Mount Sinai School of Medicine

DENNIS S. CHARNEY, M.D.
Dean

September 20, 2011
Quality

Best Doctors in NY

- 124 FPA Doctors in 46 specialties
  Total 209 in 48 specialties (includes voluntaries, affiliates and non-FPA)

US News & World Report Rankings

- Medical School 2011  #18
- Hospital 2011 “Honor Roll”  #16
  Top 20 in 7 Specialties (unchanged from 2010)
  Top 50 in 12 Specialties (13 in 2010)
  (out of 4,825 hospitals analyzed)
- One of 12 integrated Medical School/Hospital Academic Medical Centers which are both ranked in top 20

NIH Funding Rank

- Highest level in Sinai’s history at >$250M

AAMC Rank

- U.S. Medical Schools (AAMC) 2010  #3 Research Dollars/Principal Investigator
  (unchanged from 2009)
  #1 Research Density
  (up from #2 in 2009)

“A” on AMSA Pharmafree Scorecard on COI policies (1 of only 12 in country)
<table>
<thead>
<tr>
<th>Role</th>
<th>Department/Department</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean</td>
<td>Global Health</td>
<td>Philip Landrigan, MD, MScs</td>
</tr>
<tr>
<td>Associate Dean</td>
<td>Global Health</td>
<td>Jagat Narula, MD, PhD</td>
</tr>
<tr>
<td>Associate Dean</td>
<td>Scientific Computing</td>
<td>Patricia Kovatch</td>
</tr>
<tr>
<td>Assoc Dean/CMO</td>
<td>Clinical Excellence/ FPA &amp; MSH/</td>
<td>Mark Callahan, MD</td>
</tr>
<tr>
<td>Vice President</td>
<td>Technology &amp; Business Development</td>
<td>Teri Willey</td>
</tr>
<tr>
<td>Chair</td>
<td>Pathology</td>
<td>Carlos Cordon-Cardo, MD, PhD</td>
</tr>
<tr>
<td>Chair</td>
<td>Department of Genetics &amp; Genomics</td>
<td>Eric Schadt, PhD</td>
</tr>
<tr>
<td>&amp; Director</td>
<td>Institute for Genomics and Multiscale Biology</td>
<td>Milind Mahajan</td>
</tr>
<tr>
<td>Director</td>
<td>Sequencing Core</td>
<td></td>
</tr>
</tbody>
</table>
### Other Senior Recruitments

<table>
<thead>
<tr>
<th>Role</th>
<th>Department</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vice-Chair</td>
<td>Genetics &amp; Genomics</td>
<td>Andrew Kasarkis, PhD</td>
</tr>
<tr>
<td>Professor/Chief</td>
<td>Pediatric Oncology</td>
<td>Robert Maki, MD</td>
</tr>
<tr>
<td>Professor/Chief</td>
<td>Medicine/Pulmonary</td>
<td>Charles Powell, MD</td>
</tr>
<tr>
<td>Professor</td>
<td>Neuroscience &amp; Dev. Biology</td>
<td>Andrew Chess, MD</td>
</tr>
<tr>
<td>Professor/Chief</td>
<td>Psychiatry/Psychiatric Genomics</td>
<td>Pamela Sklar, MD, PhD</td>
</tr>
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</table>
Tripartite Missions of MSSM

1. Education
2. Research
3. Clinical
Education: Quality – Matriculating Class of 2011

**MD Students**

- Number of Complete Applications: 4,894
- Number of Interviews (excl EA/MSTP): 796
- Size of Class: 140
- MD/PhD: 12
- Humanities and Medicine: 40
- NY State Residents: 32%
- Women: 47%
- URM: 19%
- Average MCAT: 35.6
- Average GPA: 3.74
- Number of Undergraduate Schools: 54
  
  (Brown=16, Harvard=7, Penn=7, Columbia=6, NYU=6, Wash U=6, Williams=6, Yale=6)
## Education: Quality – Matriculating Class of 2011

