | 34 |
| Downs Fellows | 7 |
| Yale/Stanford | |
| J&J Scholars | 52 |

Visiting MD students (at Yale) from other nations 49

INTERNATIONAL ACTIVITIES

The School of Medicine is an active partner in fulfilling Yale's international goals, which include preparing students for international leadership and service, attracting the most talented students and scholars to Yale from around the world, and positioning Yale as a global university of consequence. Faculty members conduct research abroad, teach, and design courses in global health. Their work runs the gamut from molecular studies at the nanoscale to the analysis of social networks in disease transmission and prevention, to the improvement of health care systems.

Among the programs spanning the institution are:

- **Office of International Medical Student Education**, which facilitates the placement of Yale medical students in global clinical electives at sites in Argentina, Chile, China, Colombia, Dominican Republic, Ghana, Indonesia, Jamaica, Peru, South Africa, Thailand, and Uganda, and the U.S. (rural sites in Appalachia and on the Navajo reservation in Arizona as well as in free clinics in New Haven and San Francisco). The office also administers the Visiting International Student Electives Program.
- **Downs International Health Student Travel Fellowship**, which supports students who undertake health-related research, primarily in low- and middle-income countries.
- **Yale/Stanford—Johnson & Johnson Global Health Scholars**, which sponsors rotations abroad for Yale house staff and physicians from other institutions, who travel to six sites in Africa and Asia.



After the devastation of Hurricane Maria, Yale physicians organized shipments of medical supplies to Puerto Rico.

¹¹ Data refer to the 2013-14 academic year.

Endowment

Yale \$27.2 billion

YSM \$2.5 billion

2017 operating income

Yale \$3.6 billion

YSM \$1.7 billion

2017 capital projects

NEW CONSTRUCTION

Yale \$196 million

YSM \$0

RENOVATIONS/ ALTERATIONS

Yale \$198.5 million

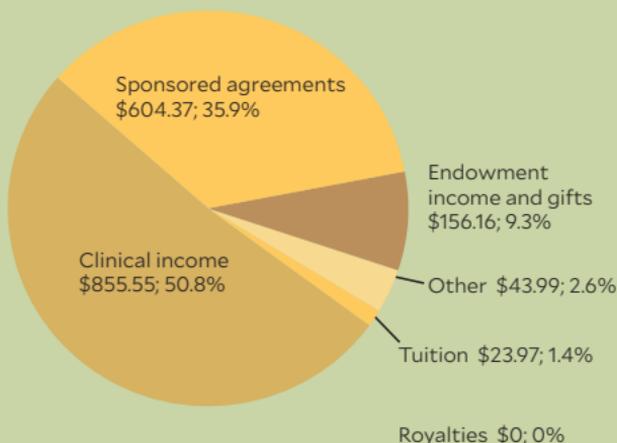
YSM \$26.2 million

FINANCE

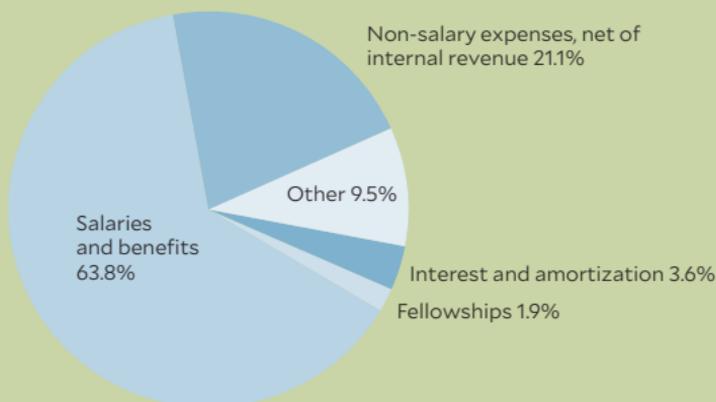
The School of Medicine had operating income of \$1.68 billion in FY17. A total of \$604 million in sponsored research funding was received and spent during the fiscal year.¹² Clinical income totaled \$855.6 million. The school ranked sixth among medical schools receiving research funding from the NIH in FY17 and seventh in NIH grants per faculty member. Salaries and benefits totaled 63.8 percent of expenditures.

Operating summary for the year ending June 30, 2017 (in millions)

Income:
Total \$1,684



Expenditures



¹² Research income does not equal award amounts because research dollars are not always spent in the same period in which they are awarded.