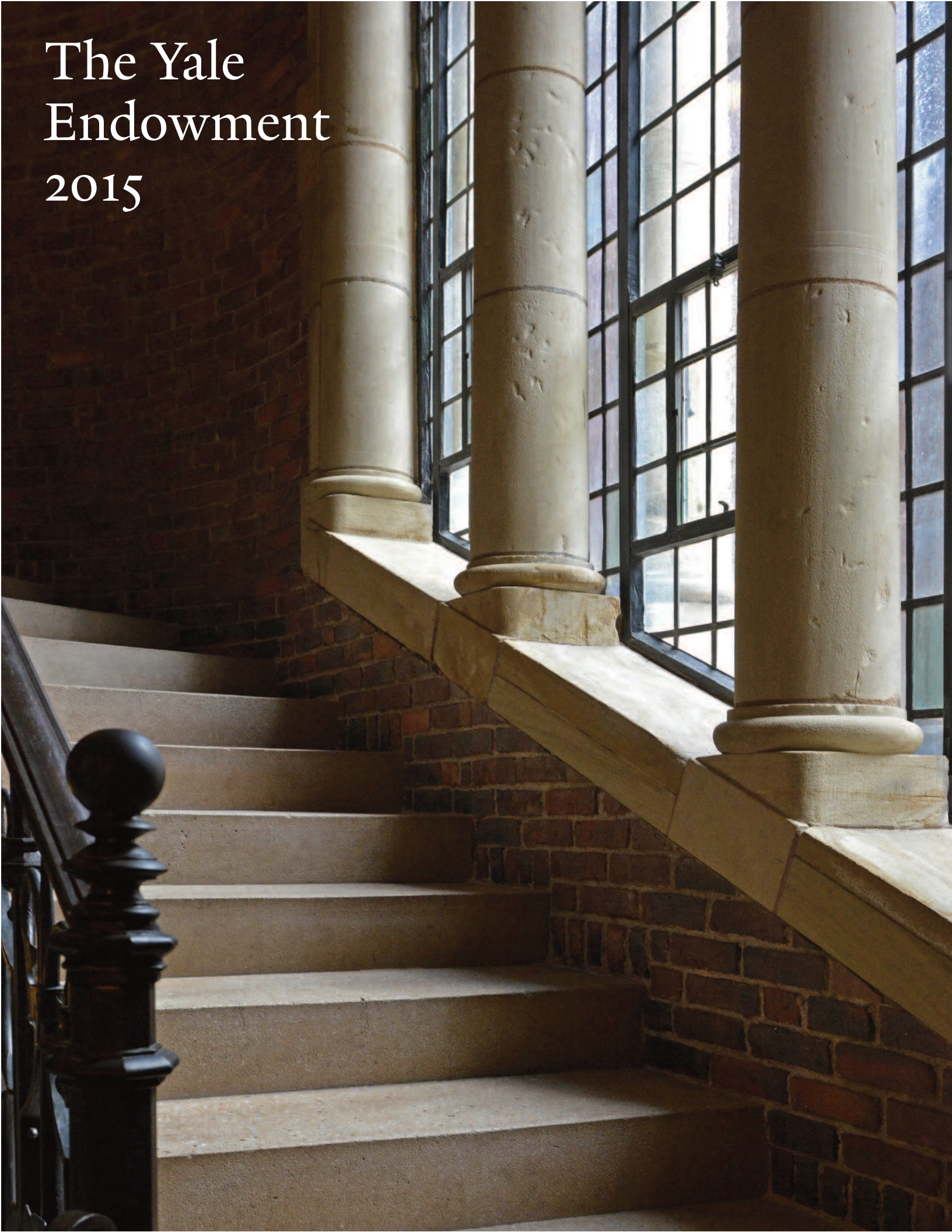


The Yale  
Endowment  
2015



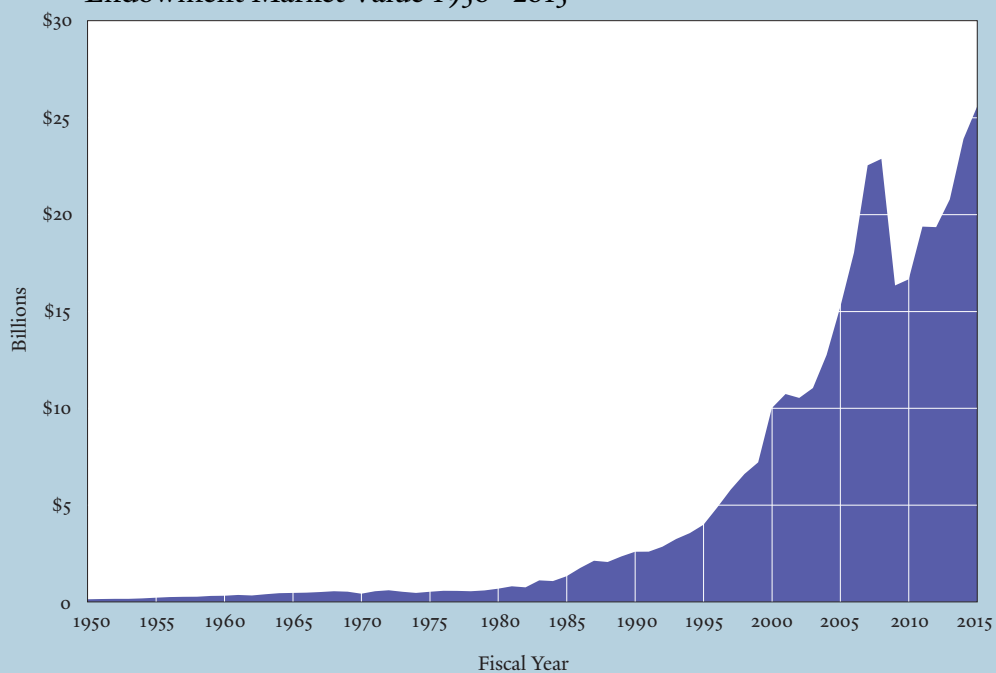
## Endowment Highlights

	Fiscal Year				
	2015	2014	2013	2012	2011
Market Value (in millions)	\$25,572.1	\$23,894.8	\$20,780.0	\$19,344.6	\$19,374.4
Return	11.5%	20.2%	12.5%	4.7%	21.9%
Spending (in millions)	\$1,082.5	\$1,041.5	\$1,024.0	\$994.2	\$986.8
Operating Budget Revenues (in millions)	\$3,297.7	\$3,116.1	\$2,968.6	\$2,847.8	\$2,681.3
Endowment Percentage	32.8%	33.4%	34.5%	34.9%	36.1%

### Asset Allocation (as of June 30)

Absolute Return	20.5%	17.4%	17.8%	14.5%	17.5%
Domestic Equity	3.9	3.9	5.9	5.8	6.7
Fixed Income	4.9	4.9	4.9	3.9	3.9
Foreign Equity	14.7	11.5	9.8	7.8	9.0
Leveraged Buyouts	16.2	19.3	21.9	24.3	24.8
Natural Resources	6.7	8.2	7.9	8.3	8.7
Real Estate	14.0	17.6	20.2	21.7	20.2
Venture Capital	16.3	13.7	10.0	11.0	10.3
Cash	2.8	3.5	1.6	2.7	-1.1

Endowment Market Value 1950–2015



# Contents

1.	Introduction	2
2.	The Yale Endowment	4
3.	Investment Policy	6
4.	Spending Policy	22
5.	Investment Performance	27
6.	Management and Oversight	34

*Front cover:*

Stairway in the Yale University Art Gallery's older wing, designed by Egerton Swartwout (B.A. 1891) and dating to 1926 in a style reminiscent of the Renaissance-era Bargello and the Davanzati Palace in Florence.

*Right:*

The Schwarzman Center Rotunda, between University Commons and Woolsey Hall, designed for the Yale bicentennial celebration in 1901 by the firm Carrère and Hastings, the architects responsible for the New York Public Library.

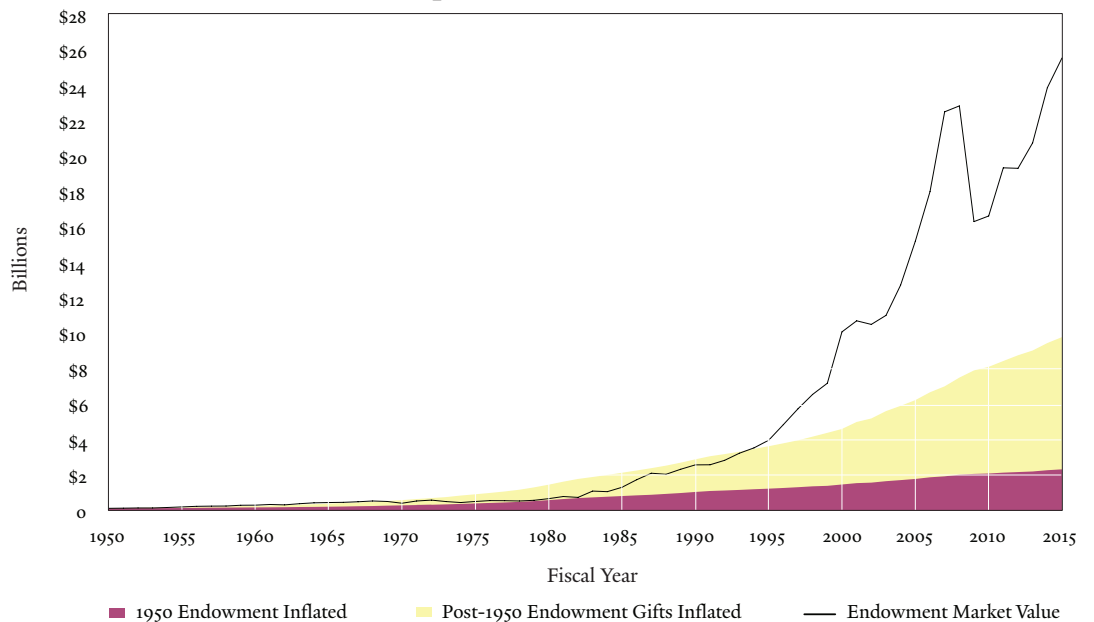


# 1

Yale’s Endowment generated an 11.5% return in fiscal 2015, producing an investment gain of \$2.6 billion. Over the past ten years, the Endowment grew from \$15.2 billion to \$25.6 billion. With annual net ten-year investment returns of 10.0%, the Endowment’s performance exceeded its benchmark and outpaced institutional fund indices. For nine of the past ten years, Yale’s ten-year record ranked first in the Cambridge Associates universe.

Spending from the Endowment grew during the last decade from \$567 million to \$1.1 billion, an annual growth rate of 6.7%. Next year, spending will amount to \$1.2 billion, or 34% of projected revenues. Yale’s spending and investment policies provide substantial levels of cash flow to the operating budget for current scholars while preserving Endowment purchasing power for future generations.

Endowment Growth Outpaces Inflation 1950–2015



## Thirty-Year Performance

In the mid 1980s Yale began moving away from a conventional portfolio model dominated by domestic equities and bonds to a diversified, equity-oriented asset allocation that promised higher returns and lower risk. In the past three decades the University's Endowment more than met expectations, returning 13.9% per annum and exceeding results for traditional marketable asset classes by wide margins. In

comparison, during the period, domestic equities generated 10.7%, foreign equities 8.7%, and domestic bonds 7.1% per annum. The University outperformed the equal-weighted mean return of colleges and universities measured by the National Association of College and University Business Officers by 5.0% per annum and bested its passive benchmark by 4.0% per annum over the thirty-year period.

Yale produced an investment gain of \$35.2 billion over the past three decades, while aggregate Endowment gifts reached \$3.1 billion. Over the thirty-year period, the aggregate spending distribution to the University's operating budget totaled \$13.9 billion.

By responding to the first principles of endowment investing – diversification and equity orientation – Yale produced an extraordinary three-decade record.



David F. Swensen, Chief Investment Officer, and Dean J. Takahashi, Senior Director of the Yale Investments Office, acknowledge applause at the

announcement of the Swensen Initiative in 2013, which raised more than \$35 million for the Yale Endowment.

David Swensen's *Pioneering Portfolio Management*, now in its second edition, discusses the essentials of endowment investing – diversification and equity orientation – which have helped Yale achieve its extraordinary three-decade results.

# 2

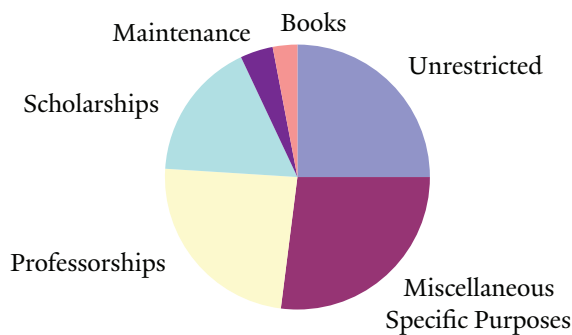
Totalling \$25.6 billion on June 30, 2015, the Yale Endowment contains thousands of funds with various purposes and restrictions. Approximately 84% of funds constitute true endowment, gifts restricted by donors to provide long-term funding for designated purposes. The remaining funds represent quasi-endowment, monies that the Yale Corporation chooses to invest and treat as endowment.

Donors frequently specify a particular purpose for gifts, creating endowments to fund professorships, teaching, and lectureships (24%); scholarships, fellowships, and prizes (17%); maintenance (4%); books (3%); and miscellaneous specific purposes (27%). Twenty-five percent of funds are unrestricted. Twenty-five percent of the Endowment benefits the overall University, with remaining funds focused on specific units, including the Faculty of Arts and Sciences (29%), the professional schools (24%), the library (7%), and other entities (14%).

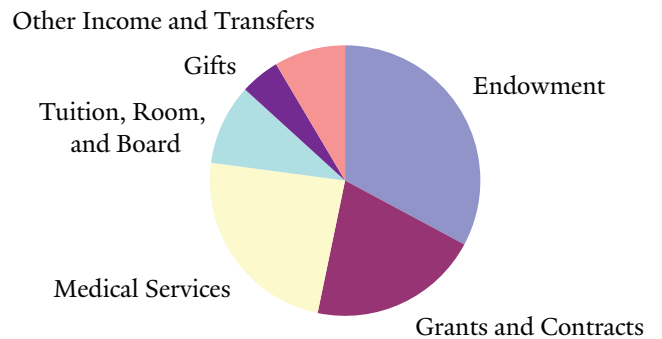
Although distinct in purpose or restriction, Endowment funds are commingled in an investment pool and tracked with unit accounting much like a large mutual fund. Endowment gifts of cash, securities, or property are valued and exchanged for units that represent a claim on a portion of the total investment portfolio.