### PhD Students

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Complete Applications</td>
<td>572</td>
</tr>
<tr>
<td>Size of Class</td>
<td>38</td>
</tr>
<tr>
<td>NY State Residents</td>
<td>24%</td>
</tr>
<tr>
<td>Women</td>
<td>50%</td>
</tr>
<tr>
<td>URM</td>
<td>5%</td>
</tr>
<tr>
<td>Average GRE</td>
<td>1,370</td>
</tr>
<tr>
<td>Median GPA</td>
<td>3.59</td>
</tr>
<tr>
<td>Number of Undergraduate Schools</td>
<td>33</td>
</tr>
</tbody>
</table>

Represented Institutions: Barnard, Brown, Columbia, Duke, Johns Hopkins, NYU, Oberlin, Tufts, UC-Berkeley, UC-San Diego, UCLA

# of PhD applicants increased 31% (from 2010)
This follows a 20% increase from 2009 to 2010.
Education: Quality – Matriculating Class of 2011

MD/PhD Students

- Number of Complete Applications: 265
- Size of class: 12
- NYS State Residents: 41.6%
- Women: 25%
- URM: 25
- Average MCAT: 36
- Median GPA: 3.87
- Number of Undergraduate Schools: 12

(U. of Minnesota, Brigham Young, NYU, U. of Delaware, Swarthmore, Boston College, Rutgers, U. of Pennsylvania, Wesleyan, Princeton, Yale, Columbia)

# of MD/PhD applicants increased 3.7% (from 2010)
Medical Education Notable Accomplishments

• LCME Reaccreditation – Site Visit October 23-26

• PORTAL(MD/MSCR dual degree) recruited its second cohort of MD/MSCR students

• Very Successful Match
  • 61% got their first choice; 80% got either their first or second choice.
  • 50% plan to pursue career as full-time university faculty (nat’l mean 36%)
  • 33% plan to practice in underserved areas; 83% of those in inner city (nat’l mean 58%)

• Inter-clerkship Ambulatory Care Track (InterACT) - supported by a $500,000 grant from the Josiah Macy Foundation  
  (credit to Valerie Parkas, Rainier Soriano, Yasmin Meah, Nel Naderi, Ali Gault)

• Global Health Training Center awarded a second $1,000,000 grant from the Mulago Foundation

• Newly appointed Director of Educational Technology – Rainier Soriano, MD, Department of Geriatrics and Palliative Care
Medical Education Initiatives

Strategic Plan – Uncompromising Excellence
Goal- a top 10 U.S. medical school

• Launch SciMed program

• Upgrade technology
  • New Learning Management System
  • Upgraded video capture and podcast of lectures

• Recruit new IME Director and enhance faculty educator development, scholarship, and support

• Launch initiatives to raise funds for scholarship (merit and need based) and loan forgiveness for those choosing to serve in underserved populations
  • Directed fundraising for dual degree tracks in Primary Care, Global Health and Translational Science
  • Parents’ Council Scholarship
  • Multiple Alumni-focused fundraising initiatives by Development Office
Graduate School Notable Accomplishments

• Revamped the Core Curriculum to offer new advanced courses for PhD students that reinforce basic science as a critically important component of successful translational research

• Strengthened capacity to cover the entire translational continuum by:
  • enhancing clinically oriented MS programs
  • Increasing exposure to disease by adding a clinical component to courses for Basic Science PhD students
  • Commencing research phase for first cohort of clinical research PhD trainees
  • Introducing Biostatistics track in MPH program
Graduate School Initiatives

- Strengthen linkage between PhD MTA’s and the Institutes
  - Develop new PhD track in Genomics in concert with the newly launched Institute for Genomics and Multiscale Biology

- Increase exposure of MD/PhD students to clinical experiences in their PhD years

