

Icahn School of Medicine at Mount Sinai

DENNIS S. CHARNEY, M.D.
Dean

September 30, 2013



Rebranding

A New Brand, A New Chapter



Mount Sinai's mission is to advance medicine through unrivaled education, research, and clinical care to provide exceptional experiences and outcomes to patients locally and globally.

New Logo for the Institution

- The new logo is iconic, sophisticated, contemporary and meaningful
- The symbol forms an “M” inspired by the historic Mount Sinai mountain range on the Sinai Peninsula in Egypt
- The dynamic interconnected lines communicate our forward momentum, commitment to integration, and stature in academic medicine

2013 SINAIInnovations theme: Team Science



SINAIInnovations
Leading a New Era of Discovery
New York, November 18–19, 2013
Stern Auditorium, 1468 Madison Avenue

Register now! Program Sponsors

Videos Speaker Bios Sinai Discoveries

About SINAIInnovations

This year's program, to be held November 18–19, 2013, will highlight the power of **Team Science**, which is a key ingredient to accelerating progress and spurring creativity as we advance our culture of innovation and discovery.

The Icahn School of Medicine at Mount Sinai has embarked upon an ambitious and unprecedented effort to redefine how innovation is taught, incentivized and facilitated within an Academic Medical Center.

The SINAIInnovations event is free and open all Mount Sinai trainees, faculty and staff, as well as faculty and trainees from other academic medical centers, and biomedical industry professionals.

Featured Speakers

Joseph Torre
Former manager of the New York Yankees

General Stanley McChrystal
Former U.S. Commander in Afghanistan

Michael Crow
President, Arizona State University

Shirley Jackson, PhD
President, Rensselaer Polytechnic Institute

Susan Desmond-Hellman
Chancellor, University of California, San Francisco

Nirav Shah, MD
NYS Health Commissioner

Twitter

#SINAIInnovations

Tweet #SINAIInnovations

Register to attend in person

Register to watch the live webcast

Featured Speakers:

Nirav R. Shah MD
Commissioner of Health
New York State

Joseph Torre
Executive Vice President
Baseball Operations, Major League Baseball

Michael M. Crow
President
Arizona State University

Rear Admiral Scott P. Moore
Deputy Commander
Naval Special Warfare Command
United States Navy

Sara Diamond
President,
Ontario College of Art and Design

<http://www.mssm.edu/sinainnovations>

Creating A Culture of Innovation : Team Science



- **Increased specialization defines knowledge boundaries in an area¹**
 - Sciences are separated from each other by overly specialized education
 - Technology is separated from science
 - Business is separated from technology research
 - Government is separated from both business and academia
- **Boundaries act as barriers and constrain exploration**
- **Innovation occurs at the boundaries of disciplines**
 - Teams from different disciplines working together with a shared goal
- **Leadership is critical to breaking down barriers**

¹-Alan F. Blackwell, Lee Wilson, Alice Street, Charles Boulton, John Knell : Radical innovation: crossing knowledge boundaries with interdisciplinary teams
University of Cambridge, Technical Report Number 760

Innovation Is Now a Need, Not a Want¹

“The primary aim of academic medicine is to innovate across its different missions”

8 of the past 10 Nobel Prizes in Medicine and Physiology were awarded for research conducted in AHC’s.

AHC’s should transform themselves to “rapid learning healthcare organizations”

AHC’s must commit to cultivating innovation by:

- Teaching it
- Creating space for it
- Supporting it
- Providing opportunities for implementing it

Sinai will have world-class clinical programs that are integrated with cutting edge translational research and training

1. Victor J. Dzau, MD, Ziggy Yoediono, MD, MBA, William F. Eilaissi, MBA, MHA. “Fostering Innovation in Medicine and Healthcare: What Must Academic Health Centers Do?”, *Academic Medicine*, Vol. 88, No. 10, October 2013

2013 Accomplishments



- **Icahn School of Medicine at Mount Sinai**
 - \$200 million lifetime giving by Trustee Carl C. Icahn
- **Leon and Norma Hess Center for Science and Medicine (Hess CSM)**
 - Formal opening December 2012
 - Gift from the Hess family
- **Medical School**
 - Reaccreditation by the Liaison Committee for Medical Education (LCME)
 - SciMed program geared to engineering, mathematics, computer science, and physics majors
- **Graduate School**
 - Supercomputer Minerva
 - Launch of Center for Technology, Innovation, and Entrepreneurship (CTIE) by Geoff Smith
- **Mount Sinai Doctors Faculty Practice**
 - Mount Sinai Care, LLC, an Accountable Care Organization (ACO)
 - Patient satisfaction rates were above 80 percent
 - Centrally managed off-site multispecialty practices
 - E-scheduling and My Chart

Best Doctors in NY

- 145 Doctors in New York's Magazine's list (up from 129 last year)
Mount Sinai physicians featured in 50 of 64 specialties reviewed

US News & World Report Rankings

- Medical School 2012 #18

NIH Funding Rank

- Within Top 20 in Total NIH funding
- Funding increased from 2012 by >10% from \$191M to \$215M (despite sequester and NIH cuts)

AAMC Rank

- U.S. Medical Schools (AAMC) 2012 #5 Research Dollars/Principal Investigator
#2 NIH funding/Principal Investigator

Major Recruitments/Appointments

Strategic recruitments in targeted areas to facilitate innovation
(Jul 2012-Jun 2013):

	no track	IN	R	CE	P	TOTAL
Instructor	31					31
Assistant Professor		20	19	41	4	84
Associate Professor		4	1	7		12
Professor		16		4	1	21
TOTAL	31	40	20	52	5	148

Tracks:

IN=Investigator

R=Research

CE=Clinical Educator

P=Practice

Additionally, we have recruited staff at all levels to add resources in critical areas.