In fiscal 2015 the Endowment provided \$1.1 billion, or 33%, of the University's \$3.3 billion operating income. Other major sources of revenues were medical services of \$787 million (24%); grants and contracts of \$674 million (20%); net tuition, room, and board of \$318 million (10%); gifts of \$156 million (5%); and other income and transfers of \$281 million (9%).

Endowment Fund Allocation  
Fiscal Year 2015



Operating Budget Revenue  
Fiscal Year 2015

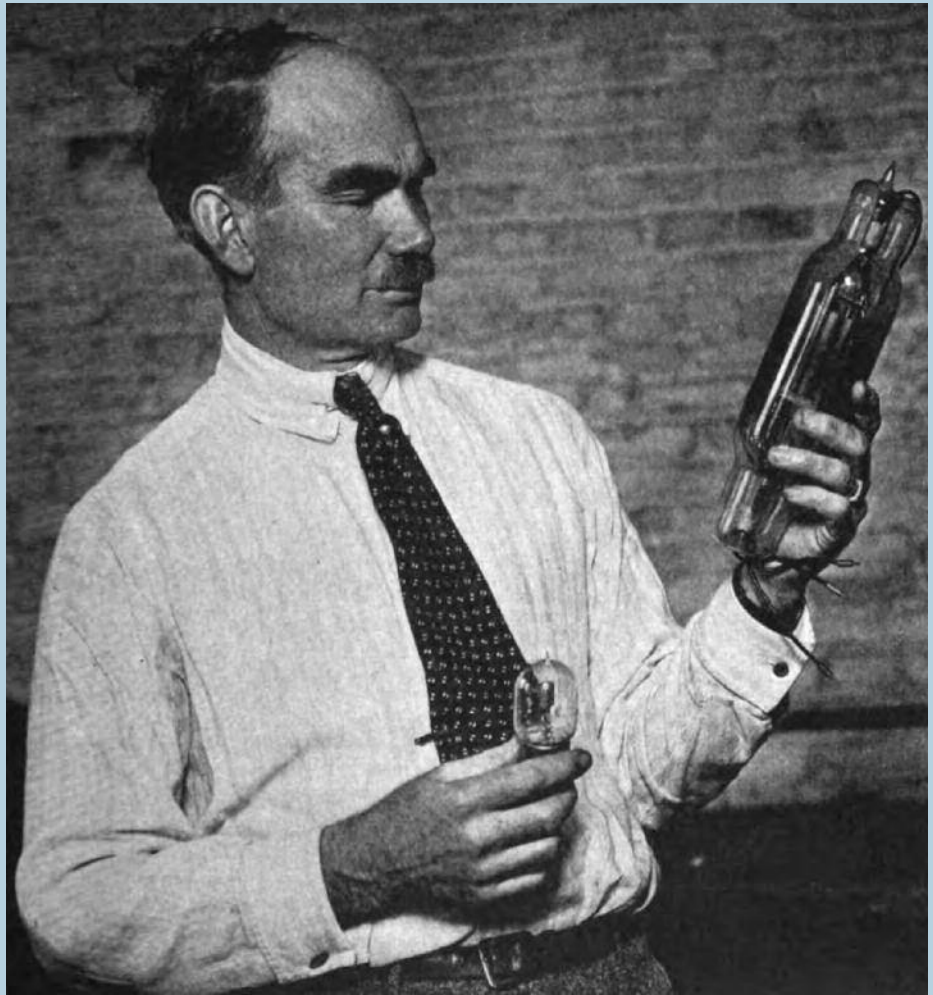


## Entrepreneurship, Technology, and Yale

The Yale community has long been at the forefront of innovation, technology, and entrepreneurship. University alumni are active members of the global venture capital ecosystem, while faculty, student, and alumni entrepreneurs have developed unique technologies and services, founding some of the world's most successful and innovative companies. In recent years, Yale's commitment to innovation has grown as the University has expanded its technology curriculum and entrepreneurship programming.

This report highlights only a small sample of Yale's successful entrepreneurs, technologists, and investors, who strive to transform markets, develop new products and processes, and change the world. In addition, the report features several of the many initiatives undertaken by the University to foster innovation and develop the next generation of technology leaders.

Lee DeForest (B.S. 1896, PH.D. 1899) was a prolific inventor, with more than 300 patents to his name. Most prominently, he is remembered for inventing the audion, a vacuum tube that amplified weak electrical signals and allowed AT&T to have nationwide phone service, and that provided sound transmission for radios, TVs, and even early computers. DeForest is known as "the father of radio."



## Yale's Venture Capital Portfolio

Venture capital partnerships provide financing and company-building skills to start-up companies with the goal of developing them into substantial, profitable enterprises. Venture capitalists identify and support promising entrepreneurs and start-ups, and successful VCs generate breathtaking returns by backing innovative and disruptive companies from an early stage.

Yale was among the first institutional investors to participate in venture capital, making its first commitment in 1976. The University participates through partnerships managed by the nation's leading venture capital firms, including Andreessen Horowitz, Benchmark, and Greylock Partners, as well as premier firms in China and India.

Yale's venture capital managers helped to start some of the world's leading companies. In the 1970s and 1980s, Yale participated in a number of start-ups that defined the technology industry, including Compaq Computer, Oracle, Genentech, Dell Computer, and Amgen. The high-flying 1990s included lucrative investments in Amazon.com, Google, Yahoo!, Cisco Systems, Red Hat, and Juniper Networks. Yale's more recent investments in Facebook, LinkedIn, Twitter, Uber, Pinterest, Snapchat, Airbnb, JD.com, and Snapdeal illustrate the home-run potential of venture capital investing; for example, the University's original \$2.7 million investment in LinkedIn generated \$84.4

million of gains after the company went public in 2011.

Since inception in 1976, Yale's venture capital portfolio generated a 33.8% annual return. Over the past ten years it has produced a return of 18.0% per annum, outpacing the S&P 500 by 10.1% per annum. The hallmark of Yale's successful venture capital program has been long-term relationships with the very best managers. By aligning itself with premier firms, the University hopes to continue to generate attractive returns to support Yale's educational mission.

One of Yale's most profitable venture capital investments in recent years was the stake in LinkedIn.



Yale's portfolio is structured using a combination of academic theory and informed market judgment. The theoretical framework relies on mean-variance analysis, an approach developed by Nobel laureates James Tobin and Harry Markowitz, both of whom conducted work on this important portfolio management tool at Yale's Cowles Foundation. Using statistical techniques to combine expected returns, variances, and covariances of investment assets, Yale employs mean-variance analysis to estimate expected risk and return profiles of various asset allocation alternatives and to test sensitivity of results to changes in input assumptions.

Because investment management involves as much art as science, qualitative considerations play an extremely important role in portfolio decisions. The definition of an asset class is quite subjective, requiring precise distinctions where none exist. Returns and correlations are difficult to forecast. Historical data provide a guide, but must be modified to recognize structural changes and compensate for anomalous periods. Quantitative measures have difficulty incorporating factors such as market liquidity or the influence of significant, low-probability events. In spite of the operational challenges, the rigor required in conducting mean-variance analysis brings an important perspective to the asset allocation process.

The combination of quantitative analysis and market judgment employed by Yale produces the following portfolio:

Asset Class	June 2015 Actual	June 2015 Target
Absolute Return	20.5%	21.5%
Domestic Equity	3.9	4.0
Fixed Income	4.9	8.5
Foreign Equity	14.7	14.5
Leveraged Buyouts	16.2	16.0
Natural Resources	6.7	8.5
Real Estate	14.0	13.0
Venture Capital	16.3	14.0
Cash	2.8	0.0

The target mix of assets produces an expected real (after inflation) long-term growth rate of 6.7% with risk (standard deviation of returns) of 13.3%. Because actual holdings differ from target levels, the actual allocation produces a portfolio expected to grow at 7.0% with risk of 13.8%. The University's measure of inflation is based on a basket of goods and services specific to higher education that tends to exceed the Consumer Price Index by approximately one percentage point.

At its June 2015 meeting, Yale's Investment Committee adopted changes to the University's policy portfolio allocations. The Committee approved increases in the fixed income target from 5% to 8.5%, in the absolute return target from 20% to 21.5%, in the foreign equity target from 13% to 14.5%, and in the natural resources target from 8% to 8.5%.



The Committee approved decreases in the real estate target from 17% to 13%, in the domestic equity target from 6% to 4%, and in the total private equity target from 31% to 30%. In addition, Yale separated the private equity asset class into leveraged buyouts (16%) and venture capital (14%).

Over the longer term, Yale seeks to allocate approximately one-half of the portfolio to the illiquid asset classes of leveraged buyouts, venture capital, real estate, and natural resources. The Endowment has made significant progress in reducing illiquidity in the years since the financial crisis.

Providing resources for current operations and preserving the purchasing power of assets dictate investing for high returns, causing the Endowment to be biased toward equity. The University's vulnerability to inflation further directs the Endowment away from fixed income and toward equity instruments. Hence, more than 90% of the Endowment is targeted for investment in assets expected to produce equity-like returns, through holdings of domestic and international securities, absolute return strategies, real estate, natural resources, leveraged buyouts, and venture capital.

Over the past three decades, Yale dramatically reduced the Endowment's dependence on domestic marketable securities by reallocating assets to nontraditional asset classes. In 1985, 80% of the Endowment was committed to U.S. stocks and bonds. Today, target allocations call for 12.5% in domestic marketable securities, while the diversifying assets of foreign equity, natural resources, leveraged buyouts, venture capital, absolute return, and real estate dominate the Endowment, representing 87.5% of the target portfolio.

The heavy allocation to nontraditional asset classes stems from their return potential and diversifying power. Today's actual and target portfolios have significantly higher expected returns than the 1985 portfolio with similar volatility. Alternative assets, by their very nature, tend to be less efficiently priced than traditional marketable securities, providing an opportunity to exploit market inefficiencies through active management. The Endowment's long time horizon is well suited to exploit illiquid, less efficient markets such as venture capital, leveraged buyouts, oil and gas, timber, and real estate.



Branford Court, in Branford College, with Wrexham Tower in background.

## Yale Alumni Venture Capitalists

### Nick Shalek

*“My time at Yale and the Yale Investments Office taught me the value of intellectual honesty and surrounding yourself with high-quality people. Nothing could be more important in entrepreneurship or venture capital. Building a successful technology company takes a lot of guts, brains, and time, so the only smart way to do it is to find great partners and be unfailingly honest with yourself about the opportunities and challenges along the way.”*



Nick Shalek is a partner at Ribbit Capital, a venture capital firm focused on changing the world of finance. Prior to Ribbit, Shalek served as entrepreneur-in-residence at Aspire Public Schools, where he incubated Schoolzilla, a cloud-based educational data management and analytics platform. Earlier in his career, Shalek was a director at Verne Global and a senior analyst at the Yale Investments Office. While at Yale, Shalek was elected to New Haven's Board of Aldermen, where he focused his efforts on the city's economic development and education policy.

As an undergraduate, he was captain of the hockey team and president of the Yale Entrepreneurial Society. During Shalek's time in business school, he worked at Facebook, developing partnership and risk management strategies for Facebook Credits.

Shalek received a B.A. in economics and political science from Yale in 2005 and an M.B.A. and an M.A. in education from Stanford in 2011.

### Ping Ping

*“Through Yale, I met the people who mattered most in my investment career, because we valued similar qualities such as intellectual honesty, original thinking, empathy, curiosity, grace, and focus. Yale's influence on my work and life will keep growing in the years to come.”*



Ping Ping is a managing director at Chengwei Capital. Since joining Chengwei in 2003, Ping has been responsible for investments across sectors, including consumer, services, Internet and mobile, energy, health care, and manufacturing. Ping serves as a director on the boards of a number of companies. Before Chengwei, Ping worked for McKinsey & Company as a consultant at its Beijing office from 1997 to 2000. She worked on strategic and operational projects covering state-owned, private, and multinational companies. In 2000 Ping joined the founding team of an Internet company serving business customers with online applications.

Ping received a B.A. in international economics from Peking University in 1997 and an M.B.A. from Yale in 2003.

### Matt Cohler

*“There are patterns to entrepreneurship, but there are no rules. After all, entrepreneurs and start-ups that break out to wild success are by definition exceptions.”*



Matt Cohler is a general partner of Benchmark. Cohler has extensive experience working with great entrepreneurs to build lasting consumer Internet companies, having served in senior management roles at Facebook and LinkedIn. Most recently, he served as vice president of product management at Facebook, overseeing the company's product development organizations. Cohler joined Facebook in early 2005 as one of the first five employees hired by the company's founders and its first external executive hire. He has been credited with helping drive Facebook's strategy, organizational growth, and product direction.

Previously, Cohler served as vice president and general manager at LinkedIn, where he was a member of the company's founding team. Before LinkedIn, he was a consultant in McKinsey & Company's Silicon Valley office and worked in Beijing for AsiaInfo, the telecom solutions provider that built China's Internet infrastructure prior to the company's initial public offering.

Cohler's investments include 1st dibs, Asana, Baixing, CouchSurfing, Domo, Dropbox, Duo Security, Edmodo, Greenhouse Software, Instagram, Quora, ResearchGate, Xapo, and Zendesk.

Cohler received a B.A. from Yale in 2001.

## Yale Alumni Venture Capitalists (continued)

### Ann Miura-Ko

*“One of my real joys beyond my work as a venture capitalist is to teach and mentor college students. Often, seniors will come to me with one or two quarters left in their academic career to ask me what final classes they should take. I think that they’re expecting me to push them toward an extra class on machine learning or data mining. It’s that Yale education that comes shining through in those moments. I tell them that they can take a class on machine learning or data mining any time in the future. They can learn those skills from books and online courses. What you’ll never get to do again is to learn how to gain a deep appreciation for Paradise Lost or learn the history of the Cold War from someone like Gaddis or learn art history from Scully. It’s these types of classes that build the foundation for character that is so important in any career and has certainly been important in mine.”*



Ann Miura-Ko is a co-founding partner at Floodgate, where her investment interests include innovations in e-commerce, security, and big data. She has been called “the most powerful woman in start-ups” by *Forbes* and is a lecturer in entrepreneurship at Stanford. The child of a rocket scientist at NASA, Miura-Ko is a Palo Alto native and has been steeped in technology start-ups since she was a teenager. Prior to Floodgate, she worked at Charles River Ventures and McKinsey & Company.