- Expand size and scope of MS programs

- Establish transparent metrics to assess success of individual MTA’s as well as PhD program as a whole.
Global Health Initiative

Goals:
- Become a top 10 leader among academic global health programs in the United States
- Improve the health of people around the world with particular emphasis on the world’s most underserved populations

Achievements to-date:
- Education-
  - Undergraduate courses and electives,
  - Global health track in MPH program,
  - Global health residency options in several major clinical departments,
  - Fogarty international training programs & post-residency fellowship programs.
- Communication & Field
  - Designated the editorial office for the official Journal of the World Heart Federation, GLOBAL HEART under the leadership of Dr. Jagat Narula, Associate Dean for Global Health
- Established formal partnership with prestigious research institutes and academic health centers oversees
- Over 60 Mount Sinai faculty, 40 students, 60 residents and 25 other professionals have worked to improve the health of underserved populations in over 20 countries
- Designated a Collaboration Centre of the World Health Organization
Research – 2011 highlights

• MSSM maintained #18 in NIH Funding with ~$275M in grants

• ARRA Funding will end in 2011 ($90M over 2 years)
  – And will pose significant challenge in an era of flat or reduced NIH funding

• The efficiency of space utilization has increased significantly:
  – In 2009, the average institutional research density was $750/sf
  – In 2010, the average institutional research density was $875/sf

• This increase has enabled us to make major recruitments within our existing space
Direct Expenditures per Principal Investigator

Purpose: Assesses research productivity of faculty engaged in research

Higher Number is Favorable

Formula: Direct Expenditures / Number of PIs

MSSM Productivity Increased:
- 2008 ~ $550,000/PI
- 2009 ~ $600,000/PI
- 2010 ~ $650,000/PI

Mean = $315,793

Fiscal Year 2010

Public Schools
Median All Schools
Median Private Schools
Median Public Schools

May 2011
Grant $s per Net Assignable Square Foot (NASF)

Purpose: Reflects productivity of research space

**Higher Number is Favorable**

Formula: Total Grant $s / NASF

MSSM Space Density Increased:
- 2008 ~ $650/NASF
- 2009 ~ $750/NASF
- 2010 ~ $875/NASF

Mean = $372 Total Costs per NASF

Fiscal Year 2010

May 2011
Faculty Practice Accomplishments

- Visits increased 10% over 2010
- Clinical revenue increased 8% over 2010
- Mount Sinai Faculty 5th nationally in clinical productivity
- Key personnel recruitments:
  - Chief Operating Officer – Michael Schaffer
  - Director of Ambulatory Services – Johanna Epstein
  - Director of FPA IT Systems – Denise Mullin
# Faculty Practice – In Top 5 in Revenue/Faculty