Mount Sinai is attracting the best talent from top US and European institutions :

Andrew Stewart	Director	Metabolic Institute	University of Pittsburgh
Ramon Parsons	Chair	Oncological Sciences	Columbia University
Paul Kenny	Chair	Pharmacology & Systems Therapeutics	Scripps Research Instt
Ash Tewari	Chair	Department of Urology	Weill Cornell



Medical Education Notable Accomplishments

- Launched FlexMed: a revolutionary early assurance program
- New medical school curriculum is implemented for the 2013 incoming class
- Accreditation Council for CME Re-accreditation
- Increased scholarships for Medical Students
- Named Reena Karani, MD, MHPE Director of the Institute for Medical Education
- Under the leadership of Dr. Karani, Drs Kase and Aufses are honored with the naming of two Excellence in Teaching Awards
 - Nathan G. Kase Innovations in Medical Education Award
 - Arthur H. Aufses Career Achievement Award in Medical Education
- Students display excellence in service by responding to Hurricane Sandy; both on campus and as leaders in efforts around the city to provide medical assistance to those impacted by the storm

Education: Quality – Matriculating Class of 2013



MD Students

Number of Complete Applications:	5468
Number of Interviews (excl EA/MSTP)	752
Size of Class	140
MSTP	12
Humanities and Medicine	30
Women	49%
URM	19%
Average MCAT	35.7
Average GPA	3.75
Number of Undergraduate Schools	69
(Penn=9, Yale=8, Brown= 7, Columbia=7, Harvard=6, Princeton=6)	

Education: Quality – Matriculating Class of 2013



MD/PhD Students

- Number of Complete Applications: 297
- Size of Class 12
- NY State Residents 8%
- Women 42%
- URM 17%
- Median MCAT 37
- Median GPA 3.89
- Number of Undergraduate Schools 12

(Representative schools: Caltech, UC Berkeley, Yale, Howard, Northwestern, Brown)

of MD/PhD applicants increased by 4% from 2012

Graduate School Notable Accomplishments



Launched several new courses:

- PhD track in Design, Technology, and Entrepreneurship (DTE).
- “QED and Translating Science” for PhD students to emphasize practical learning by having students start virtual companies with the results judged by Foundation and Venture Capital experts.
- “Becoming a Professional Scientist” emphasized core proficiencies in leadership, organizational, and bench skills, career planning, and an embedded workshop on communicating with non-scientists
- **First-Ever** course on Whole Genome Sequencing
 - Students have the option to sequence, analyze and interpret their own complete genome

Established an academic affiliation with RPI that will include new MD/PhD and PhD programs involving both campuses and faculty co-mentors.

Education: Quality – Matriculating Class of 2013



PhD Students

- Number of Complete Applications: 441
- Size of Class 32
(excl 2 deferments)
- NY State Residents 44%
- Women 55%
- URM 6%
- Median GRE 321
(1380 in old system; 76% of class >159 in Quantitative Reasoning)
- Median GPA 3.64
- Number of Undergraduate Schools 27

(Representative schools: UC Berkeley, Johns Hopkins, Columbia, UC Irvine, NYU, Yeshiva, Boston College, Boston U. Pomona, U.MI-Ann Arbor, Sarah Lawrence, Skidmore)

Icahn School of Medicine at Mount Sinai and Rensselaer Polytechnic Institute (RPI) Academic Affiliation



- Shirley Ann Jackson, PhD,
President
Rensselaer Polytechnic Institute
- Dennis Charney, MD,
Dean
Icahn School of Medicine

- Affiliation agreement signed May 22, 2013
- Mount Sinai's leadership in biomedical research and patient care
- Rensselaer Polytechnic Institute expertise in engineering and invention prototyping
- Promotes collaboration in educational programs and research
- Promotes joint funding in research programs
- MS & RPI to develop complementary research programs
- MS & RPI are committed to a culture of innovation in research and education

Global Health – Notable Accomplishments

- Enrolled largest class in history - 75 students in AY 12/13 (total in program = 156)
- Established specialty tracks in Biostatistics, Epidemiology, and Health Care Management.
- Launched a new Human Rights Program, which will include a Clinical Center of Excellence for victims of torture
- Launched a new post-residency Global Health Teaching Fellowship
- Created a new **Institute for Global Health**
- Finalized a partnership with Fordham's School of Social work to offer a dually registered joint MPH-MSW degree program.
- Expanded Global Mental Health program and provided psychiatric/psychological assistance in Japan in response to the earthquake/tsunami disaster
- Sent more than 75 Students and 60 Residents on medical missions to over 25 countries.
- Hosted a high-profile international conference at Mount Sinai in partnership with Doctors Without Borders in December 2012

Research - Highlights



- NIH Funding at an all-time high with 2013 awards expected to exceed \$215M
- The efficiency of space utilization has remained high:
 - AAMC Rank – #2 even with the opening of Hess
- Infrastructure to support “Culture of Innovation”
 - e.g. High Performance Computing, Cores for: Human Immuno-monitoring, Vaccine Development, Monoclonal Antibodies, Medicinal Chemistry etc.
- \$10 million investment in promising research and clinical ventures that provide near term revenue opportunities.
 - The venture capital commercialization team evaluates and prioritizes opportunities with the following characteristics:
 - Investment of no more than \$2 to \$4 million to get initial product/service to market,
 - No more than 3 years to cash flow positive,
 - A market within Mount Sinai.
 - Projects approved to date:
 - Next Gen – Diagnostic Testing
 - Precise Pathology – Diagnostic Testing
 - Center for Patient Therapeutics-Personalized Cancer Therapies

Leon and Norma Hess Center for Science and Medicine



A building designed to encourage collaborations and team-work



New faculty recruits in CSM:

- | | |
|----------------------|---------------------|
| Schahram Akbarian | Jeremiah Faith |
| Preeti Balchandani | Sacha Gnjatic |
| Nina Bhardwaj | Ching He |
| Julide Celebi | Yujin Hoshida |
| Judy Cho | David Mulholland |
| Jose Carlos Clemente | Samir Parekh |
| Paula Croxson | Ramon Parsons |
| Arvin Dar | Poulikos Poulikakos |
| David Domingues-Sola | Peter Rudebeck |
| Nicole Dubois | Junqian Xu |

Scientific Computing Resources



Accelerating scientific research with state-of-the-art technology and
Advancing scientific inquiry through expanded capabilities

- The Minerva supercomputer has:
 - Over 339 users and 161 projects
 - Distributed over 11 departments
 - Delivered over 51M compute hours to researchers in the past year
 - Scientists using over 2 petabytes of storage!
 - Enabled over 50 peer-reviewed publications
- Mount Sinai Data Warehouse has:
 - Contains over 2 billion facts
 - Assisted over 700 researchers through the self-service Cohort Query Tool supplying data to over 9,000 cohort searches
 - Supported over 70 approved research studies were supported
 - Helped over 100 clinical quality initiatives
 - Delivered over 2,500 custom reports and datamarts

Research Re-engineering



Midway through an extensive effort to simplify and increase the efficiency of research protocol submissions & reviews:

- Rollout of new research management software “Ideate” in progress (replacing InfoEd). IACUC module already live.
- 22 different optimization opportunities implemented across various research administration offices.
- Established Office for Research Services (ORS) and Financial Administration of Clinical Trials Services (FACTS) Office.
- Policy Review Board continuously reassessing internal regulatory processes.
- Performance metrics show improvement in turnaround time for IACUC and IRB approvals.

