



Yale SCHOOL OF MEDICINE

FACTS AND FIGURES 2016-17
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
- 1839** MD student thesis requirement formalized
- 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

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 fifth in NIH dollars per faculty member. More than 1,300 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 8,890 medical degrees since 1814. There are 5,567 living alumni¹ with MD degrees, 4,646 with MPH degrees, and 1,147 alumni of the Physician Associate Program with the PA-C certificate or MMSc degree.



ABOVE: Every year at Match Day, students learn where they will be going for residencies. Yale students typically match at top programs around the country.

COVER: Beaumont Room entrance.

¹ Living alumni figures reflect a new tracking system.

All data in Facts & Figures as of 6/30/16 unless otherwise noted.



As medical students reach their clinical years, they learn the basics of physical examinations at a simulation center that uses manikins that replicate real-life medical scenarios.

Students by degree program

MD program ²	544
MD	355
MD/PhD	125
MD/MHS	45
MD/MBA	17
MD/MPH	2
MD/JD	0
MMSc (PA-C)	77
MPH	310
PhD	373
Total	1,304

MD program details

CLASS OF 2020 PROFILE

Applicants	4,425
Class size	104
Acceptance rate	6.5 %
Average cumulative GPA	3.80
MCAT mean of sections for 2016	11.83
MCAT2015 mean of sections for 2016	517.6
Male-to-female ratio	50 to 50
Faculty-to-student ratio	3.7 to 1

Finances

Tuition, 2016–2017	\$57,629
Average debt, 2016 graduates w/debt	\$116,901

Medical Library³

Volumes	415,228
Journals	22,727
Online books, biomedical	38,291

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 544 students enrolled in the MD program, 77 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. The number of journals increased significantly from last year, but consists mostly of electronic journals.

Academic departments

Basic science	10
Clinical	18
Public Health	5

Total 33

Programs and centers 7

Active patents

U.S.	420
World (60 countries)	834

Yale-founded biotech companies 77

Faculty⁴

Teaching (ladder)	1,565
Clinician	198
Research	713
Lecturer/Instructor	445
<i>Subtotal</i>	<i>2,921</i>
Visiting	327
Emeritus/Retired	286
Voluntary/Adjunct	1,739
<i>Subtotal</i>	<i>2,352</i>

Total 5,273

Postgraduate fellows and associates 1,578

Memberships⁵

National Academy of Sciences	64
National Academy of Medicine	44
HHMI investigators	17

Faculty with endowed professorships 125

Research activity

2,422 awards	
totaling	\$593.1 million

NIH

Awards	\$365.9 million
Rank among medical schools (total grant dollars) ⁶	6th
Rank, grants per faculty member ⁷	4th
Centers and program grants	33

Laboratory space (net assignable sf)

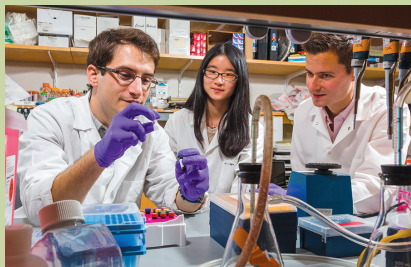
Medical School	647,579
----------------	---------

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 \$485.2 million in 2007 to \$593.1 million in 2016.

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



Graduate students, medical students, and postdocs participate in research projects across the medical school in such fields as biology, genetics, immunobiology, and microbial pathogenesis.

⁴ Faculty, associates, and fellows data as of 6/30/16.

⁵ Includes faculty across Yale University.

⁶ NIH ranking is for the federal fiscal year ending 9/30/16.

⁷ Per faculty rank averaged over 2015 and 2016.

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	179
NCSP Scholars since 2016	6
PhDs awarded by Investigative Medicine Program since 2003	39
YCCI Scholars trained since 2006	112

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 1,400 active trials in 2016 with more than 6,294 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.



The Yale Center for Clinical Investigation played a key role in the development of an artificial pancreas, which was tested on a group of New Haven area teenagers with diabetes.