<table>
<thead>
<tr>
<th>School</th>
<th>Receipts</th>
<th>Clinical MDs</th>
<th>Receipts/MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwestern U Feinberg SOM</td>
<td>441,280,637</td>
<td>681</td>
<td>647,989</td>
</tr>
<tr>
<td>Cornell U Weill Med Coll</td>
<td>444,303,191</td>
<td>733</td>
<td>606,144</td>
</tr>
<tr>
<td>Washington U in St Louis SOM</td>
<td>593,556,599</td>
<td>1,169</td>
<td>507,747</td>
</tr>
<tr>
<td>Wake Forest University SOM</td>
<td>327,982,565</td>
<td>665</td>
<td>493,207</td>
</tr>
<tr>
<td><strong>Mount Sinai School of Medicine</strong></td>
<td><strong>417,093,000</strong></td>
<td><strong>911</strong></td>
<td><strong>457,841</strong></td>
</tr>
<tr>
<td>U Rochester SOM &amp; Dentistry</td>
<td>310,603,605</td>
<td>713</td>
<td>436,855</td>
</tr>
<tr>
<td>Emory University Sch of Med</td>
<td>467,258,238</td>
<td>1,139</td>
<td>410,236</td>
</tr>
<tr>
<td>U Wisconsin Medical School</td>
<td>497,724,948</td>
<td>1,228</td>
<td>405,313</td>
</tr>
<tr>
<td>Columbia U Coll of P &amp; S</td>
<td>475,843,460</td>
<td>1,248</td>
<td>381,285</td>
</tr>
<tr>
<td>Duke University Sch of Med</td>
<td>413,284,029</td>
<td>1,115</td>
<td>370,658</td>
</tr>
<tr>
<td>Johns Hopkins University SOM</td>
<td>389,551,725</td>
<td>1,266</td>
<td>307,703</td>
</tr>
<tr>
<td>Yale University Sch of Med</td>
<td>307,813,800</td>
<td>1,009</td>
<td>305,068</td>
</tr>
<tr>
<td>U of Texas Southwestern MC &amp; SOM</td>
<td>380,519,740</td>
<td>1,269</td>
<td>299,858</td>
</tr>
<tr>
<td>University of Virginia SOM</td>
<td>221,610,443</td>
<td>781</td>
<td>283,752</td>
</tr>
<tr>
<td>UC San Francisco SOM</td>
<td>341,717,792</td>
<td>1,400</td>
<td>244,084</td>
</tr>
<tr>
<td>Oregon Health &amp; Science U</td>
<td>221,183,617</td>
<td>931</td>
<td>237,576</td>
</tr>
<tr>
<td>University of Florida COM</td>
<td>198,528,201</td>
<td>897</td>
<td>221,325</td>
</tr>
<tr>
<td>University of Michigan Medical School</td>
<td>342,451,809</td>
<td>1,625</td>
<td>210,740</td>
</tr>
<tr>
<td>UC Davis SOM</td>
<td>165,611,045</td>
<td>800</td>
<td>207,014</td>
</tr>
<tr>
<td>University of Maryland SOM</td>
<td>174,153,200</td>
<td>883</td>
<td>197,229</td>
</tr>
<tr>
<td>UNC Chapel Hill SOM</td>
<td>197,090,787</td>
<td>1,026</td>
<td>192,096</td>
</tr>
<tr>
<td>Massachusetts General Hospital</td>
<td>524,126,460</td>
<td>2,925</td>
<td>179,189</td>
</tr>
<tr>
<td>Baylor College of Medicine</td>
<td>222,586,453</td>
<td>1,277</td>
<td>174,304</td>
</tr>
<tr>
<td>UC San Diego SOM</td>
<td>144,740,931</td>
<td>843</td>
<td>171,697</td>
</tr>
<tr>
<td>U of Chicago Pritzker SOM</td>
<td>130,720,474</td>
<td>780</td>
<td>167,590</td>
</tr>
<tr>
<td>University of Washington SOM</td>
<td>204,775,888</td>
<td>1,334</td>
<td>153,505</td>
</tr>
<tr>
<td>University of Colorado SOM</td>
<td>257,792,820</td>
<td>1,816</td>
<td>141,956</td>
</tr>
</tbody>
</table>
Faculty Practice Goals 2012

• Growth
  – 7% growth in volume and revenue

• Patient experience
  – #1 AMC in region in patient satisfaction (Press Ganey)

• Access
  – Achieve industry standards for best practices for phones
    • ≤ 5% dropped calls
    • ≥ 80% calls answered in ≤1 minute
  – E-scheduling
Faculty Practice Goals 2012

- Initiatives
  - Expanded FPA primary care
    - 10 primary care physicians by end of 2012
    - New location in CSM Tower base in 2012
    - Routine appointment in <2 weeks
    - “Provider of choice” for MSMC faculty & staff
  - Multispecialty satellites
    - Columbus Avenue (including Urgent Care & specialty care) site opens mid 2012
    - Expanded Chinatown practice (opened 2011)
Achieving the Faculty Practice Goals