Innovation Continuum at Mount Sinai

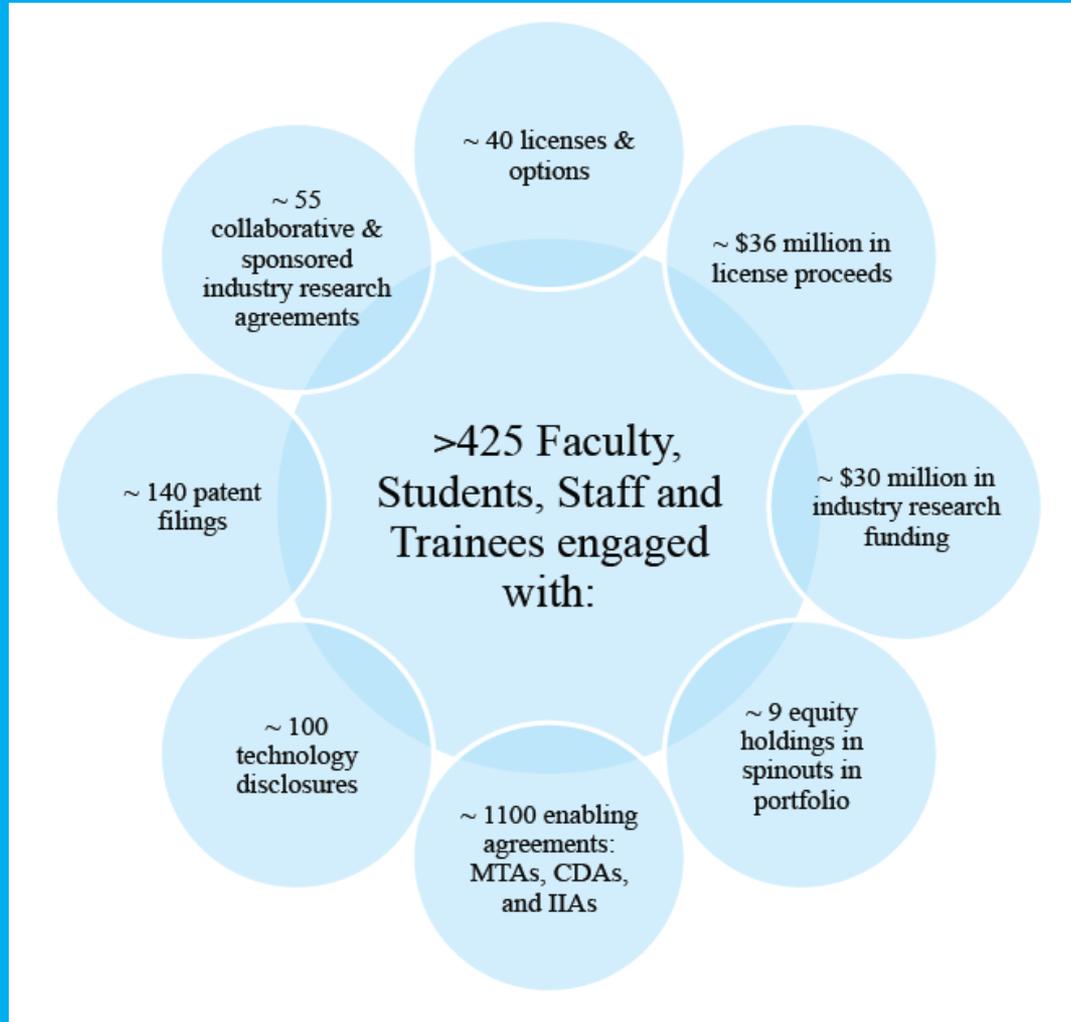


- Entrepreneurship programs: C-TIE / QED / TechDev
- Seminars & Dept meetings
- 1:1 meetings with faculty
- Web resources: guides for inventors and consulting
- **SINA***nnovations* and events
- Experimental Therapeutics Institute
 - *Center for Therapeutic Abs*
 - *Sm. molecule screening*
 - *Structure-based drug discovery*
 - *Medicinal Chemistry*
- Industry Partnership opportunities
- 1:1 meetings with faculty
- Early invention discussion
- Funder compliance
- Enabling agreements
- IP management
- Industry research agreements
- IP licensing to commercialize
- Equity deals/spinouts
- Revenue distribution
- 1:1 meetings with faculty
- Industry Partnership opportunities

Mount Sinai Innovation Partner (MSIP)