Some of Miura-Ko’s investments include Lyft, Ayasdi, Xamarin, Refinery29, Chloe and Isabel, Maker Media, Wanelo, TaskRabbit, and Modcloth.

Miura-Ko is known for her debate skills (she placed first in the National Tournament of Champions in high school) and represented Yale in the Robocup Competition in Paris.

Miura-Ko received a B.S. in electrical engineering from Yale in 1998 and a PH.D. in math modeling of computer security from Stanford in 2010.

### Steve Harrick

*“Yale’s emphasis upon diverse and rigorous academic study prepares its students for the inevitably changing world that they encounter upon graduation. As a venture capitalist, I look for talented entrepreneurs who are able to recognize when change affords them the opportunity to apply technology to solve problems and create exceptional companies.”*



Steve Harrick joined Institutional Venture Partners (IVP) as a general partner in October 2001 and has more than eighteen years of venture capital experience. He focuses on investing in later-stage technology companies with exceptional growth potential. Specifically, Harrick targets Internet, communications, and technology-enabled services companies that have the potential to become leaders in their respective markets. He enjoys working closely with committed entrepreneurs to create businesses that are both respected and revolutionary. Harrick was recognized by *Forbes* as one of the top one hundred venture capitalists in the world by his inclusion in the 2009, 2012, and 2013 *Forbes* Midas Lists.

Harrick led IVP’s investments in Aerohive Networks, Ayasdi, Business.com, LegalZoom, MySQL, Personal Capital, Spiceworks, and Tripwire, among other firms.

Before joining IVP, Harrick worked for the Internet Capital Group (ICG) as vice president of acquisitions. Prior to ICG, Harrick worked for Highland Capital Partners. Before entering the

venture capital industry in 1997, Harrick worked in new business development for Netscape Communications and in mergers and acquisitions for Morgan Stanley.

Harrick received a B.A. in history from Yale in 1993 and an M.B.A. from Harvard in 1997.

### David Sze

*“Anyone reasonably smart will tell you all the reasons your venture will fail, but only you can decide the reasons it will succeed despite the odds.”*



David Sze is a partner of Greylock Partners. Sze invests in entrepreneurs who are building companies focused on consumer mobile, Internet services, and media convergence.

Sze joined Greylock Partners in 2000. Before Greylock, he was senior vice president of product strategy at one of the first search pioneers, Excite, and then Excite@Home. As an early employee at Excite starting in 1996, Sze held roles as general manager of Excite.com and vice president of content and programming for the Excite Network. Before Excite, he worked in product marketing at Electronic Arts and development at Crystal Dynamics. He started his career in management consulting for Marakon Associates and The Boston Consulting Group, and also spent time at HBO.

Sze’s investments include LinkedIn, Facebook, Pandora, Nextdoor, Vessel, Medium, ToyTalk, WhoSay, Jelly, VUDU, Revision3, Digg, Oodle, SEVEN, SGN, and New Edge Networks. Since 2011 Sze has been consistently ranked at the top of the *Forbes* Midas List, which recognizes top VC tech investors.

Sze received a B.A. in economics and political science from Yale in 1988 and an M.B.A. from Stanford in 1993.

## Yale Alumni Venture Capitalists (continued)

### David B. Singer

*“Entrepreneurship is about balancing an unwavering optimism that the future can be better than the present, with the sober objectivity that is required to make very difficult decisions. My professional experiences that required combining optimism and objectivity derive inextricably from my time at Yale – the academic rigor, the insanely diverse extracurriculars, and the inspiration of watching my friends passionately pursuing their own curiosities.”*



David Singer is managing partner of Maverick Capital Ventures, where he is responsible for Maverick’s venture investments globally. In that role, Singer serves on the boards of several private companies in the fields of health care information technology, health care delivery, and biotechnology. He serves and has served on several public company boards as well.

Prior to Maverick, Singer was an entrepreneur who specialized in health care start-ups. He is founder and former chief executive officer of three health care companies – Affymetrix, Inc., GeneSoft Pharmaceuticals, and Corecept Therapeutics, Inc. – in fields ranging from DNA analysis tools to novel therapeutics. He has been a member of the Rand Corporation’s Health Advisory Board, is a Sterling Fellow of Yale University, and is vice chair of College Track. In July 2013, Singer was appointed by the mayor of San Francisco to be a health commissioner and a member of the San Francisco General Hospital Joint Conference Committee. He is a 1997 Henry Crown Fellow of The Aspen Institute.

Singer received a B.A. in history from Yale in 1984 and an M.B.A. from Stanford in 1988.

### Roger McNamee

*“Entrepreneurship has been a cornerstone of my American dream. My first start-up began at Yale and paid for my undergraduate and graduate degrees, paving the way for a very happy life.”*



Roger McNamee is a co-founder of Elevation Partners. He began his career in 1982 at T. Rowe Price Associates, where he managed the New Horizons Fund. In 1991 he launched Integral Capital Partners, the first crossover fund (combining later-stage venture capital with public market investments), in partnership with Kleiner Perkins Caufield & Byers and Morgan Stanley. In 1999 McNamee co-founded Silver Lake Partners, the first private equity fund focused on technology businesses. In 2004 McNamee and his partners launched Elevation Partners, an investment partnership focused on the intersection of media and entertainment content and consumer technology.

McNamee performs one hundred concerts a year in the bands Moonalice and Doobie Decibel System, in which he plays bass and guitar. Moonalice pioneered the use of social media in music, inventing such applications as Twitter-cast concerts, Moonalice radio on Twitter, live Moontunes video concert streams, and the Moonalice Couch Tour. McNamee is the author of *The New Normal* and *The Moonalice Legend: Posters and Words*, Volumes 1–6. He has served as a technical adviser for seasons two and three of HBO’s *Silicon Valley* series.

McNamee is a co-founder of the Tembo Preserve and the Haight Street Art Center. He serves on the board of directors for the Rock and Roll Hall of Fame Museum.

McNamee received a B.A. in history from Yale in 1980 and an M.B.A. from Dartmouth in 1982.

### Mike Brooks

*“During my venture capital career I have been privileged to mentor and support some extraordinary entrepreneurs and their management teams. A great idea – even if surrounded by superior talent – only goes so far. If I have added value, it is from what I learned at Yale: the discipline required in the classroom and the competitive drive inspired by our coaches, who reinforced the notion that preparation and teamwork improve the odds of success.”*



Mike Brooks joined Venrock in 2000 and served as a partner until 2014. An active, successful, and experienced venture capital investor for over thirty years, he currently serves as a consultant and adviser to Venrock.

During his years at Venrock, Brooks was responsible for investments in collegeboard.com, Fogdog, MediaMetrix, Message One, Niku Corp., Optinuity, Performance Retail, Semtek, Spotlight/Profitlogic, Taleo, and USInternet-working. He continues to serve on the boards of companies in which Venrock is a major investor.

Prior to Venrock, Brooks spent eleven years with Morgan Stanley and fifteen years with J.H. Whitney. His extensive background in finance and investing helped provide entrepreneurs in enterprise software, financial services, and digital media with unique insights into managing and financing rapidly growing businesses. He has been recognized several times on the *Forbes* Midas List and served as a director of the National Venture Capital Association.

Brooks has been active with not-for-profit companies and currently serves on

## Yale Alumni Venture Capitalists (continued)

the boards of Hospital for Special Surgery, the U.S. Ski and Snowboard Association, and Greenwood Cemetery. He is a former trustee of Kent School and the U.S. Cycling Development Foundation, and has been involved in several capacities with Yale.

Brooks received a B.A. in history from Yale in 1967 and an M.B.A. from Harvard in 1973.

### G. Leonard Baker

*"I graduated from Yale College in 1964 and started my business career in 1966, a time when large, centralized corporations – AT&T, IBM, Kodak – commanded the economy. They believed in size and bureaucratic methods. Today, companies that have implemented new ideas made possible by technology and globalization – Apple, Facebook, Alibaba, Tencent – account for the bulk of economic value-creation and increasingly dominate stock markets and our daily lives. Creative destruction continues to blindside and supplant traditional firms that try to protect and milk their past successes.*

*"It's been my luck to witness and participate in this exceptional half-century of entrepreneurial success. The process not only continues but is speeding up. Yale people have been deeply involved all along the way. Yale College and successful entrepreneurs have something important in common: belief in thinking and acting from first principles."*



Len Baker has been a partner of Sutter Hill Ventures since 1973. He has been an active investor in a number of industries, including entertainment media, semicon-

ductors and semiconductor equipment, biotechnology and medical equipment, and software.

Currently, Baker serves on the boards of a number of public and private companies, among them Concept Therapeutics, an early-stage biopharmaceutical company, and Youku Tudou, the leading Chinese Internet video company. He is responsible for Sutter Hill's investment in Chengwei Ventures, a venture capital firm in Shanghai that Sutter Hill helped start in 1999, and in Golden Gate Capital, a private equity firm in San Francisco that Sutter Hill helped found in 2000.

Before joining Sutter Hill, Baker worked for Cummins Engine Company, a manufacturer of diesel engines, and for the Delta Foundation, a community-owned, minority business development firm in Greenville, Mississippi.

Baker is a former trustee of Yale University, where he chaired the Finance Committee. He served on the Yale Investment Committee from 1990 to 2015. He is a member of the Investment Board to the Government of Singapore Investment Corporation and is a member of Singapore's International Academic Advisory Panel. He is an adviser to the Packard Foundation Investment Committee and Alta Advisers, a London family office. Baker is a board member of the Environmental Defense Fund and a trustee of the Berklee College of Music.

Baker received a B.A. in mathematics from Yale in 1964 and an M.B.A. from Stanford in 1966.

### Henry McCance

*"From my forty-plus-year experience in venture capital, I have concluded that the most important skill is to proactively identify and attract world-class, visionary entrepreneurs. If you have the right founder, he or she will make the necessary and inevitable adjustments to the business plan over the life of the venture investment. The truly great entrepreneurs are clear thinkers, passionate about their vision, good communicators, willing to make hard decisions, extraordinarily energetic, and convinced that they are on their life's mission. The role of the venture capitalist is to support such entrepreneurs by being their 'most trusted adviser,' and being a value-added resource over the life of the venture."*



Henry McCance is chairman emeritus of Greylock Partners.

McCance came to Greylock in 1969 after serving for two years in the Office of the Secretary of Defense. He was responsible for Greylock's early involvement in the software industry with his backing of market-leading firms, including American Management Systems, Pansophic, Cullinane, McCormack and Dodge, and VM Software.

Over the ensuing forty years of his tenure, Greylock has raised a series of twelve partnerships, with current committed capital in excess of \$2 billion, and helped build approximately 300 developing companies. In recognition, McCance received the National Venture Capital Association's Lifetime Achievement Award in May 2004 and, along with Greylock's founding partners, the Harvard Business School Award for Alumni Achievement in 2003. In 2000 McCance was voted one of the country's ten best VCs by *Forbes*.

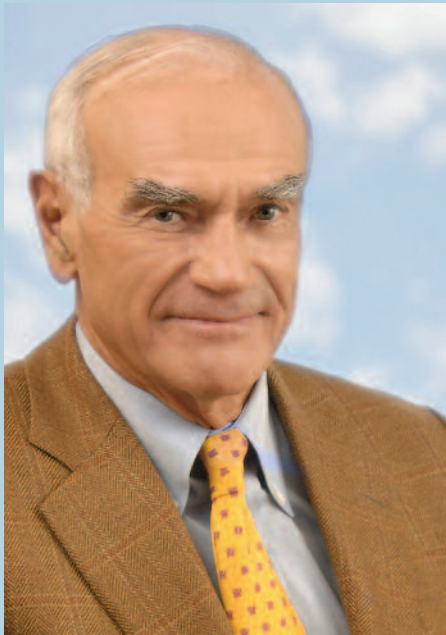
McCance served on the Greylock board and led its investment in companies such as Tellabs, Shiva Corporation, Manugistics, Trilogi, ABT Corporation, Narrative Communications, Gradient Technologies, Information Resources, Epsilon, and Gateway Design. In addition, he served for twenty-five years on the board of directors of Continental Cablevision.

McCance received a B.A. from Yale in 1964 and an M.B.A. from Harvard in 1966.