Patient care overview

Income **\$804.6 million**

Yale Medicine

Patient encounters **2,579,663**

Physicians
Full-time **1,064**
Part-time **265**

Advanced practice practitioners (PA, APRN) **598**

Medical residents **906**

Clinical fellows **341**

Yale New Haven Hospital⁸

Patient discharges **79,490**

Emergency visits **152,727**

Outpatient encounters (including ED) **1,633,011**

Total licensed beds **1,541**

PATIENT CARE

In 2016, Yale Medical Group was rebranded to Yale Medicine, signifying our continued commitment to innovative patient care and consistency in our approach to the patient experience. More than 1,300 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. Yale Medicine is a major referral center for Connecticut and New England, and treats patients from throughout the world.



Yale Medicine, the School of Medicine’s clinical practice, has more than 1,300 physicians who deliver advanced care in more than 100 specialties and subspecialties.

⁸ Yale New Haven Hospital data as of 9/30/16; 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.

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

Yale Health

Connecticut Mental Health Center

John B. Pierce Laboratory

Facts and Figures

2016–17 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/media or (203) 432-1345.
- **To find a person at Yale University**, consult the online directory at directory.yale.edu/phonebook, 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 (2015) 130,322

Distance from:

NYC 80 miles

Boston 137 miles

University profile

Yale totals include YSM

FACULTY

Yale 4,488

YSM 2,921

STAFF

Yale 9,548

YSM 3,337

STUDENTS

Yale 12,458

YSM 1,304

Community service

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

Hill Regional
Career High School
partnership
Anatomy
Teaching Program

Hunger and
Homelessness
Auction

HAVEN (student-
run free clinic)

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.



Yale medical, physician associate, and public health students regularly serve the New Haven community in educational programs.

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 UCL 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. Projects include the Global Health Leadership Institute, in which health leaders from other nations spend a week at Yale devising strategies to overcome health problems in their home country.

By the numbers (2014-15)

International students at Yale (%)

MD	14%
MPH	27%
BBS	26%

Yale students/trainees abroad⁹

MD	29
MPH	31
Downs Fellows	10
Yale/Stanford J&J Scholars	57

Visiting MD students (at Yale) from other nations 99

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 clinical electives at sites in Argentina, Chile, China, Colombia, Dominican Republic, Ghana, Indonesia, Jamaica, Mexico, Peru, South Africa, Thailand, and Uganda. 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.



Yale students travel the globe to conduct research and provide care under the supervision of faculty. Students and faculty provided psychiatric care in the Andean city of Ayacucho in Peru.

⁹ Data refer to the 2013-14 academic year.

Endowment

Yale \$25.4 billion

YSM \$2.4 billion

2016 operating income

Yale \$3.4 billion

YSM \$1.6 billion

2016 capital projects

NEW CONSTRUCTION

Yale \$183 million

YSM \$0

RENOVATIONS/ ALTERATIONS

Yale \$293.7 million

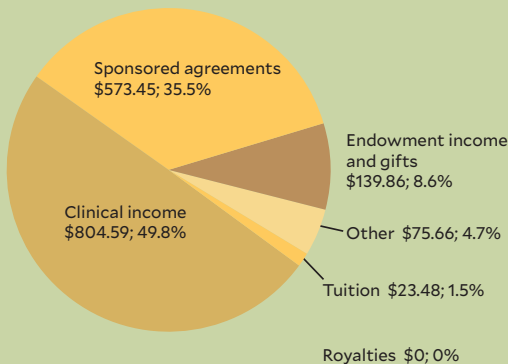
YSM \$14.7 million

FINANCE

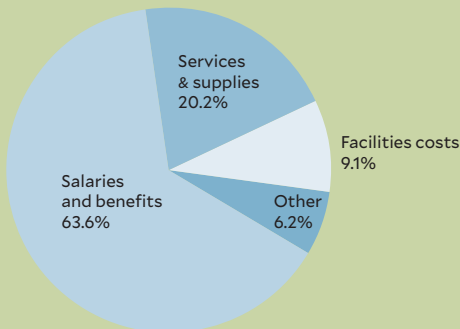
The School of Medicine had operating income of \$1.62 billion in FY16. A total of \$573 million in sponsored research funding was received and spent during the fiscal year.¹⁰ Clinical income totaled \$804.6 million. The school ranked sixth among medical schools receiving research funding from the NIH in FY16 and fourth in NIH grants per faculty member. Salaries and benefits totaled 63.6 percent of expenditures.

Operating summary for the year ending June 30, 2016 (in millions)

Income:
Total \$1,617



Expenditures



¹⁰ Research income does not equal award amounts because research dollars are not always spent in the same period in which they are awarded.