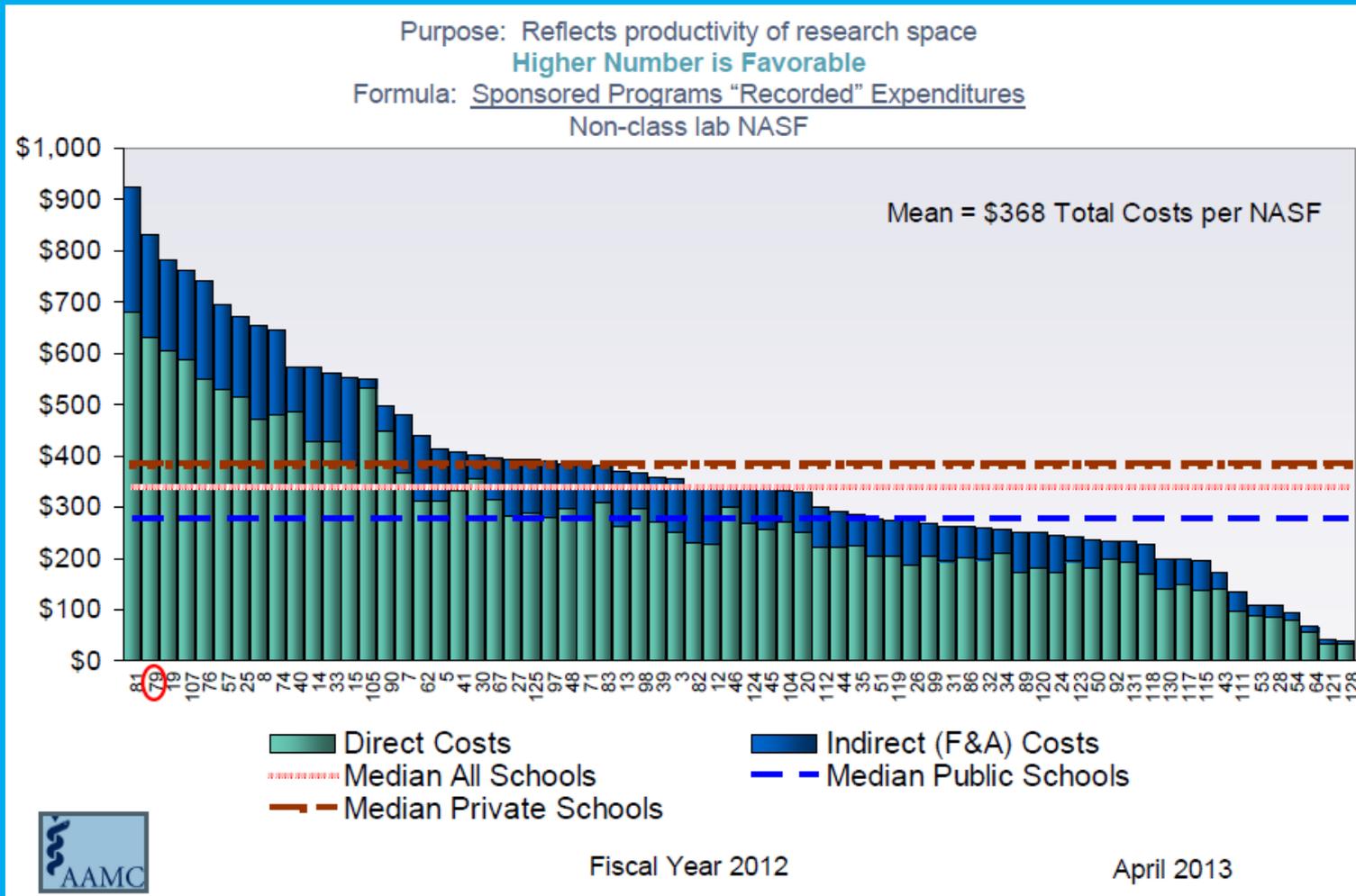


MSIP: 2012 Metrics



2012 Research Funding

2: Sponsored Programs Expenditures/Net Assignable Square Feet



2012 Research Funding



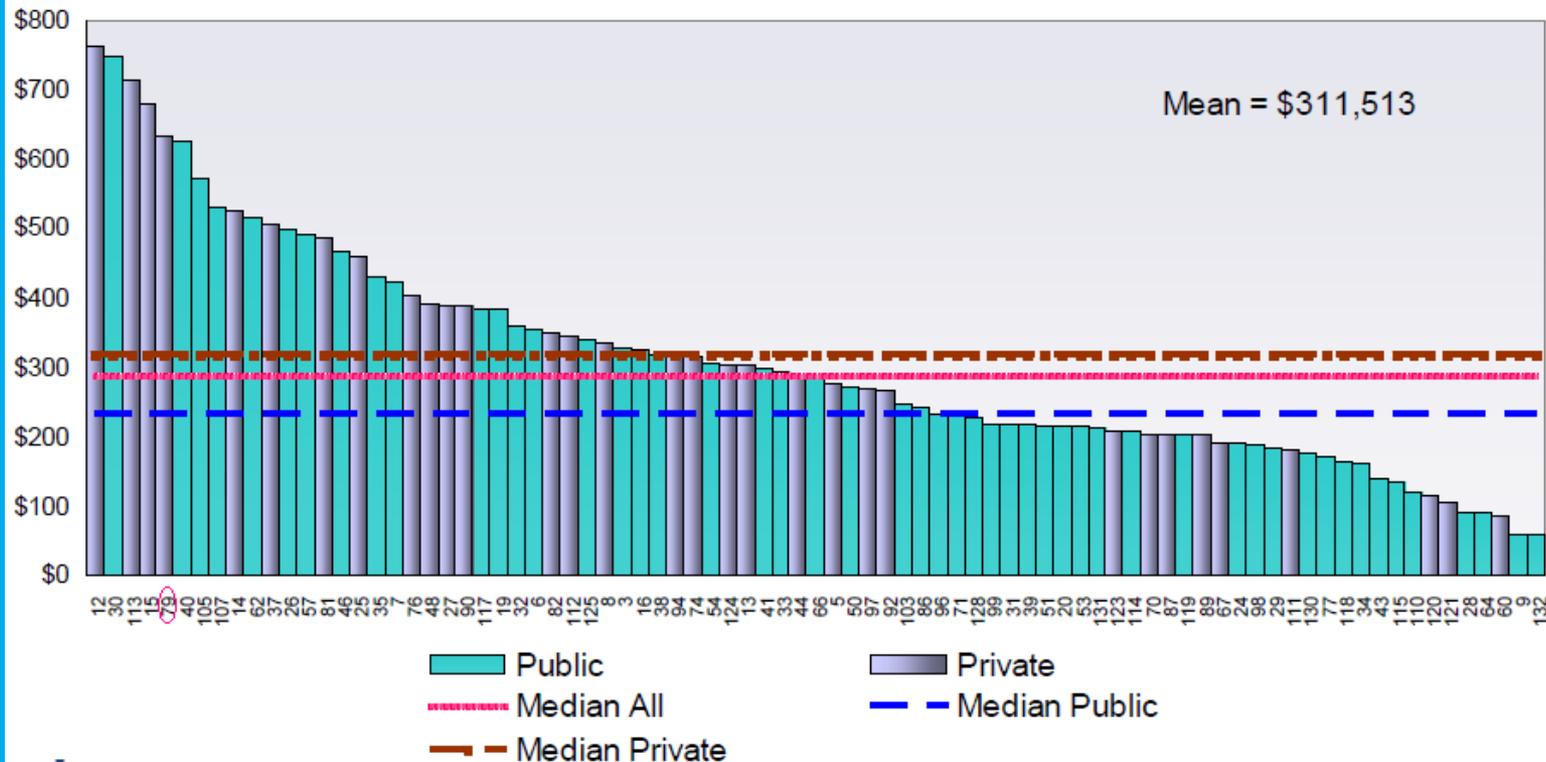
5: Sponsored Programs Direct Expenditures/PI