## Yale Alumni Venture Capitalists (continued)

### William H. Draper III

*"I have found that the most successful entrepreneurs are like the most successful Yale graduates... diligent, smart, well focused, and eager to accomplish something of real significance. As a venture capitalist I have supported some wonderful entrepreneurs with these traits and it has worked out pretty well."*



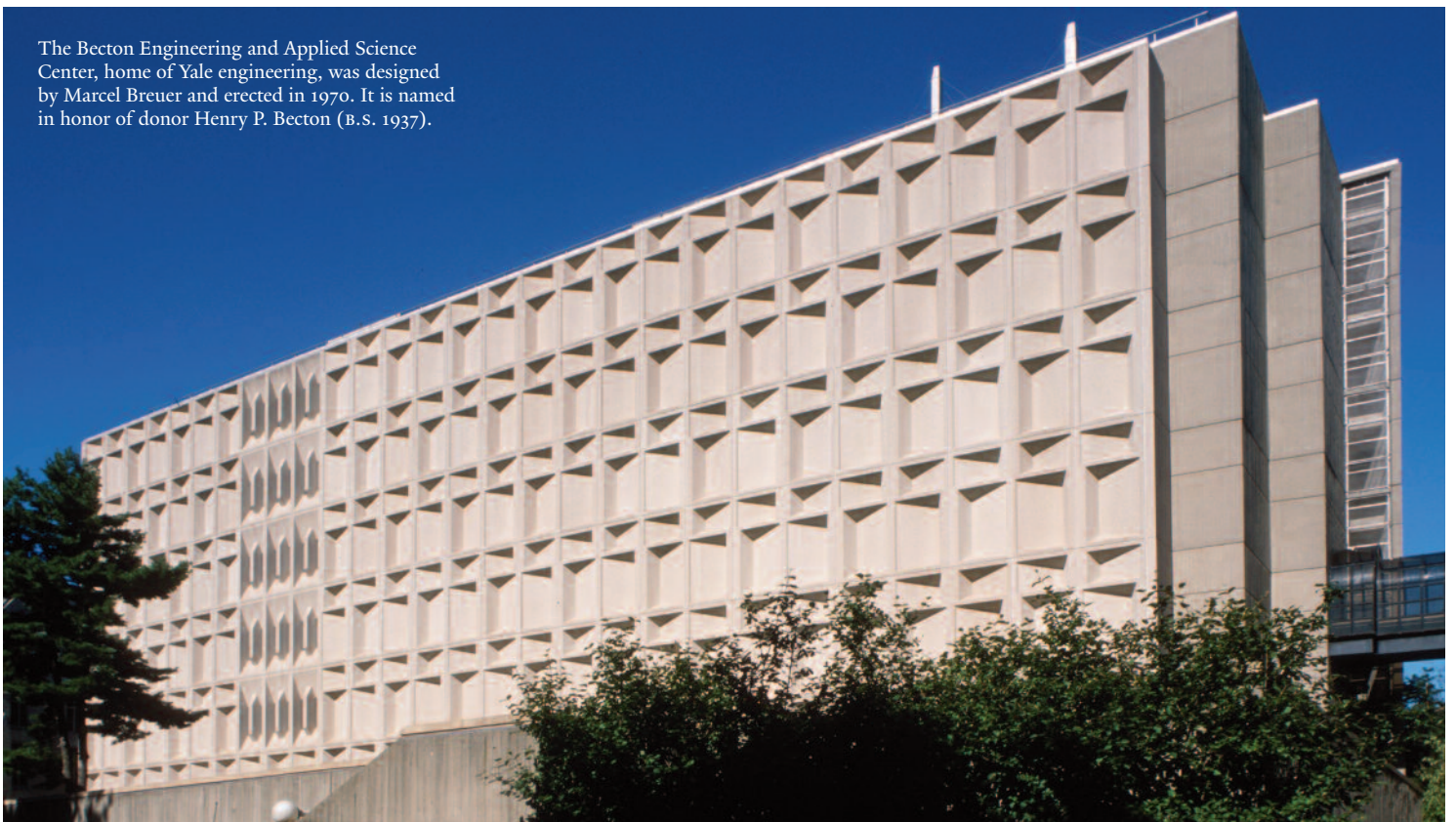
With over forty years of experience, William Draper was one of the first venture capitalists on the west coast. He founded Sutter Hill Ventures, and during his twenty years as the senior partner, he helped to organize and finance several hundred technology companies. From 1981 to 1986 he served as president and chairman of the Export-Import Bank. In 1986 he became the head of the world's largest source of multilateral development grant assistance, the United Nations Development Program. At present he is the general partner of Draper Richards, a venture capital fund focusing on early-stage technology companies in the United States, and Draper International, a venture capital fund investing in private companies with operations in the United States and India. He serves as co-chairman of the Draper Richards Kaplan Foundation, a venture philanthropy firm focused on start-up non-profit organizations promoting social change.

A few years ago, Draper authored *The Startup Game: Inside the Partnership between Venture Capitalists and Entrepreneurs*. In addition to serving on many corporate boards of directors, he has served on the boards of the Atlantic Council, Harvard Business School

California Research Center, Hoover Institution, Freeman Spogli Institute for International Studies at Stanford University, World Affairs Council of Northern California, and the United Nations Association-USA. Draper formerly served as the chairman of the World Affairs Council of Northern California, as chairman of the Institute of International Education, as a trustee of Yale University, and as chairman of the board of the American Conservatory Theatre in San Francisco; he is a former board member of Population Action International, George Bush Library Foundation, the Advisory Council of the Stanford Graduate School of Business, and the World Rehabilitation Fund in New York. He is a member of the Council on Foreign Relations and the President's Council on International Activities at Yale University. In 2005 he received the Vision Award from SD Forum and was inducted into the Dow Jones Venture Capital Hall of Fame. In 2006 he received the Silicon Valley Fast 50 Lifetime Achievement Award, and the Distinguished Service Award from the Institute of International Education.

Draper received a B.A. from Yale in 1950 and an M.B.A. from Harvard in 1954.

The Becton Engineering and Applied Science Center, home of Yale engineering, was designed by Marcel Breuer and erected in 1970. It is named in honor of donor Henry P. Becton (B.S. 1937).



## Asset Class Characteristics

Yale's eight asset classes are defined by differences in their expected response to economic conditions, such as economic growth, price inflation, or changes in interest rates, and are weighted in the Endowment portfolio by considering their risk-adjusted returns and correlations. The University combines the asset classes in such a way as to provide the highest expected return for a given level of risk, subject to fundamental diversification and liquidity constraints.

## *Absolute Return*

In July 1990, Yale became the first institutional investor to define absolute return strategies as a distinct asset class, beginning with a target allocation of 15.0%. Designed to provide significant diversification to the Endowment, absolute return investments are expected to generate high long-term real returns by exploiting market inefficiencies. The portfolio is invested in two broad categories: event-driven strategies and value-driven strategies. Event-driven strategies rely on a very specific corporate event, such as a merger, spin-off, or bankruptcy restructuring, to achieve a target price. Value-driven strategies involve hedged positions in assets or securities with prices that diverge from their underlying economic value. Today, the absolute return portfolio is targeted to be 21.5% of the Endowment, below the average educational institution's allocation of 24.1% to such strategies. Absolute return strategies are expected to generate a real return of 4.8% with risk of 8.6%. The Barclays 9 to 12 Month Treasury Index serves as the portfolio benchmark.

Unlike traditional marketable securities, absolute return investments have historically provided returns largely independent of overall market moves. Over the past twenty years, the portfolio exceeded expectations, returning 10.1% per year with low correlation to domestic stock and bond markets.

## *Domestic Equity*

Equity owners reasonably expect to receive returns superior to those produced by less risky assets such as bonds and cash. The predominant asset class in most U.S. institutional portfolios, domestic equity represents a large, liquid, and heavily researched market. While the average educational institution invests 19.4% of assets in domestic equities, Yale's target allocation to this asset class is only 4.0%. The domestic equity portfolio has an expected real return of 6.0% with a standard deviation of 18.0%. The Wilshire 5000 Index serves as the portfolio benchmark.

Despite recognizing that the U.S. equity market is highly efficient, Yale elects to pursue active management strategies, aspiring to outperform the market index by a few percentage points, net of fees, annually. Because superior stock selection provides the most consistent and reliable opportunity for generating attractive returns, the University favors managers with exceptional bottom-up, fundamental research capabilities. Managers searching for out-of-favor securities often find stocks that are cheap in relation to fundamental measures such as asset value, future earnings, or cash flow. Over the past twenty years, Yale's domestic equity portfolio has posted returns of 14.0% per year.

## *Fixed Income*

Fixed income assets generate stable flows of income, providing more certain nominal cash flow than any other Endowment asset class. The bond portfolio exhibits a low covariance with other asset classes and serves as a hedge against financial accidents or periods of unanticipated deflation. In line with the typical educational institution's allocation to fixed income instruments of 9.3%, Yale's target allocation to fixed income and cash is 8.5% of the Endowment. Bonds have an expected real return of 0.5% with risk of 3.0%. The Barclays Capital 1 to 3 Year U.S. Treasury Index serves as the portfolio benchmark.

Yale is not particularly attracted to fixed income assets, as they have the lowest expected returns of the eight asset classes that make up the Endowment. In addition, the government bond market is arguably the most efficiently priced asset class, offering few opportunities to add significant value through active management. Based on skepticism of active fixed income strategies and belief in the efficacy of a highly structured approach to bond portfolio management, the Investments Office chooses to manage Endowment bonds internally. Over the past twenty years, the fixed income portfolio has generated returns of 5.1% per annum.

## *Foreign Equity*

Foreign equity investments give the Endowment exposure to the global economy, providing diversification and the opportunity to earn outsized returns through active management. Yale allocates 5.5% of its portfolio to foreign developed markets and 9.0% to emerging markets. Yale's foreign equity target allocation of 14.5% stands below the average endowment's allocation of 22.1%. Expected real returns for emerging equities are 7.5% with a risk level of 23.0%, while developed equities are expected to return 6.0% with risk of 18.0%. The portfolio is measured against a composite benchmark of developed markets, measured by the Morgan Stanley Capital International (MSCI) Europe, Australasia, and Far East (EAFE) Investable Market Index, and emerging markets, measured by a blend of the MSCI Emerging Markets Investable Market Index and the MSCI China A-Share Investable Market Index.

Yale's investment approach to foreign equities emphasizes active management designed to uncover attractive opportunities and exploit market inefficiencies. As in the domestic equity portfolio, Yale favors managers with strong fundamental research capabilities. Capital allocation to individual managers takes into consideration the country allocation of the foreign equity portfolio, the degree of confidence that Yale possesses in a manager, and the appropriate size for a particular strategy. In addition, Yale attempts to exploit mispricings in countries, sectors, and styles by allocating capital to the most compelling opportunities. Twenty-year returns for Yale's foreign equity portfolio stand at 15.0% per year.



## *Leveraged Buyouts*

Leveraged buyouts offer extremely attractive long-term risk-adjusted returns, stemming from the University's strong stable of managers that exploit market inefficiencies. The University's target allocation to leveraged buyouts of 16.0% far exceeds the 5.9% actual allocation of the average educational institution. The leveraged buyout portfolio is expected to generate real returns of 10.0% with risk of 23.6%.

Yale's leveraged buyout strategy emphasizes partnerships with firms that pursue a value-added approach to investing. Such firms work closely with portfolio companies to create fundamentally more valuable entities, relying only secondarily on financial engineering to generate returns. Investments are made with an eye toward long-term relationships – generally, a commitment is expected to be the first of several – and toward the close alignment of the interests of general and limited partners. Over the past twenty years, the leveraged buyout program has earned 16.4% per annum.

## *Natural Resources*

Equity investments in natural resources—oil and gas, timberland, and metals and mining—share common risk and return characteristics: protection against unanticipated global inflation, high and visible current cash flow, and opportunities to exploit inefficiencies. At the portfolio level, natural resource investments provide attractive return prospects and significant diversification. Yale has an 8.5% long-term policy allocation to natural resources, with expected real returns of 6.6% and risk of 24.5%. Yale's current natural resources allocation is slightly above the 7.3% allocation of the average endowment.

Superior operators have demonstrated the ability to generate excess returns over a market cycle. Over the past twenty years, Yale's oil and gas, timber, and mining portfolio has generated an impressive 17.0% per annum.

## *Real Estate*

Investments in real estate provide meaningful diversification to the Endowment. A steady flow of income with equity upside creates a natural hedge against unanticipated inflation without sacrificing expected return. Yale's 13.0% policy allocation significantly exceeds the average endowment's commitment of 3.7%. Expected real returns are 5.5% with risk of 15.0%.

While real estate markets sometimes produce dramatically cyclical returns, pricing inefficiencies in the asset class and opportunities to add value allow superior managers to generate excess returns over long time horizons. Over the past twenty years, the portfolio has returned 13.6% per annum.

## Venture Capital

Venture capital investments provide compelling option-like returns as the University's premier venture managers gain exposure to innovative start-up companies from an early stage. Yale's venture capital allocation of 14.0% exceeds the 4.6% actual allocation of the average educational institution. The venture capital portfolio is expected to generate real returns of 16.0% with risk of 37.8%.

Yale's venture capital program, one of the first of its kind, is regarded as among the best in the institutional investment community, and the University is frequently cited as a role model by other investors. Yale's venture capital managers are strong, cohesive, and hungry teams with proven ability to identify opportunities early and support talented entrepreneurs as they build early-stage businesses. The University's vast experience in venture capital provides an unparalleled set of manager relationships, significant market knowledge, and an extensive network. Over the past twenty years, the venture capital program has earned an outstanding 92.7% per annum.

## Asset Allocations as of June 30, 2015

	Yale University	Educational Institution Mean
Absolute Return	20.5%	24.1%
Domestic Equity	3.9	19.4
Fixed Income	4.9	9.3
Foreign Equity	14.7	22.1
Leveraged Buyouts	16.2	5.9
Natural Resources	6.7	7.3
Real Estate	14.0	3.7
Venture Capital	16.3	4.6
Cash	2.8	3.7

Note: Educational Institution Mean values sum to 100.1% due to rounding.

The home of Computer Science at Yale, Watson Center. In 1961, Mrs. Thomas J. Watson and her son, Arthur K. Watson (B.A. 1942), donated Watson Hall to house the first Yale Computer Center in memory of Thomas J. Watson, founder of IBM.



## Yale Alumni Entrepreneurs

### Jennifer Fleiss

*“Entrepreneurship is about going after your dreams with unrelenting determination, pushing the limits, and having the persistence to handle the inevitable bumps in the road. Yale exposed me to so many opportunities and taught me that it was up to me to take initiative in molding these opportunities to meet my needs—the foundational learning of entrepreneurship.”*



Jennifer Fleiss is the co-founder and head of special projects at Rent the Runway, a fashion technology company providing designer dress and accessory rentals powered by proprietary technology and a unique reverse-logistics operation. Rent the Runway seeks to change the meaning of ownership and revolutionize retail.

Fleiss currently works on Rent the Runway's business evolution and optimization projects as well as strategic partnerships with brands. Before she met co-founder Jennifer Hyman at Harvard Business School, Fleiss held positions at Morgan Stanley and Lehman Brothers. Since starting Rent the Runway in 2009, she has been honored with several industry recognitions including *Inc. Magazine's* “30 Under 30,” *Fortune's* “40 Under 40” and “Most Powerful Women Entrepreneurs,” *Forbes's* “12 Most Disruptive Names in Business,” *Business Insider's* “35 Under 35,” and *Fast Company's* “Most Influential Women in Technology.” Fleiss is co-founder of The RTR Foundation, which supports female entrepreneurs, an adviser to several female-run businesses, and a guest lecturer at Yale, Columbia, Princeton, and Harvard Business School.

Fleiss received a B.A. in political science from Yale in 2005 and an M.B.A. from Harvard in 2009.

### Jennifer Staple-Clark

*“My Yale experience was transformational. I was immersed in an intellectually stimulating environment that promoted the entrepreneurial spirit. The most essential lesson in entrepreneurship is the importance of focusing on quality, and not just innovation for the sake of innovation. Identify how your dedication and passions can help to advance new, effective ideas.”*



In 2000 Jennifer Staple-Clark, then a sophomore at Yale, founded Unite For Sight in her dorm room. Unite For Sight is now a leader in global health education and in providing cost-effective care to the world's poorest people. It has provided eye care to two million people in North America, Africa, and Asia and has trained nearly 10,000 Global Impact Fellows to eliminate preventable blindness in their local community and abroad.

