Icahn School of Medicine at Mount Sinai

DENNIS S. CHARNEY, M.D.
Dean

September 30, 2013
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
Leading a New Era of Discovery

SINA Innovations

Leading a New Era of Discovery

New York, November 18–19, 2013
Stern Auditorium, 1468 Madison Avenue

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 Want

“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

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
Quality

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):

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<td></td>
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<td>20</td>
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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
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)
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
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.
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

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

• Shirley Ann Jackson, PhD, President
  Rensselaer Polytechnic Institute

• Dennis Charney, MD, Dean
  Icahn School of Medicine
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  Poulakos Poulakakos
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:


- 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

**Cultivating Innovation through Education**
- Entrepreneurship programs: C-TIE / QED / TechDev
- Seminars & Dept meetings
- 1:1 meetings with faculty
- Web resources: guides for inventors and consulting
- **SINAIInnovations** and events

**Facilitating Discovery through State-of-the-Art Resources**
- Experimental Therapeutics Institute
  - Center for Therapeutic Abs
  - Sm. molecule screening
  - Structure-based drug discovery
  - Medicinal Chemistry
- Industry Partnership opportunities
- 1:1 meetings with faculty

**Optimizing Value through Good Deals**
- 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

- >425 Faculty, Students, Staff and Trainees engaged with:
  - ~ 55 collaborative & sponsored industry research agreements
  - ~ 140 patent filings
  - ~ 100 technology disclosures
  - ~ 1100 enabling agreements: MTAs, CDAs, and IIAs
  - ~ 9 equity holdings in spinouts in portfolio
  - ~ $36 million in license proceeds
  - ~ $30 million in industry research funding
# 2: Sponsored Programs Expenditures/Net Assignable Square Feet

Purpose: Reflects productivity of research space
Higher Number is Favorable
Formula: Sponsored Programs “Recorded” Expenditures
Non-class lab NASF

Mean = $368 Total Costs per NASF

- Direct Costs
- Median All Schools
- Indirect (F&A) Costs
- Median Public Schools
- Median Private Schools

Fiscal Year 2012
April 2013
2012 Research Funding

# 5: Sponsored Programs Direct Expenditures/PI

Purpose: Assesses research productivity of faculty engaged in research

Higher Number is Favorable

Formula: Sponsored Programs Direct Expenditures
# PIs Associated with Sponsored Programs Expenditures

Mean = $311,513

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

**Outpatient Visits
2009 – 2013

*Annualized based on April data.

**On campus outpatients visits
Mount Sinai Doctors Faculty Practice
Current Positioning: FP Financial Performance

**FP Annual Receipts 2009 – 2013**

- 2009: $395M
- 2010: $416M
- 2011: $443M
- 2012: $472M
- 2013*: $477M

**Annual Operating Margin (FP + Dept) 2009 – 2013**

- 2009: $3.8M
- 2010: $6.8M
- 2011: $11.8M
- 2012: $10.9M
- 2013*: $14.7M

* Annualized based on April data
The School continues to meet its overall goal of positive financial operating results.

Financial Operating Results:

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<th>Year</th>
<th>Results</th>
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<td>2013 (Budget)</td>
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<tr>
<td>2012</td>
<td>$ 7,481*</td>
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<tr>
<td>2011</td>
<td>$ 116</td>
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<tr>
<td>2010</td>
<td>$ 286</td>
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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”

Mount Sinai and Continuum Health Partners merge

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
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.
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

**Mount Sinai Ambulatory Care Sites**
*Manhattan*

**Continuum Ambulatory Care Sites**
*Manhattan*
Post Merger – expanded access in Manhattan
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