Purpose: Assesses research productivity of faculty engaged in research

Higher Number is Favorable

Formula: $\frac{\text{Sponsored Programs Direct Expenditures}}{\# \text{ PIs Associated with Sponsored Programs Expenditures}}$

(In Thousands)



Fiscal Year 2012

April 2013

Mount Sinai Doctors Faculty Practice Accomplishments 2013



- Growth
 - 6.5% in 2012
 - 6.2% in 2013 YTD
- Contribution margin
 - 2.3% in 2012
- Patient experience
 - 76th percentile vs. national peers in 1st quarter 2013 Press Ganey Survey
- Urgent Care facility (2012; 1st 7 months of operation)
 - 75 new admissions to MSSM
 - 889 new visits to MSH outpatients facilities
 - 1,360 new visits to the Mount Sinai Doctors Faculty Practice

Mount Sinai Doctors Faculty Practice

Ongoing Initiatives



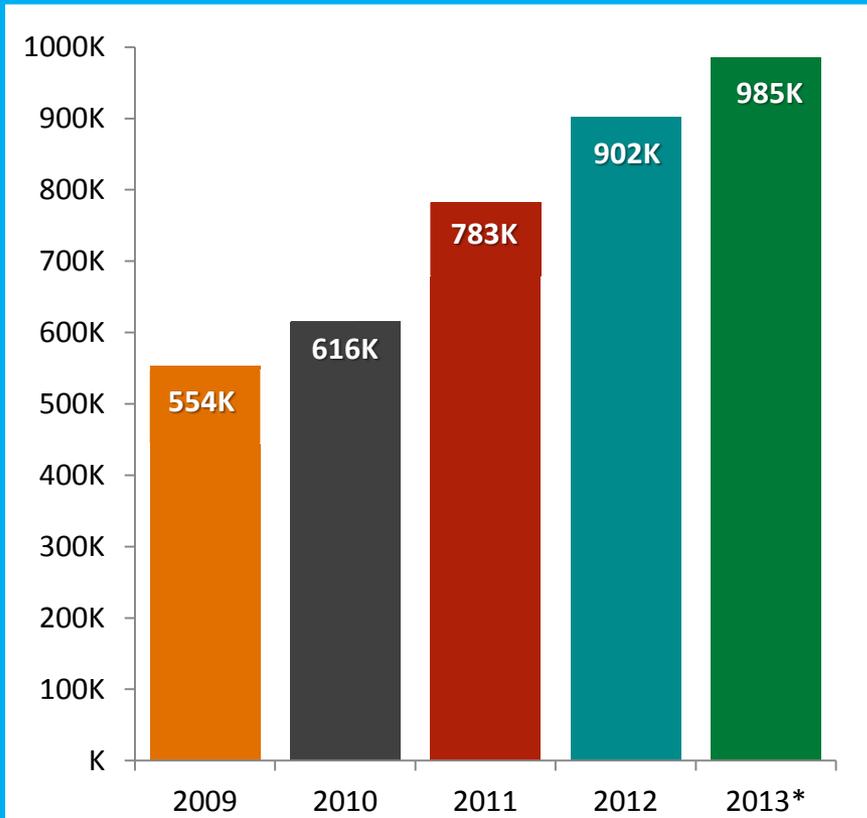
- Centralized billing office:
 - 18 of 26 Departments in CBO by September 2013
- Central call center:
 - 4-5 Departments by end of 2013
 - Superior performance (metrics)
 - Will incorporate physician referral service
- Lobby Renovation of 5 E 98th St
- New Upper East Side multidisciplinary clinical space at 85th St
 - Primary care
 - Integrated multidisciplinary care