Staple-Clark is the recipient of the 2011 John F. Kennedy New Frontier Award, presented by the John F. Kennedy Library Foundation and the Institute of Politics at Harvard's Kennedy School of Government, and the 2015 Vision Award, presented by Middlebury College's Center for Social Entrepreneurship. Staple-Clark received the Yale School of Public Health's Centennial Leadership Innovation Award and the Praxis Award in Professional Ethics from Villanova University. She received the American Institute of Public Service's 2009 National Jefferson Award for Public

Service and a 2007 BRICK Award, which honors and funds change-makers who identify problems and work to change the world.

Staple-Clark is a member of the Yale University President's Council on International Activities and is on the operating board of the Yale Entrepreneurial Institute.

Staple-Clark received a B.S. in molecular, cellular, and developmental biology from Yale in 2003.

### Jake Schwartz

*“Yale helped form my world view, and though I didn't know I was going to be an entrepreneur at the time, I can now see how each element of my experience there influenced the path that led me here. Yale's culture of student initiative, leadership, and creativity empowered me to shape my own journey after college, and it's that spirit of empowerment that we seek to inspire at General Assembly every day.”*



Jake Schwartz is the co-founder and chief executive officer of General Assembly, started in 2011 as a community for entrepreneurs and start-up companies in New York City. The company now offers full-time immersive programs, long-form courses, classes, and workshops on technology, business, and design at fourteen campuses across four continents, where it has taught more than 300,000 students.

Schwartz was named E&Y Entrepreneur of the Year in New York, and was recently named one of *Crain's* “40 under 40.”

## Yale Alumni Entrepreneurs (continued)

Schwartz received a B.A. in American studies from Yale in 2000 and an M.B.A. in entrepreneurial management from Wharton in 2008.

### Anne Wojcicki

*“My days at Yale opened my eyes to new ways of seeing the world. Thanks to those experiences and my friends, I left Yale with confidence, a desire to improve the world, and a willingness to take risk.”*



Getting access to and understanding her own genetic information has always been one of Anne Wojcicki's ambitions. She co-founded 23andMe in 2006 after a decade spent in health care investing, focused primarily on biotechnology companies. Her hope was to empower consumers with access to their own genetic information and to create a way to generate more personalized information so that commercial and academic researchers could better understand and develop new drugs and diagnostics. At present, 23andMe has built one of the world's largest databases of individual genetic information. Its novel, Web-based research approach allows for the rapid recruitment of participants to many genome-wide association studies at once, reducing the time and money needed to make new discoveries, and the company has created a proven and standardized resource for finding new genetic associations and confirming genetic loci discovered by others. Under Wojcicki's leadership, 23andMe has made significant advances in bringing personalized medicine directly to the public.

Wojcicki received a B.S. in biology from Yale in 1996.

### Joe Tsai

*“Yale's liberal arts approach taught me that anything is possible. As an entrepreneur in technology, you not only have to adapt to change, but also create change. I support Computer Science and Engineering at Yale because they provide the tools for liberal arts graduates to make disruptive impact.”*



Joe Tsai was a member of the Alibaba Group's founding team and has served as executive vice chairman since May 2013. He previously served as chief financial officer and has been a member of the board of directors since Alibaba's formation in China in 1999. The company's eighteen founders shared a belief that the Internet would level the playing field by enabling small enterprises to leverage innovation and technology to grow and compete more effectively in the domestic and global economies. Today, Alibaba operates leading online and mobile e-commerce marketplaces, cloud computing and payment platforms, and other services. Its 2014 initial public offering on the New York Stock Exchange became the largest in history, raising \$25 billion.

From 1995 to 1999, Tsai worked in Hong Kong with Investor AB, where he was responsible for Asian private equity investments. Prior to that, he was vice president and general counsel of Rosecliff, Inc., a management buyout firm based in New York. From 1990 to 1993, Tsai was an associate attorney in the tax group of Sullivan & Cromwell LLP, a New York-based international law firm.

Tsai serves on the boards of directors of several of Alibaba's investee companies.

Tsai received a B.A. in economics and East Asian studies from Yale in 1986 and a J.D. from Yale in 1990.

### Kevin P. Ryan

*“The core skills that allowed me to launch many Internet companies over the past twenty years were learned and nurtured at Yale. I am glad Yale is even more focused than ever on developing entrepreneurial instincts. The impact is already being felt and will continue to grow.”*



Kevin Ryan is one of the leading Internet entrepreneurs in New York. He is the founder and chairman of several businesses, including Business Insider, MongoDB, GILT, and Zola. Combined, these companies have raised more than \$500 million in venture capital funding and currently employ almost 2,000 people. Previously, Ryan helped build DoubleClick from 1996 to 2005, first as president and later as CEO. He led DoubleClick's growth from a twenty-person start-up to a publicly traded global leader with over 1,500 employees. In 2013 Ryan was named one of “The 100 Most Influential New Yorkers of the Past 25 Years” by *The Observer*.

Ryan serves on the board of Human Rights Watch, is vice chairman of The Partnership for New York City, and is a member of the Council on Foreign Relations. He previously served on the boards of INSEAD, the Direct Marketing Association, The Ad Council, HotJobs, and the advisory board of Doctors Without Borders.

## Yale Alumni Entrepreneurs (continued)

Ryan received a B.A. in economics from Yale in 1985 and an M.B.A. from INSEAD in 1990. He is a fellow of the Yale Corporation.

### Rob Glaser

*"I am grateful for all of the ways my Yale education prepared me for my adult life and the entrepreneurial path I chose. In addition to what I learned academically, Yale stimulated me to think rigorously and globally about the world around me. Perhaps most uniquely, my Yale experience encouraged me to juxtapose the world of the possible and the world of the actual in ways that stimulated me to never accept the status quo as immutable, and to find new ways of doing things that hadn't been done before."*



Rob Glaser – founder, chairman, and CEO of RealNetworks – is an Internet, technology, and media pioneer. RealNetworks was the first company to introduce streaming on the Internet with its groundbreaking RealAudio product in 1995. RealNetworks has continued to innovate and create compelling digital media products and services, including, most recently, its innovative RealTimes® product introduced in 2015.

Glaser founded Real in 1994 and served as chief executive officer until January 2010. During that time, Glaser successfully steered the company through its initial public offering and through fifteen years of growth. In July 2012 Glaser returned to Real as chief executive officer to help lead the company through its next period of transformation and innovation.

Prior to RealNetworks, Glaser spent ten years at Microsoft in a number of roles, including vice president of Multimedia and Consumer Systems. Under his guidance, Glaser's team set the engineering and commercial standard for integrating multimedia hardware and software into PCs.

Glaser has served on several non-profit boards and committees, including an appointment by President Clinton to the Advisory Committee on Public Interest Obligations of Digital Television Broadcasters and as a member of the digital advisory committee for the Broadcasting Board of Governors. Glaser also serves as chairman of the Glaser Progress Foundation and the RealNetworks Foundation.

Glaser received a B.S. in computer science and an M.A. in economics from Yale in 1983.

### Donna Dubinsky

*"I've had an amazing career at the forefront of four major generations of computing: personal computing, handheld computing, smartphones, and intelligent computing. You can't be trained to create new markets. Yale's education gave me the tools I needed to be both creative and analytical as we figured out how to create breakthrough products in new markets."*



Donna Dubinsky is chief executive officer, board chair, and co-founder of Numenta, Inc., a software company that creates fundamental technology designed to lead the coming era of machine intelligence.

After graduating from business school, Dubinsky worked at Apple Computer and then as a founder of Claris Corporation. In 1992 she joined Jeff Hawkins at Palm Computing, serving as president and chief executive officer. The handheld computer, the PalmPilot, introduced four years later, became the fastest-selling computer and consumer electronics product. Dubinsky remained Palm's president and chief executive officer throughout its acquisition by U.S. Robotics and subsequently by 3Com Corporation.

In 1998 Dubinsky and Hawkins founded Handspring, Inc., creator of the Treo Smartphone, which set the standard for next-generation phones. Handspring merged with Palm in 2003, and Dubinsky served as a director until early 2009. She and Hawkins founded Numenta in 2005.

Dubinsky received a B.A. in history from Yale in 1977 and an M.B.A. from Harvard in 1981. She is a fellow of the Yale Corporation.

### Bing Gordon

*"The most important element of your investment pitch is not a slide; it's you."*



Bing Gordon was a long-time executive at Electronic Arts, beginning with EA's founding in 1982. He served as chief creative officer at EA from 1998 to 2008 and previously headed EA marketing and product development. Gordon drove EA's branding strategy with EA Sports, developed EA's pricing strategy for package goods and online games, created EA's studio organization, and contributed to the design and marketing of many EA

## Yale Alumni Entrepreneurs (continued)

franchises, including John Madden Football, The Sims, Sim City, Need for Speed, Tiger Woods Golf, Club Pogo, and Command and Conquer. Gordon was a founding director at ngmoco and Audible, and held the game industry's first university chair at the University of Southern California School of Cinematic Arts.

Gordon joined venture capital firm Kleiner Perkins Caufield & Byers in 2008 and serves as general partner and chief product officer for the firm, leading KPCB's sFund, the investment initiative to fund and build applications and services that deliver on the promise of the social Web. Gordon serves on the board of directors of Amazon, Zynga, Zazzle, Airtime, and N3twork. Gordon's additional investments include DuoLingo, Fleksy, Jawbone, Betterworks, and Spotify.

Gordon received a B.A. from Yale in 1972 and an M.B.A. from Stanford in 1978.

### Mitch Kapor

*"Building a workplace that engages a diversity of employees and brings out their best makes a far greater contribution than financial success alone."*



Mitch Kapor is the managing partner of Kapor Capital, an Oakland-based venture firm that invests in tech-driven seed-stage companies committed to closing gaps of access, opportunity, or outcome for low-income communities

and/or communities of color in the United States.

Kapor is a pioneer of the personal computing industry, a serial entrepreneur, and a long-time angel investor. He founded Lotus Development Corporation and designed Lotus 1-2-3, the "killer application" that made the personal computer ubiquitous in the business world in the 1980s. He is the co-founder of The Electronic Frontier Foundation, which protects freedom and privacy on the Internet, and was the founding chair of the Mozilla Foundation, creator of the open source Web browser Firefox.

He serves as co-chair of the Kapor Center for Social Impact and as interim president of the Level Playing Field Institute.

Kapor received a B.A. from Yale in 1971.

### Frederick W. Smith

*"Leadership is the ability of an individual that can coalesce the efforts of a group of individuals toward achieving organizational goals... At the end of the day, culture is everything."<sup>1</sup>*



Born in 1944 in Marks, Mississippi, Frederick W. Smith is the founder and chief executive officer of FedEx Corporation. He performed the original analyses of the logistics needs of a highly automated future society during his undergraduate years.

After four years of service in the Marines, including two tours of duty in Vietnam, he launched the original air-ground Federal Express network, which began operations in 1973 to serve the rapidly growing high-tech/high-value-

added sectors of the economy Smith had predicted. The company has since grown into a \$45 billion global enterprise.

Smith is responsible for providing strategic direction for all FedEx operating companies: FedEx Services (including FedEx Office), FedEx Express, FedEx Ground, and FedEx Freight. FedEx serves more than 220 countries and territories with operations that include 634 aircraft and over 90,000 vehicles. More than 350,000 team members worldwide currently handle more than 11 million shipments each business day.

FedEx has been widely acknowledged for its commitment to total quality service. FedEx Express was the first service company to win the Malcolm Baldrige National Quality Award in 1990. FedEx has consistently been ranked on *Fortune* magazine's industry lists, including "World's Most Admired Companies," "100 Best Companies to Work For," and "Blue Ribbon Companies List."

Smith is co-chair of the Energy Security Leadership Council, a trustee for the United States Council for International Business, and a member of both the Business Council and Business Roundtable. He served as chairman of the U.S.-China Business Council and co-chair of the French-American Business Council. Smith has served on the boards of several large public companies and a number of charitable organizations, including St. Jude Children's Research Hospital and the Mayo Foundation. He formerly chaired the board of governors for the International Air Transport Association and the executive committee of the U.S. Air Transport Association.

Smith has received several honorary degrees and numerous civic, academic, and business awards, including the Global Leadership Award from the U.S.-India Business Council and the Circle of Honor Award from the Congressional Medal of Honor Foundation. He is a member of the Aviation Hall of Fame and the Business Hall of Fame. He served as co-chairman of both the U.S. World War II Memorial project and the campaign for the National Museum of the Marine Corps. He has been named a top chief executive officer by both *Barron's* and *Chief Executive* magazines.

Smith received a B.A. from Yale in 1966.

<sup>1</sup> Frederick W. Smith, second annual Stump Entrepreneurship Lecture, Birmingham-Southern College, April 2012, <https://www.youtube.com/watch?v=R2LkpuLZlI8> at 48:30 and 40:40.

## Yale Alumni Entrepreneurs (continued)

### Early Yale Entrepreneurs: Eli Whitney, Henry R. Luce, and Juan Trippe

Yale alumni have a long tradition of entrepreneurship and innovation. Eli Whitney (B.A. 1792, M.A. 1795) designed a cotton gin for cleaning green-seed cotton and secured a patent of his invention in 1794. He later developed the concept for mass production of interchangeable parts deployed in assembling muskets. Henry R. Luce (B.A. 1920) and Briton Hadden (B.A. 1920) founded *Time*, America's first news magazine, in 1923. Luce went on to found *Fortune*, *Life*, and *Sports Illustrated*, and to build a publishing empire that made him one of the most influential figures of the twentieth century. Juan Trippe (B.A. 1921), who enlisted in the Navy after his freshman year and later led Yale's flying club, founded Pan American World Airways, spearheading the development of the airline industry and making air travel more affordable.



Publishing magnate Henry R. Luce (B.A. 1920), front row, second from left, with the board of the *Yale News* during his undergraduate days.



Inventor Eli Whitney (B.A. 1792, M.A. 1795) in an 1822 oil portrait by Samuel F. B. Morse (B.A. 1810).



Juan Trippe (B.A. 1921), founder of Pan American World Airways, is shown with Charles A. Lindbergh in British Guiana in 1929.