• Enhancing Information Technology
  – E-scheduling in Spring 2012
  – Epic MyChart (patient portal): 2000 active users; goal is to triple number of active users in 2012
  – Meaningful Use and e-Prescribing: All eligible physicians enrolled in 2012
  – Utilization Management: Integrate into Physician Dashboard 2012
  – Advanced Decision Support: New tools 2012 for radiology support, formulary management
Achieving the Faculty Practice Goals

• Changing Incentives
  – New compensation models
  – Tied to quality, patient experience, resource utilization, productivity
  – New models for population management

• Moving to Integrated Central Services
  – Centralized Billing Office
  – Customer Service Teams and Training
  – Practice Improvement Teams
  – Common Protocols
**Financial Results**

The School has met its overall financial goals since the Strategic Plan was approved (000’s)

<table>
<thead>
<tr>
<th>Year</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>2011 (Budget)</td>
<td>$0</td>
</tr>
<tr>
<td>2010</td>
<td>$286</td>
</tr>
<tr>
<td>2009</td>
<td>$71</td>
</tr>
<tr>
<td>2008</td>
<td>$(2,880)*</td>
</tr>
<tr>
<td>2007</td>
<td>$236</td>
</tr>
<tr>
<td>2006</td>
<td>$852</td>
</tr>
</tbody>
</table>

*Loss resulted from market downturn

Fund raising for the $1 billion Capital Campaign, exceeding $761 million, has been sufficient to support the Strategic Plan spending.

Research and FPA growth major contributors to School’s financial success.
Financial Challenges to Continued Success

- Both Clinical and Research Programs face heightened financial challenges
  - Clinical reimbursement constraints from health care reform
  - Increased competition for research grants resulting from Federal Budget issues
- Research spending growth has slowed in 2011
- The ARRA stimulus grants that provided $90 million in research grant funding over the past two years have ended
- The CSM Building will be open in the 4th Quarter of 2012
Action Plan to Meet Financial Challenges

• Continue successful Financial Goals

  • School’s Financial Goals:
    • Positive financial operating results using only the 5% endowment spending rate investment income
    • Philanthropy supports the gap between Strategic Plan revenues and spending on growth initiatives

  • Department’s Financial Goals:
    • Departments must consistently achieve positive financial results
    • Research and Clinical performance guided by metrics
Action Plan to Meet Financial Challenges

• Departmental Incentive Plans to Encourage Financial Performance:
  • Clinical Revenue Growth Incentive Policy
  • Clinical Operating Margin Incentive Policy

• Continued Focus on Faculty Productivity
  • Investigator Incentive Policy
  • Performance goals for each physician
  • Compensation models tying 100% of compensation to performance

• Compensation must be covered by Teaching, Research, and Clinical Revenue
Action Plan to Meet Financial Challenges

• More Space for Growth
  • Administrative services moved off campus
  • CSM provides additional space to support education, research and clinical operations

• Clinical and Research Growth from:
  • New recruits,
  • Faculty productivity, and
  • Efficient, cost effective operations

• Philanthropy support according to campaign goals

• Medical Center initiative to reduce Administrative Costs by 10% over 3 years

• FINANCIAL DISCIPLINE IS IMPERATIVE
  • Business Plans
  • Return on Investment
CSM & Tower-rendering

Tower

Annenberg

1212 Fifth

CSM

Mount Sinai School of Medicine
CSM & Tower - under construction
## CSM – Preliminary Schedule

### Schedule
- Closing of building exterior
- Interior work
- Hi voltage electric service
- Building inspections
- Occupy Clinical Floors
- Occupy Research Floors

### Tower/CSM Dates
- CSM July 2011, Tower September 2011
- In Progress
- Go live November 2011
- On-Going
- October 2012 – November 2012
- December 2012 – February 2013

### Relocations will be staged
- Minimize disruption to patients, physicians and researchers
- Working with Support Service Departments for building systems takeover
- Constructing/installing Hi Performance Computing data center
- Tunnel under 101st Street is complete
The new building will foster interdisciplinary translational research that will help Mount Sinai serve our communities better by encouraging research that results in new therapeutic discoveries.
The Tower has 4 clinical floors that connect to CSM by bridge – 2 floors devoted to cancer, 1 floor Primary Care and 1 floor Medical Sub-Specialties.