Mount Sinai Doctors Faculty Practice

Current Positioning: FP Clinical Activity

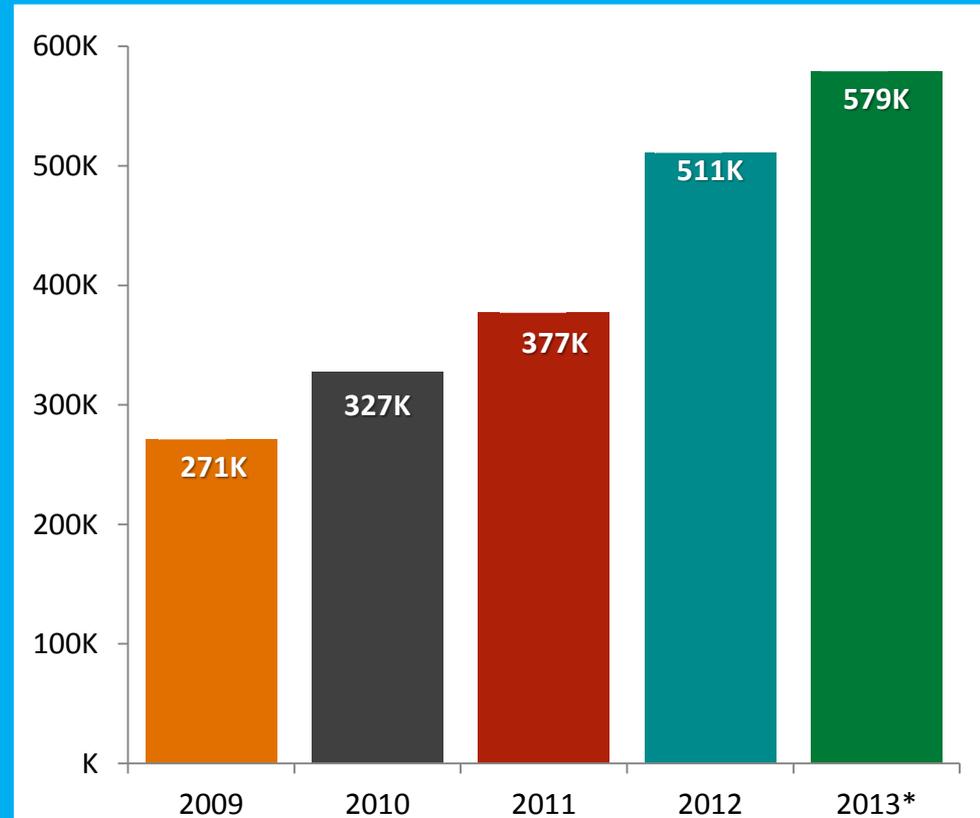


Ambulatory Encounters 2009 – 2013



*Annualized based on April data.