# 4

The spending rule is at the heart of fiscal discipline for an endowed institution. Spending policies define an institution's compromise between the conflicting goals of providing support for current operations and preserving purchasing power of endowment assets. The spending rule must be clearly defined and consistently applied for the concept of budget balance to have meaning.

The Endowment spending policy, which allocates Endowment earnings to operations, balances the competing objectives of providing a stable flow of income to the operating budget and protecting the real value of the Endowment over time. The spending policy manages the trade-off between these two objectives by combining a long-term spending rate target with a smoothing rule, which adjusts spending in any given year gradually in response to changes in Endowment market value.

The target spending rate approved by the Yale Corporation currently stands at 5.25%. According to the smoothing rule, Endowment spending in a given year sums to 80% of the previous year's spending and 20% of the targeted long-term spending rate applied to the fiscal year-end market value two years prior. The spending amount determined by the formula is adjusted for inflation and constrained so that the calculated rate is at least 4.5%, and not more than 6.0%, of the Endowment's inflation-adjusted market value two years prior. The smoothing rule and the diversified nature of the Endowment are designed to mitigate the impact of short-term market volatility on the flow of funds to support Yale's operations.

View from Cross Campus toward the main entrance of Sterling Memorial Library. Designed by James Gamble Rogers (B.A. 1889), SML was built with funds from the bequest of John W. Sterling (B.A. 1864) and opened in 1931.

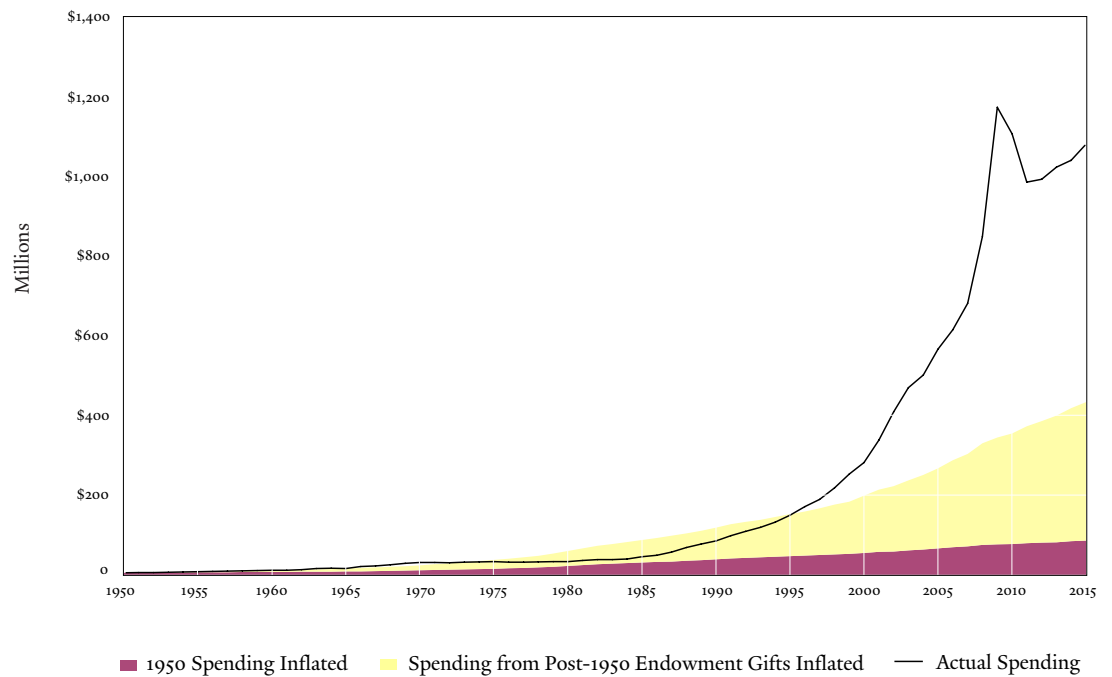




The spending rule has two implications. First, by incorporating the prior year’s spending, the rule eliminates large fluctuations, enabling the University to plan for its operating budget needs. Over the last twenty years, the standard deviation of annual changes in actual spending has been approximately 70% of the standard deviation of annual changes in Endowment value. Second, by adjusting spending toward the long-term target spending level, the rule ensures that spending will be sensitive to fluctuating Endowment market values, providing stability in long-term purchasing power.

Despite the conservative nature of Yale’s spending policy, distributions to the operating budget rose from \$567 million in fiscal 2005 to \$1.1 billion in fiscal 2015. The University projects spending of \$1.2 billion from the Endowment in fiscal 2016, representing approximately 34% of revenues.

Spending Growth Surpasses Inflation 1950–2015



# Entrepreneurial Organizations

## Yale Entrepreneurial Institute

The Yale Entrepreneurial Institute (YEI) is an organization that helps entrepreneurs and innovators at Yale start scalable new ventures. YEI is dedicated to fostering entrepreneurship across all schools at Yale and providing opportunities for students and faculty to test their ideas, develop them with expert guidance, and launch companies that can make an impact in their respective industries. YEI resources include a Mentor Network; resident entrepreneurs; in-kind services from corporate partners in legal, accounting, financial, IP, communications, and branding; connections to the angel and venture community; and connections to campus and community entrepreneurship partners.

YEI offers three dedicated programs for accelerating ventures: the Venture Creation Program, the YEI Fellowship, and the YEI Innovation Fund.

YEI's Venture Creation Program was created to catalyze and support the growth of new, early-stage ventures at Yale from students and faculty by providing resources for entrepreneurial teams to commercialize promising, unique products or services for which there is a customer or market demand. Mission-based teams with global reach



M.B.A. candidate Paul-Renaud Raymond participated in a YEI "pitch," a competition in which

student entrepreneurs make presentations about their start-ups.

are eligible for additional support.

The YEI Fellowship is a competitive ten-week program for Yale's most promising student start-ups. An intensive bootcamp, the Fellowship helps students launch and grow their new business ventures with an award of \$15,000 in grant funding, business fundamental and lean start-up skills, and connections with experienced mentors and investors in YEI's network.

The YEI Innovation Fund offers pre-seed funding to select YEI start-ups. Ten teams have received \$100,000 from the fund since it launched in 2013 and have gone on to collectively raise \$17 million in follow-on funding.

There are currently one hundred active YEI companies that have raised more than \$150 million in funding and created over four hundred jobs.



YEI Fellows 2015, during the annual ten-week summer bootcamp that provides select Yale

start-ups with \$15,000 along with mentorship, education, and pitching opportunities.

## Entrepreneurial Organizations *(continued)*

### Office of Cooperative Research

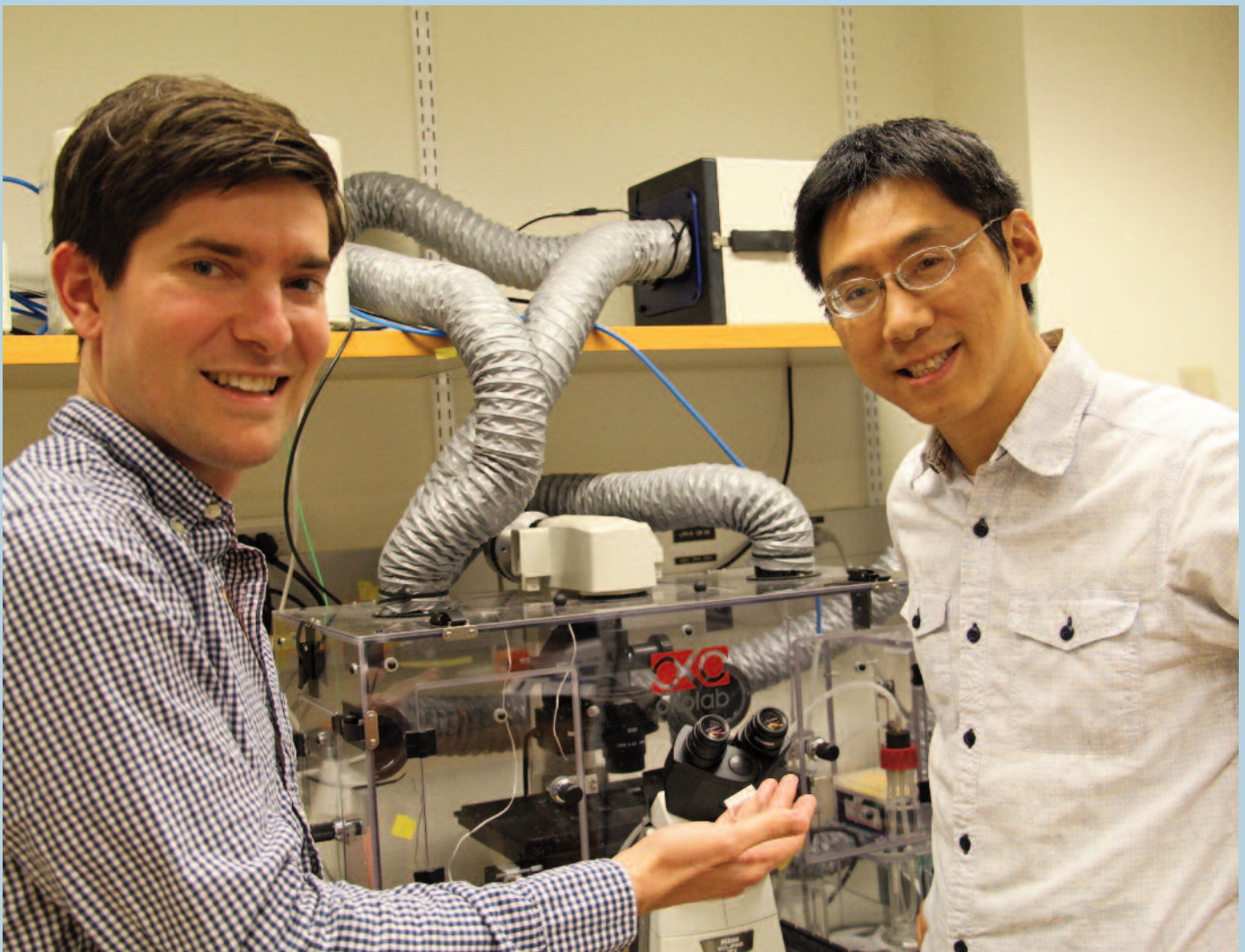
The Office of Cooperative Research (OCR) was founded in 1982 to foster commercial investment in the development of inventions and discoveries flowing from faculty research at Yale. OCR facilitates the translation of research from Yale's labs into products and services that benefit society. In its commitment to technology transfer, OCR's mission is closely aligned with Yale's mission to create, preserve, and disseminate knowledge. OCR has built a significant portfolio of inventions and patents and has grown into an engine of regional economic development by identifying, counseling, and nurturing early-stage technologies and guiding the transition into robust companies.

OCR's portfolio includes Achillion Pharmaceuticals, a small-molecule drug

developer; Axerion Therapeutics, a biotechnology company focused on developing innovative therapeutics for neurological diseases and injuries; CoolSpine, a medical device company that has developed a cerebral spinal fluid cooling platform designed to induce localized hypothermia and prevent neurological injuries; Hadapt, a start-up that has developed the industry's only big data analytic platform natively integrating SQL with Apache Hadoop; IsoPlexis, a proprietary single-cell immunoassay and software suite; Oasys Water, a provider of integrated forward osmosis systems for high-recovery desalination; and Sonic Golf, a creator of electronically enabled, intelligent golf clubs.



Achillion and Oasys Water are among companies recently created in conjunction with Yale's Office of Cooperative Research.



Sean Mackay (M.B.A. 2014) and Rong Fan, Associate Professor of Biomedical Engineering,

are shown in the lab of IsoPlexis, a company they co-founded in association with the Yale Office of

Cooperative Research to develop devices and software to study immune and cancer cell activity.

## Entrepreneurial Organizations *(continued)*

### Program in Innovative Therapeutics for Connecticut's Health

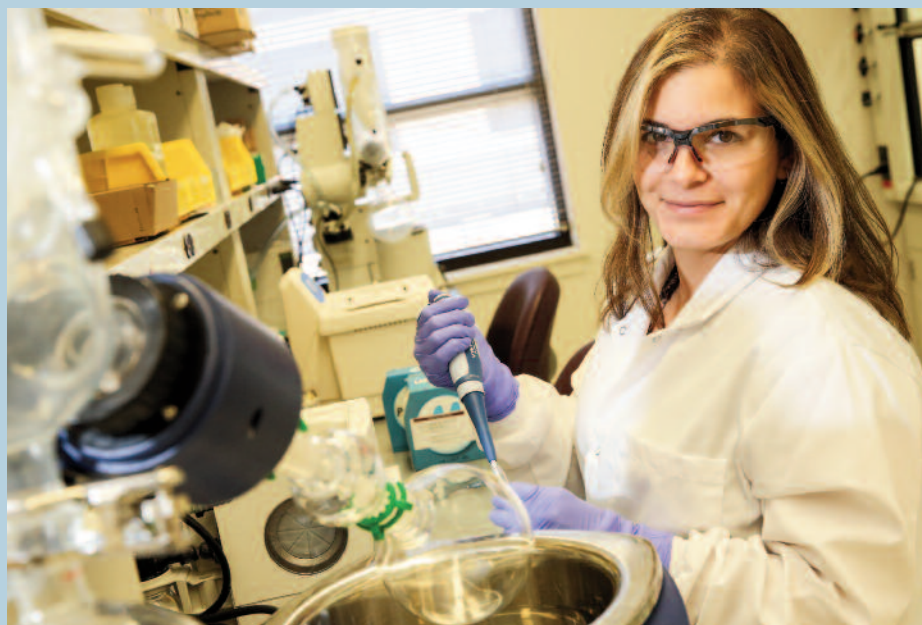
The Program in Innovative Therapeutics for Connecticut's Health (PITCH) will structure and oversee the creation of new biopharma and biotechnology ventures in Connecticut based on research from the state's higher education system. PITCH, a collaboration between Yale and the University of Connecticut, was funded by a \$10 million grant from the Connecticut Bioscience Innovation Fund, managed by Connecticut Innovations. The program, led by Craig Crews of Yale and Dennis Wright of UConn, will build on significant academic infrastructure and experienced

leadership, bridging the worlds of academia, biopharma, and venture capital. PITCH will help the state's academic researchers translate Connecticut's research into innovative therapeutic strategies, treatments, new ventures, and jobs.

The effort will engage Yale's Center for Molecular Discovery at the West Campus, UConn's School of Pharmacy, and UConn Health to create a new, multi-centered statewide academic drug discovery consortium.