Entrance to clinical floors in Tower

Typical reception on clinical floor
Strategic Growth & Groundbreaking Innovation in the age of Uncertainty
External Challenges to Clinical Enterprise

Academic Medical Centers and Sinai will be impacted by:

• Health care reform

• AMCs markets become more competitive with pressures to keep care in the local communities

• New York City landscape is filled with hospitals under economic pressure
2011-2012 Clinical Strategic Planning Process

Mandate:

• Develop a growth plan for The Mount Sinai Medical Center clinical enterprise by 12% (4,000 incremental discharges) by year 3-5

• Reengineer Mount Sinai clinical enterprise to be successful in the future of Health Care Reform

• Develop a plan to reduce cost base across the institution by 10% over 3-5 years
Workgroups Developing Growth Plans:

Workgroups established for development of growth plan for:

- **Cancers:** Head and Neck (14%), Surgical Oncology (12%), Liver Cancer (16%), Thoracic Cancer (29%), Bone Marrow Transplant (15%), Leukemia (25%) and Brain Cancer (27%)

- **Heart:** Cardiac Surgery (7%), Valvular Surgery (10%), Implant Heart Devices (9%)

- **Transplant:** Liver and Kidney (16% each)

- **Brain:** Neurosurgery (35%)

- **Surgical Subspecialties:** Vascular (23%), Complex General Surgery (14%), Spine (6%), Orthopedics (20%)

Review of all programs for optimal size and scope underway
Workgroups to Reengineer Mount Sinai to Meet Future of Health Care Reforms:

- **Network Development**: to meet the mission of providing care in the communities and enhance flow of complex care to Mount Sinai

- **Inpatient Care Model**: to optimize the delivery of inpatient care at higher quality and lower cost

- **Ambulatory Care**: to optimize ambulatory services in the School and Hospital, eliminate inefficiencies, and enhance care

- **Quality**: to position Mount Sinai to excel in Quality measures

- **Population Management**: to position Mount Sinai for the future changes in reimbursement and ensure success in management of populations
Workgroups to Reduce Baseline Costs of Mount Sinai Medical Center:

- **Hospital Efficiencies**: identify and address operational and system inefficiencies

- **Clinical Resource Management**: optimize the use of clinical resources in patient care: imaging, pharmacy, labs, etc…

- **Supply Chain**: identify areas of opportunities in supply chain; product standardization, cost reduction, delivery systems, etc…

- **Corporate Support Services**: reduce baseline operating cost of support services in the Medical Center to align with future revenue trends; information technologies, human resource management, compliance, administrative services, etc…
# 2011-2012 Clinical Strategic Planning Process

## Strategic Planning Time:

<table>
<thead>
<tr>
<th>Sept '11</th>
<th>Oct '11</th>
<th>Nov '11</th>
<th>Dec '11</th>
<th>Jan '12</th>
<th>Feb '12</th>
<th>March '12</th>
<th>April '12</th>
<th>May '12</th>
<th>June '12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and Neck Transplant</td>
<td>Interim report on Network</td>
<td>Interim Report on Inpatient care model</td>
<td>BMT/Lymphoma/Leukemia</td>
<td>Assessment: - Pediatrics - other niche programs</td>
<td>Interim space and capital report</td>
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</tbody>
</table>
External Challenges to Research Enterprise

Flat NIH Budget & End of ARRA grants
Awards competitive

Tighter R&D budgets in Private Industry
Explore other growth opportunities

Recession, Federal Debt & Stock Market Volatility
Low returns impacts Philanthropy, Foundation awards

Academic Medical Centers impacted due to their unique tripartite role that include unfunded mandates that would be previously bridged by government or private sources

Historically, this funding gap bridged by government or private sources
High correlation between disease priorities and NIH Institutes’ budgets. However, these priorities are not the same as those of Pharma. Research supported by NIH and other public entities has had a more immediate effect in improving public health than other funding mechanisms.