**Outpatient Visits 2009 – 2013



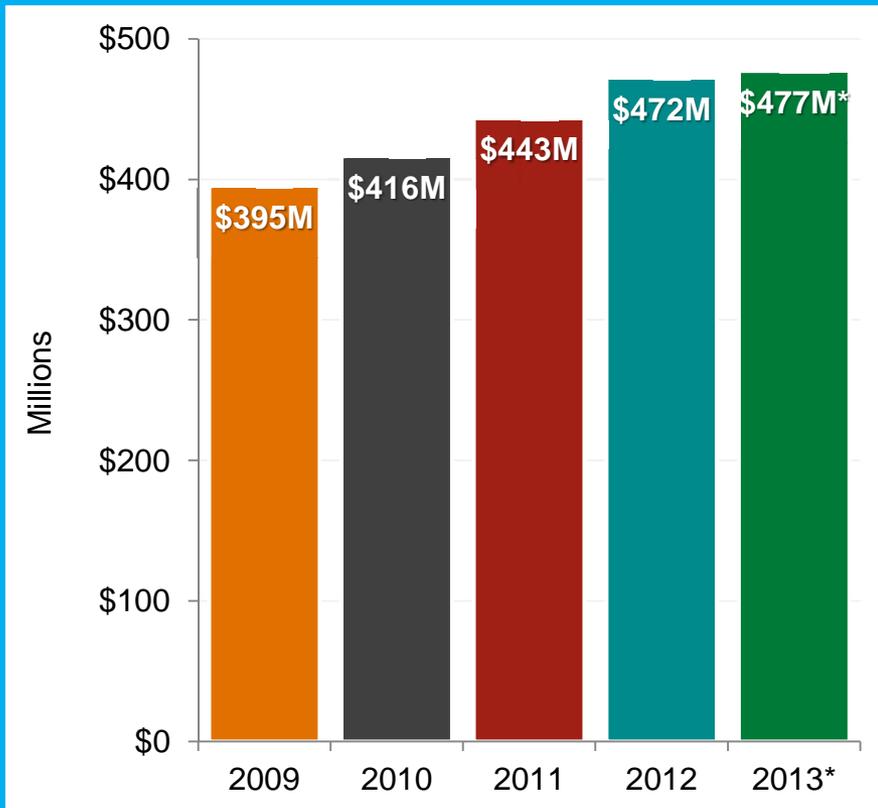
**On campus outpatients visits

Mount Sinai Doctors Faculty Practice

Current Positioning: FP Financial Performance

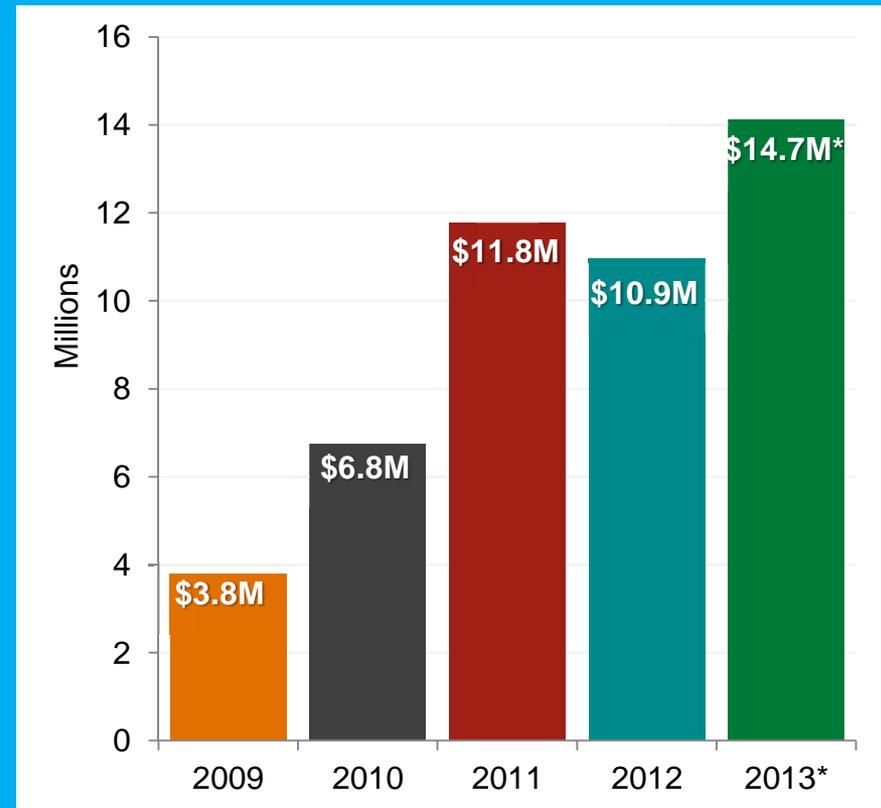


FP Annual Receipts 2009 – 2013



* Annualized based on April data

Annual Operating Margin (FP + Dept) 2009 – 2013

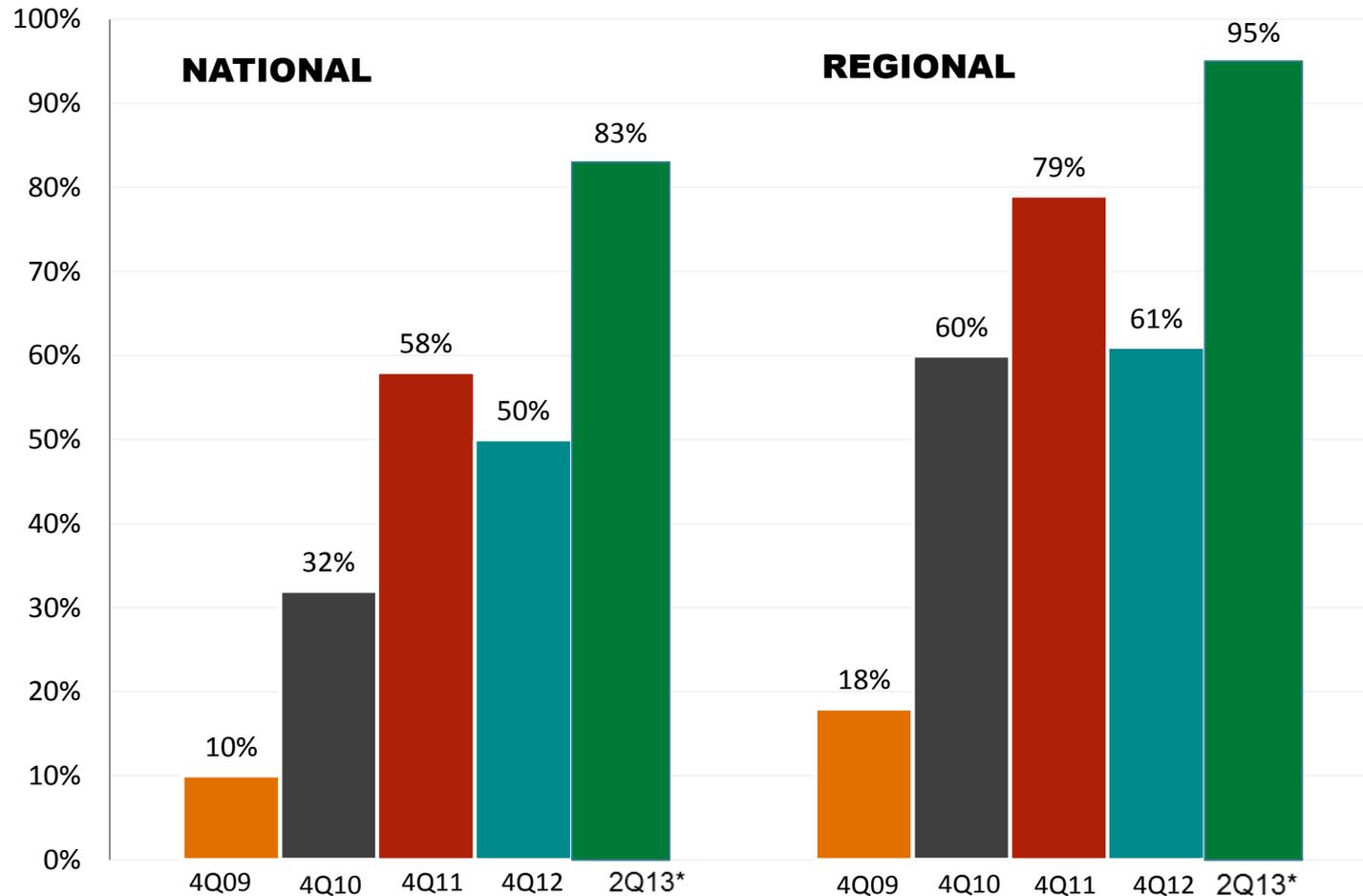


Mount Sinai Doctors Faculty Practice

Current Positioning: FP Patient Satisfaction



Press Ganey Percentile Ranking – Overall Satisfaction



*YTD based on Jan-May 2013 data.

Financial Results



The School continues to meet its overall goal of positive financial operating results.

Financial Operating Results:

	<u>Results</u>	
2013 (Budget)	\$	YTD is favorable
2012	\$	7,481*
2011	\$	116
2010	\$	286
2009	\$	71

Fund raising for the \$1 billion Capital Campaign, currently exceeding \$1.3 billion, supports Strategic Plan spending

Research and FPA growth major contributors to School's financial success

Financial Challenges to Continued Success



- Financial challenges for both Clinical and Research Programs continue:
 - Clinical reimbursement constraints from sequester and health care reform
 - Federal Budget issues
 - NIH Funding
 - Sequester cut averages 5% across the School
 - More competition for fewer grants awards
- Research spending is flat compared to 2012 principally from sequester cuts offset by new grants received.
- The fully operational HCSM building adds \$31.7 million to School operating costs in 2013.
- Capital Project Funding for existing school buildings.
- Revenue Diversification.

Action Plan to Meet Financial Challenges



- Continue successful Financial Goals
 - School's financial operating results must be positive using only the 5% endowment spending rate investment income.
 - Department's must consistently achieve positive financial results.
 - Institute's must recruit well funded faculty and enhance core facilities to expand research base.
 - Strategic Plan budgeted spending in excess of operating revenue covered by philanthropy.
 - Research and Clinical performance guided by metrics.