Craig Crews, the Lewis B. Cullman Professor of Molecular, Cellular, and Developmental Biology and Professor of Chemistry at Yale, is co-director of PITCH, a new Connecticut joint venture.



A researcher at Arvinas, one of the start-ups founded by Professor Craig Crews, whose activity won him the title of Connecticut Entrepreneur of the Year in 2013.

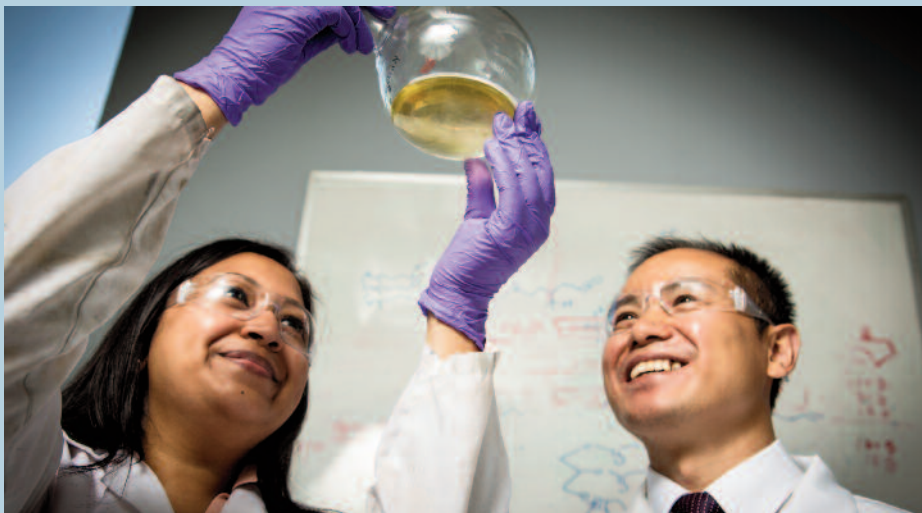
### Elm Street Ventures

Elm Street Ventures (ESV), founded in 2006 by Rob Bettigole (B.S. 1976, M.B.A. 1983), is a seed- and early-stage venture fund based in New Haven. ESV focuses on creating companies founded on intellectual property developed at Yale and other research institutions in the region. The fund emphasizes the life sciences, with approximately 70% of its investments in companies developing laboratory tools, diagnostics, medical devices, therapeutics, and other health-care-related products and services. The remaining 30% of its commitments are in green technology, information technology, and other industries.

By providing management expertise and early-stage capital, ESV catalyzes new company formation, working closely with scientists, engineers, and entrepreneurs to build significant technology companies from the seed and early stage. ESV's portfolio includes P2 Sciences, a green-chemistry bio-refinery company;

AxioMx, a custom monoclonal antibody producer; Arvinas, a novel therapeutic developer based on research from the Yale lab of Craig Crews; and Desmos,

an educational software developer founded by Yale undergraduates and incubated at YEI.



Scientists Tania Salam and Yonghua Yang, of green-chemistry firm P2 Sciences.

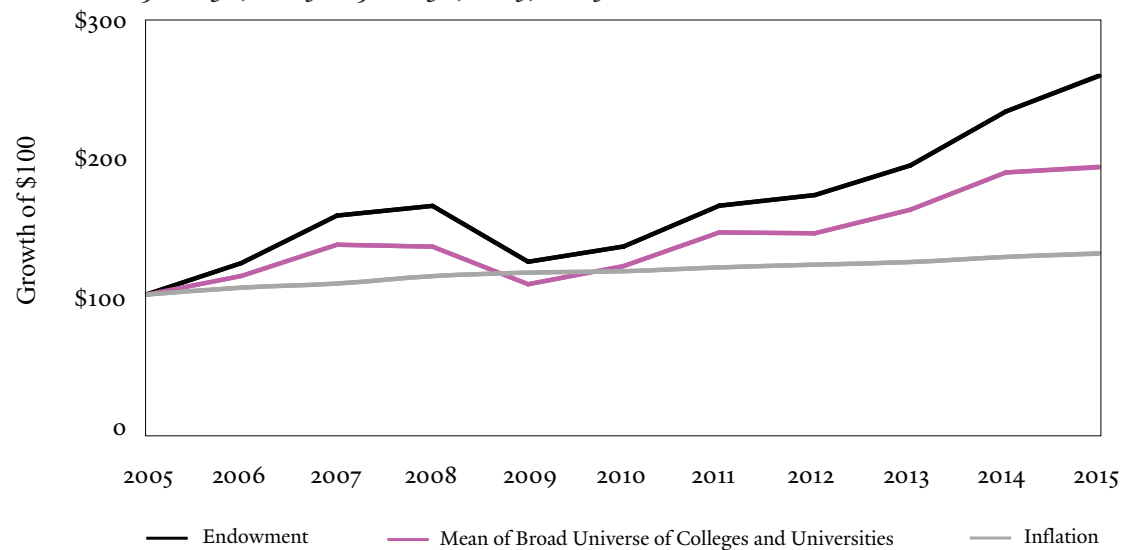
## Investment Performance

# 5

Yale has produced excellent long-term investment returns. Over the ten-year period ending June 30, 2015, the Endowment earned an annualized 10.0% return, net of fees, surpassing annual results for domestic stocks of 8.2% and domestic bonds of 4.4%, and placing Yale among the top 2% of colleges and universities. Endowment outperformance stems from sound asset allocation policy and superior active management.

Yale's long-term superior performance relative to its peers and benchmarks creates substantial wealth for the University. Over the ten years ending June 30, 2015, Yale added \$8.0 billion relative to the average return of a broad universe of college and university endowments and \$6.8 billion relative to its passive benchmark.

Yale's Performance Exceeds Peer Results  
June 30, 2005 to June 30, 2015, 2005=\$100



Since opening in 2012, the Center for Engineering Innovation and Design (CEID) has served as the hub for collaborative design and interdisciplinary activity at Yale. Students, staff, and faculty have access to CEID resources, participate in courses and events, and collaborate on a wide range of projects.

## *Performance by Asset Class*

Yale's long-term asset class performance continues to be outstanding. In the past ten years, every asset class posted superior returns, outperforming benchmark levels.

Over the past decade, the absolute return portfolio produced an annualized 7.2% return, exceeding the passive Barclays 9 to 12 Month Treasury Index by 5.3% per year and besting its active benchmark of hedge fund manager returns by 3.0% per year. For the ten-year period, absolute return results exhibited little correlation to traditional marketable securities.

The domestic equity portfolio returned an annualized 12.3% for the ten years ending June 30, 2015, outperforming the Wilshire 5000 by 4.1% per year and the Russell Median Manager return, net of estimated fees, by 4.3% per year. Yale's active managers have added value to benchmark returns primarily through stock selection.

Yale's internally managed fixed income portfolio earned an annualized 3.0% over the past decade, keeping pace with the passive index and exceeding the Russell Median Manager return, net of estimated fees, by 0.2% per year. Because the fixed income portfolio serves as the University's primary source of liquidity, the Endowment generally forgoes opportunities to generate excess returns.

The foreign equity portfolio generated an annual return of 17.4% over the ten-year period, outperforming its composite passive benchmark by 8.4% per year and the Russell Median Manager return, net of estimated fees, by 10.4% per year. The portfolio's excess return is due to astute country allocation and effective security selection by active managers.

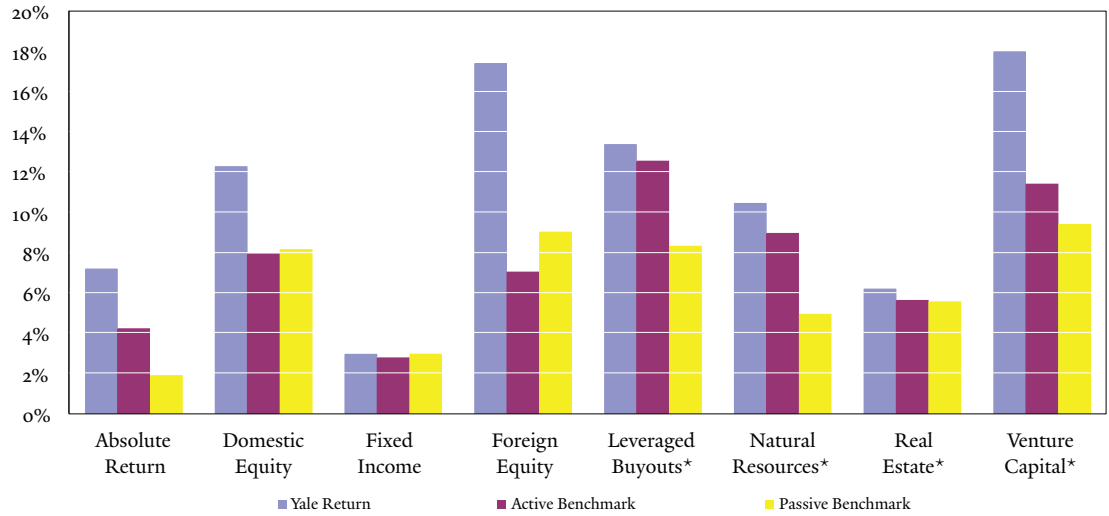
Leveraged buyouts generated an annualized 13.4% return over the decade, outperforming the composite passive benchmark by 5.0% per year and outperforming the pool of buyout and growth equity managers compiled by Cambridge Associates by 0.8% per year. Leveraged buyout performance demonstrates the value of superior active management.

Yale's natural resources portfolio produced an annualized return of 10.5% over the past decade, surpassing its composite passive benchmark by 5.5% per year and the Cambridge Associates natural resources manager pool by 1.5% per year. Yale's strong performance results from partnership with superior operators.

Real estate generated a 6.2% annualized return over the ten-year period, outperforming the MSCI U.S. REIT Index by 0.6% per year and a pool of Cambridge Associates real estate managers by 0.6% per year. Yale's outperformance is due to successful exploitation of market inefficiencies and timely pursuit of contrarian investment strategies.

The venture capital portfolio earned an annualized return of 18.0% for the ten years ending June 30, 2015, exceeding its composite passive benchmark by 8.6% per year and the Cambridge Associates venture capital manager pool by 6.5% per year. Yale's venture capital program focuses on premier firms that are likely to generate superior returns by emphasizing a value-added approach.

## Yale Asset Class Results Beat Most Benchmarks June 30, 2005 to June 30, 2015



\* Yale Returns and Active Benchmarks are dollar-weighted.

### Active Benchmarks

*Absolute Return:* Credit Suisse Composite  
*Domestic Equity:* Frank Russell Median Manager, U.S. Equity, with fee adjustment of 78 basis points per annum  
*Fixed Income:* Frank Russell Median Manager, Fixed Income, with fee adjustment of 34 basis points per annum  
*Foreign Equity:* Frank Russell Median Manager Composite, Foreign Equity, with fee adjustment of 79 basis points per annum for developed equity and 98 basis points per annum for emerging equity  
*Leveraged Buyouts:* Cambridge Associates Leveraged Buyouts Composite  
*Natural Resources:* Cambridge Associates Natural Resources Composite  
*Real Estate:* Cambridge Associates Real Estate  
*Venture Capital:* Cambridge Associates Global Venture Capital

### Passive Benchmarks

*Absolute Return:* Barclays 9-12 Month Treasury  
*Domestic Equity:* Wilshire 5000  
*Fixed Income:* Barclays 1-3 Year Treasury (Barclays 1-5 Year Treasury from July 2008 to September 2013, LB Treasury Index from July 2005 to June 2008)  
*Foreign Equity:* Blend of MSCI EAFE Investable Market Index, MSCI Emerging Markets Investable Market Index, MSCI China A-Share Investable Market Index  
*Leveraged Buyouts:* Blend of Russell 2000, MSCI ACWI ex-U.S. Small-Cap Index  
*Natural Resources:* Blend of Custom Timber REIT Basket, S&P O&G Exploration & Production Index, Euromoney Global Mining Index  
*Real Estate:* MSCI U.S. REIT Index  
*Venture Capital:* Blend of Russell 2000 Technology, MSCI China Small-Cap Index, MSCI India Small-Cap Index



Aerial view of the Smilow Cancer Hospital, the large building in the left half of the photograph. Founded in 2009 as part of Yale-New Haven Hospital, the state-of-the-art cancer treatment center, named for philanthropist Joel R. Smilow (B.A. 1954), typifies the expansion and modernization of Yale's medical campus and of its research and clinical capabilities.

## Yale Programs

### Department of Computer Science and the School of Engineering & Applied Sciences

In March 2015, Yale announced an expansion of the Department of Computer Science, with enhancements in both faculty and classroom resources. The announcement affirmed Yale's commitment to the study of computer science and its desire to claim a leadership position in exploring the frontiers of technical knowledge. It reflected the growing and pervasive role of computer science in higher education and interdisciplinary research, and acknowledged that by enabling a wide range of activities – from creating new smartphone apps to participating in campus hackathons – computer programming skills are an essential part of the college experience.

The expansion of the Computer Science faculty was enabled by gifts from two anonymous donors, totaling \$20 million. The department is slated to grow from twenty to twenty-six ladder faculty. The first new hires are Mariana Raykova, a specialist in computer security and cryptography, and Mahesh Balakrishnan, an expert in cloud computing and distributed systems.

“The growth to twenty-six faculty members that was announced last spring

is an excellent first step in building the big and great computer science department that a pre-eminent twenty-first-century university needs, but it cannot be the last step,” said Joan Feigenbaum, Department Chair and Grace Murray Hopper Professor of Computer Science. “I'm excited to continue advancing this important mission.”

A key element in the expansion is the close connection between computer science and engineering. Acknowledging that high level of collaboration, Yale's Department of Computer Science has joined the University's four other engineering departments as part of the Yale School of Engineering & Applied Science (SEAS), a “school within a school” of the Faculty of Arts and Sciences.

SEAS itself has expanded in recent years, with nine new junior faculty hires. The nearly 20% increase in faculty was made possible by a \$50 million donation from John C. Malone (B.E. 1963) to endow ten professorships across SEAS.

By becoming part of SEAS, the Department of Computer Science is positioned at the heart of Yale's efforts to spur innovation and strengthen a culture of interdisciplinary learning. That approach is exemplified at Yale by such facilities and programs as the Center for Engineering Innovation and Design, the Yale Entrepreneurial Institute, Yale's

Institute for Network Science, and the Computing and the Arts program.