Action Plan to Meet Financial Challenges

- Departmental Incentive Plans encourage growth in both clinical revenue and operating margin.
- Department Compensation Models enhanced:
 - 100% of compensation tied to performance
 - Compensation must be covered by Teaching, Research and Clinical Revenue
 - Quality, productivity and outcomes goals integrated
 - Performance goals for each physician with regular reviews of actual results

Action Plan to Meet Financial Challenges



- More Space for Growth:
 - Administrative services continue to be moved off campus
 - HCSM provides additional space to support education, research and clinical operations
 - Continue to expand Faculty Practice offsite locations (85th Street initiative)
 - Continuum merger
- Clinical and Research Growth from:
 - New recruits
 - Faculty productivity
 - Efficient, cost effective operations
 - Enhanced Core facilities (eg vaccine cGMP)
- Philanthropy support for Strategic Plan and growth initiatives
- Continued Financial Discipline is Imperative:
 - Business Plans
 - Return on Investment
 - Continuous monitoring of financial results with timely corrective actions, if necessary

Economics of Healthcare Changing



Current system fragmented offering duplicate services

Patients treated in practice silos with little care coordination

Retailers (eg CVS, Walmart etc.) offering in-store clinics at deeply discounted rates

Reimbursement rates under pressure while costs of delivery increase

60% of healthcare costs - labor, salaries and benefits

Uncertainty surrounding Affordable Care Act

Major Health Systems downsizing

Cleveland Clinic to cut \$330 million from next year's budget, may cut jobs

Additional burden faced by AMCs

Larger uninsured/underinsured population

Medicare/Medicaid patients reimbursements capped

Commercial insurers negotiating lower reimbursements

Opportunities to cover revenue gap decreasing

Proposed GME and NIH funding cuts pose challenges

Impact on cost of training next generation of doctors and researchers

Major AMC's downsizing

Vanderbilt University Medical Center announced that 275 positions were eliminated this week in another round of jobs cuts.

Previously, the Medical Center had confirmed only that several hundred people would be cut during this step towards reducing the medical center's \$3.3 billion operating budget by \$250 million over the next two fiscal years.

Meeting the Challenge



By Creating a High Value Healthcare Delivery System¹

- Organize into Integrated Practice Units (Clinical Institutes)
- Measure outcomes and costs for every patient
- Move to bundled payments for care cycles
- Integrate care delivery across separate facilities
- Expand excellent services across geography
- Build an enabling technology platform

“...improving the value for patients, where value is defined as the health outcomes achieved that matter to patients relative to the cost of achieving those outcomes”

1. Michael E. Porter and Thomas H. Lee , “The Strategy That Will Fix Healthcare”, *Harvard Business Review*, October, 2013

The Mount Sinai Health System, A Bold New Chapter

- All affiliations that Continuum currently has with other medical schools will be transitioned to the Icahn School of Medicine at Mount Sinai over time
- Scientists and physicians affiliated with Continuum will become Mount Sinai faculty members
- Mount Sinai students will have clinical training and mentorship opportunities at all Health System hospitals
- Clinical and translational research reach across a larger network and accelerate the development of best practices and breakthrough treatments

Expanding the Geographic Reach



Merger with Continuum Health Partners

- 7 hospital campuses
- 12 free-standing ambulatory surgery centers
- 430 primary care physicians
- 2,784 full and part-time physicians
- 3,783 voluntary physicians
- 40 clinical and academic affiliations
- 45 ambulatory practices in 5 boroughs on NYC

7 campuses - 1 Medical School



Icahn School of Medicine will integrate clinical and research missions across all campuses

Faculty appointments will transfer to Icahn over time

Medical students and residents will have opportunities for expanded clinical training

Larger clinical footprint with diverse population expands opportunities for clinical research

Clinical Institutes of Excellence will be hubs of healthcare innovation and translational research

Bigger system will allow new models of care and incentives to improve quality to be tested

Creation of Clinical Institutes of Excellence



Patient-Centered and Disease-Focused Institutes include:

- Primary Care
- HIV
- Cancer
- Pulmonary
- Cardiovascular
- Critical Care
- Diabetes
- Digestive Disorders
- Women's Health
- Neuroscience

With the following Quality Metrics

- Outcomes
- Patient satisfaction
- Utilization
- Patient safety/care coordination
- Prevention
- Chronic disease management

As well as Productivity Metrics

Mount Sinai and Continuum-Current Sites

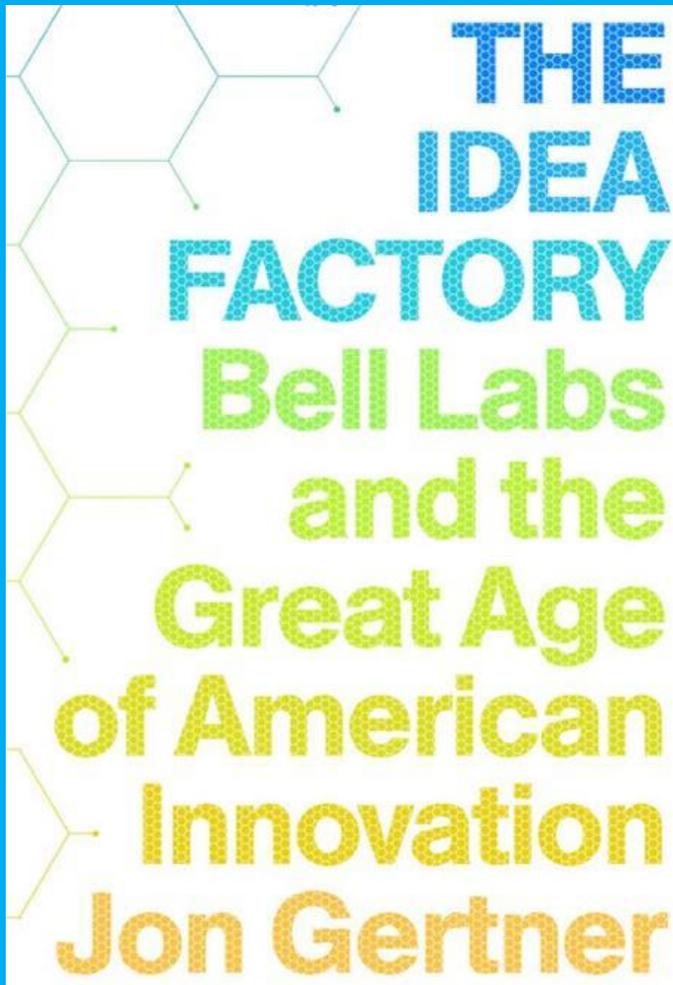


Post Merger – expanded access in Manhattan



Mount Sinai Health System
Ambulatory Care Sites
Manhattan

Suggested Reading



Bell Labs' formula for success:

- Technically competent management all the way to the top
- Recognition of the need for and creation of interdisciplinary teams early – in 1945
- Research on a topic supported for many years – if science sound
- Research could be terminated without blaming the researcher

“Anyone can hold the helm when the sea is calm”

Publilius Syrus

“Leadership is the capacity to translate vision into reality”

Warren Bennis