Yale will invest in a host of new teaching initiatives relating to computer science, many geared to undergraduates. For example, Yale joined forces with Harvard on CS50, an introductory survey course that focuses on basic programming. Both campuses held intensive classroom sessions, with undergraduate learning assistants leading sections, grading problem sets, and fielding student questions. This novel pedagogical experiment marked both the first extensive use of undergraduates in course staffing at Yale and the first large-scale application of a flipped-classroom model across university campuses.

Yale will soon begin work on an underground teaching concourse that physically links Arthur K. Watson Hall, home of the Department of Computer Science, with the other main engineering buildings. The 10,000-square-foot space will be designed specifically for undergraduate engineering laboratories and hands-on learning experiences that bolster degree programs offered by the departments of Electrical Engineering, Mechanical Engineering and Materials Science, Biomedical Engineering, and Chemical and Environmental Engineering.



A fair hosted in 2015 in conjunction with the Yale College “Introduction to Computing and Programming” course (CS50) featured displays of Web apps, mobile apps, and innovations made by

students as their final project in the course. On hand were alumni, engineers, and recruiters from eBay, ESPN, Facebook, Google, and Palantir Technologies.



Assistant Professor Mariana Raykova, an expert in computer security and cryptography, is one of the first new faculty brought to Yale as part of the newly funded expansion of the Computer Science department.



## Yale Programs *(continued)*

### Entrepreneurship at the Yale School of Management

In April 2014 the Yale School of Management (SOM) signaled its renewed commitment to entrepreneurship by launching the Entrepreneurship Program. The program expands entrepreneurship initiatives through new curriculum development and strengthening connections across Yale's entrepreneurship community, while adding an important global dimension through connections with faculty and students in the Global Network for Advanced Management. The program is led by Kyle Jensen, a serial entrepreneur, associate dean, and the inaugural Shanna and Eric Bass '05 Director of Entrepreneurial Programs.

Student founders meeting in the entrepreneurship suite with SOM Associate Dean/Director of Entrepreneurship Kyle Jensen. Before joining the Yale SOM faculty, Jensen co-founded Agrivida, a venture-backed biotechnology company; PriorSmart, a patent analytics provider; and Pit Rho, a leader in motorsport analytics.

In addition, SOM created two new scholarships for students in each entering M.B.A. class. The merit-based awards will be granted on the basis of demonstrated interest in entrepreneurship and future potential as an entrepreneur. Furthermore, each year SOM will name up to five Entrepreneurial Fellows who, after graduation, will receive two years of loan deferral to enable them to work full time on a start-up.

During the last academic year, the Entrepreneurship Program created eight new classes and a variety of extracurricular programs to support Yale students

interested in entrepreneurship. These range from survey courses like "Entrepreneurship and New Ventures" to "Start-up Founder Practicum," a course in which students work on their own ventures. SOM's growing entrepreneurship curriculum leverages the school's core curriculum, which emphasizes a team-taught, integrated approach to problem solving to facilitate an understanding of the whole of the enterprise rather than individual functions. This model provides potential entrepreneurs with a deep understanding of how to develop and sustain a venture.



An SOM Entrepreneurship Program study group at work.

## Yale Programs *(continued)*

### Center for Engineering Innovation and Design



Undergraduates in the new Center for Engineering Innovation and Design (CEID) at Becton Center working with Professor Aaron Dollar on a robotics project.

The Center for Engineering Innovation and Design (CEID), located on the first floor of the Becton Engineering Center, gives students and faculty tools and resources for design projects in an environment that encourages collaboration. It features a lecture area and meeting rooms for the exploration of new ideas, machine shops, a wet lab, and a studio for the creation of physical prototypes. CEID seeks to infuse design experiences into student learning through an array of classes and activities. In addition to hosting engineering design courses, CEID holds workshops, lectures, networking events, and exhibitions. Student teams and clubs can use CEID for meetings and project work.

CEID's greatest resources are the people who participate in its activities. Students, both undergraduate and graduate, make up the majority of CEID's community. They are supported by a network of staff, faculty, and external members who serve as mentors, lecturers, speakers, and specialists. While CEID stems from the School of Engineering & Applied Science, scholars from all disciplines are encouraged to use CEID's resources.

CEID empowers students to improve human lives through the advancement of technology. Its approach integrates engineering, innovation, and design while embracing the core values of purpose, diversity, creativity, and integrity.

### Yale Institute for Network Science

The Yale Institute for Network Science (YINS) produces and disseminates knowledge related to network science, in all its forms and applications, and seeks to make Yale a leader in the area. Network phenomena are now studied in many disciplines, including engineering, computer science, sociology, economics, political science, biology, physics, medicine, public health, and management. YINS is home to researchers hailing from different disciplines and schools across Yale University.

Affiliated faculty and other researchers share many common technical and scientific challenges, including developing statistical and computational tools for processing big data; creating new models for complex networks; understanding how networks dynamically change in time; investigating techniques for learning and inference in networks; developing methodologies for the design of networks; understanding diffusion processes in networks; and evaluating emergent behavior, such as how local interactions can lead to global phenomena. YINS seeks to expose researchers from across the University to the measurements,

methodologies, and challenges of diverse disciplines.

YINS facilitates interdisciplinary research and the development of interdisciplinary courses at both the undergraduate and graduate levels. YINS promotes the development and application of network science by organizing seminars, workshops, and conferences, and maintaining a working paper series. Its members advise others in the Yale community who seek to understand networks and network effects.



Organizing and making sense of big data (illustrated in the graphic above) has become one of today's major challenges in machine learning and data mining, and is one of many topics being

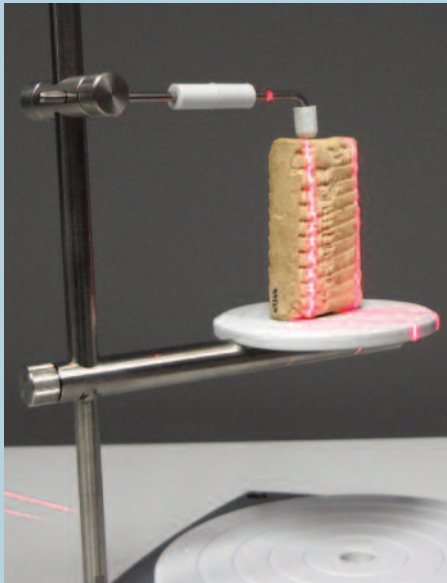
studied by researchers at the Yale Institute for Network Science. YINS Assistant Professor Amin Karbasi won a Google Research Award for his research in mathematically extracting a small

subset of representative elements to obtain a faithful description of the massive data.

## Yale Programs *(continued)*

### Computing and the Arts

Computing and the Arts is an interdepartmental major designed for students who wish to integrate work in computing with work in one of the arts disciplines: art, history of art, music, or theater.



This tablet is a student's rendering of the multiplication table by 5's. Here it is going for a 360 degree spin to get scanned for its 3D model with a NextEngine scanner.

For students with a computing perspective, issues in these disciplines present interesting and substantive problems: the use of computers by musicians to compose; the limitations of current software tools used by artists; the types of analyses done by art historians; the challenges in designing and using virtual

sets in the theater; the ways that virtual worlds might help to envision new forms of artistic expression; and the lessons that can be learned from trying to create a robotic conductor or performer.

For students with an artistic perspective, computing methods offer a systematic approach to achieving their vision. A foundation in computer science allows artists to understand existing computing tools more comprehensively and to use them more effectively. Furthermore, it gives artists insight into what currently can and cannot be done with computers, so they can anticipate the future development of new tools for computing in their field.



Yale's Babylonian clay tablet of a portion of the epic of *Gilgamesh*, scanned as part of a program in Computing and the Arts at Yale. Because the tablets contain writing on all sides, they needed to be propped up by cushions so that the full text could be recorded.

### Center for Biomedical and Interventional Technology

The Yale University Center for Biomedical and Interventional Technology (CBIT) is an interdisciplinary initiative with the mission of catalyzing biomedical technology development and commercialization at Yale. Formally established in 2014, CBIT leverages Yale's students, faculty, and staff, Yale's resources across campus, the Yale-New Haven Health System, peer institutions,

and industry partners to identify, support, and fund transformative biomedical technologies that drive better patient care.

Additionally, CBIT inspires a culture of biomedical innovation in the broader community through events and activities such as Healthcare Hackathons,

Clinician Pitch Nights, medical device entrepreneurship workshops and lectures, biomedical innovation course work, direct project mentorship, and a Clinical Immersion Program for industry.



During a CBIT presentation to science, engineering, art, business, and medical students, Dr. Andrey Zinchuk pitched recruits for his project to develop a device for sleep apnea patients.



Senior-level engineers and managers gowned up for a CBIT Clinical Immersion Program for industry,

which included a tour of the Yale-New Haven Hospital surgical and central sterilization units.

## Management and Oversight

# 6

### *Investment Committee Members*

Since 1975, the Yale Corporation Investment Committee has been responsible for oversight of the Endowment, incorporating senior-level investment experience into portfolio policy formulation. The Investment Committee consists of at least three Fellows of the Corporation and other persons who have particular investment expertise. The Committee meets quarterly, at which time members review asset allocation policies, Endowment performance, and strategies proposed by Investments Office staff. The Committee approves guidelines for investment of the Endowment portfolio, specifying investment objectives, spending policy, and approaches for the investment of each asset category.

Douglas A. Warner, III '68  
Chairman  
*Former Chairman  
J.P. Morgan Chase & Co.*

Francis Biondi '87  
Managing Member  
*King Street Capital Management*

Ben Inker '92  
Partner  
*GMO*

Paul L. Joskow '72 PH.D.  
President  
*Alfred P. Sloan Foundation*

Ann Miura-Ko '98  
Partner  
*Floodgate*

Kevin P. Ryan '85  
Chairman and Founder  
*Gilt, MongoDB, Business Insider, Zola*

Peter Salovey '86 PH.D.  
President  
*Yale University*

John R. Shrewsberry '92 MPPM  
Chief Financial Officer  
*Wells Fargo & Company*

Carter Simonds '99  
Managing Director  
*Blue Ridge Capital*

Dinakar Singh '90  
CEO and Founding Partner  
*TPG-Axon Capital*



Aerial view of the central Yale campus, with Harkness Tower at center right.

The Investments Office manages the Endowment and other University financial assets, and defines and implements the University's borrowing strategies. Headed by the Chief Investment Officer, the Office currently consists of thirty-one professionals.

## *Investments Office*

David F. Swensen '80 PH.D., '14 L.H.D. <i>Chief Investment Officer</i>	Patrick K. Sherwood '13 M.B.A. <i>Associate Director</i>
Dean J. Takahashi '80, '83 MPPM <i>Senior Director</i>	Cain P. Soltoff '08 <i>Associate Director</i>
Carrie A. Abildgaard <i>Director</i>	Xinchen Wang '09 <i>Associate Director</i>
Alexander C. Banker <i>Director</i>	Celeste P. Benson <i>Senior Portfolio Manager</i>
Alan S. Forman <i>Director</i>	Michael Knight <i>Senior Business Analyst</i>
R. Alexander Hetherington '06 <i>Director</i>	David S. Katzman '10 <i>Senior Associate</i>
Lisa M. Howie '00, '08 M.B.A. <i>Director</i>	Philip J. Bronstein '12 <i>Senior Investment Analyst</i>
Matthew S. T. Mendelsohn '07 <i>Director</i>	Amy M. Chivetta <i>Senior Investment Analyst</i>
Timothy R. Sullivan '86 <i>Director</i>	Timothy H. Hillas '13 <i>Senior Investment Analyst</i>
Kenneth R. Miller '71 <i>Senior Associate General Counsel</i>	Daniel J. Otto '12 <i>Senior Investment Analyst</i>
Stephanie S. Chan '97 <i>Associate General Counsel</i>	E. Benjamin VanGelder '13 <i>Senior Investment Analyst</i>
Deborah S. Chung <i>Associate General Counsel</i>	Laura W. Bass '15 <i>Investment Analyst</i>
Sohail S. Ramirez '10 J.D. <i>Associate General Counsel</i>	Sophia B. Jia '14 <i>Investment Analyst</i>
J. Colin Sullivan <i>Associate General Counsel</i>	Robert J. Pecoraro '15 <i>Investment Analyst</i>
Michael E. Finnerty <i>Associate Director</i>	John T. Ryan '14 <i>Investment Analyst</i>
John V. Ricotta '08 <i>Associate Director</i>	



Aerial view of the Schwarzman Center Rotunda, part of the Yale Bicentennial Buildings of 1901.



The Daniel L. Malone Engineering Center, opened in 2005 to house the newly formed Department of Bio-

medical Engineering, which partners faculty from Yale Engineering and the School of Medicine. Designed by

architect Cesar Pelli, the building is a gift from John C. Malone (B.E. 1963) in memory of his father.

## Sources

### Financial and Investment Information

Educational institution asset allocations and returns from Cambridge Associates.

Much of the material in this publication is drawn from memoranda produced by the Investments Office for the Yale Corporation Investment Committee. Other material comes from Yale's financial records, Reports of the Treasurer, and Reports of the President.

### Texts on Yale Alumni Venture Capitalists, Entrepreneurs, Entrepreneurial Organizations, and Yale Programs

Much of the material in this publication is drawn from interviews with Yale alumni venture capitalists and entrepreneurs and from biographical information provided by the subjects.

Connecticut Innovations

Elm Street Ventures

Platoff, Emma and Stephanie Rogers, "SEAS Receives \$20 Million Donation," *Yale Daily News* 26 March 2015

Program in Innovative Therapeutics for Connecticut's Health

Whitney and Betty MacMillan Center for International and Area Studies at Yale

Yale College Programs of Study

Yale Entrepreneurial Institute

Yale University Center for Biomedical and Interventional Technology

Yale University Center for Engineering Innovation and Design

Yale University Department of Computer Science

Yale University Institute for Network Science

Yale University Office of Cooperative Research

Yale University Office of Public Affairs and Communications

Yale University School of Engineering & Applied Science

Yale University School of Management

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Corporate logos courtesy of the companies: Achillion and Oasys Water, p. 25; LinkedIn, p. 5.

Yale professional schools, departments, and organizations (as listed under "Sources") graciously provided the photographs of their activities shown throughout.

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### Design

Strong Cohen LLC/L. Feher

*Back cover photo:* View of Science Hill, with Kroon Hall and Kline Biology Tower.