**Table 1. Number of Drug Products Approved by the Food and Drug Administration and Originating from Public-Sector Research, According to Therapeutic Area, 1970–2009.**

<table>
<thead>
<tr>
<th>Therapeutic Area</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>153</td>
</tr>
<tr>
<td>Hematology or oncology</td>
<td>40</td>
</tr>
<tr>
<td>Infectious disease</td>
<td>36</td>
</tr>
<tr>
<td>Cardiology</td>
<td>12</td>
</tr>
<tr>
<td>Metabolic disease</td>
<td>12</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>12</td>
</tr>
<tr>
<td>Dermatology</td>
<td>7</td>
</tr>
<tr>
<td>Renal disease</td>
<td>7</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>6</td>
</tr>
<tr>
<td>Immunology</td>
<td>6</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>4</td>
</tr>
<tr>
<td>Women’s health</td>
<td>3</td>
</tr>
<tr>
<td>Allergy</td>
<td>2</td>
</tr>
<tr>
<td>Pulmonary disease</td>
<td>2</td>
</tr>
<tr>
<td>Urology</td>
<td>2</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>1</td>
</tr>
<tr>
<td>Dental disorders</td>
<td>1</td>
</tr>
</tbody>
</table>

- In the past 40 years, 153 FDA approved drugs were discovered by institutions.
- FDA approved 1,541 new drug applications.
- 46.2% of publicly funded new drug applications received priority review vs 20% for private-sector.
- Publicly funded research has contributed 9.3%-21.2% of all new drugs involved in new drug applications.

*Source: NEJM, Feb 10, 2011*
Shift from primary care to specialty care continues

Payer dissatisfaction with high prices for incremental innovations for same diseases

Need to be accountable to payers is shaping discovery & development programs at drug firms

Preference to tackle expensive treatments for chronic conditions

Source: Nature 2011

Figure 1 | FDA drug approvals since 1996. New molecular entities and biologics license applications approved by the US Food and Drug Administration’s (FDA) Center for Drug Evaluation and Research, by year.
Shifting Landscape-2

Drug Companies reducing R&D and “out-sourcing” basic research

Susan Desmond-Hellmann

In 2009, Susan Desmond-Hellmann left Genentech, after 5 years as President of Product Development, to become Chancellor at the University of California, San Francisco (UCSF). Since rejoining academia, she has overseen the creation of numerous UCSF–industry alliances, including recent deals with Pfizer, Sanofi–Aventis and Bayer. Similar partnerships, of varying forms, are appearing around the world, as pharmaceutical and biotechnology companies seek new sources of innovation to shore up faltering pipelines. Speaking with Asher Mullard, Desmond-Hellmann discusses the increasing interest in industry–academia collaborations and looks back on the lessons she has learned since leaving Genentech. Nature, March 2011

Basic Science research is expensive but that is where academia excels

Drug Companies reducing their R&D budgets and Basic Science research

Pharma leveraging the high quality of science and depth of knowledge at academia to increase their understanding of drug interactions

Collaborations between academia and Pharma on the rise

Goal is to improve the predictability of outcomes of new drugs.

Pfizer’s Shakeup Means Less Money for Research

The pharmaceutical giant Pfizer has announced it will lay off thousands of workers and cut its research and development budget by between $1.5 billion and $2 billion in 2012. That drastic decrease, industry observers say, reflects uncertainties facing many large drug companies about what role they should play—or even want to play—in basic drug research. Increasingly, they shop for the science they need, when they need it.

Science, February 11, 2011

Achieving and Maintaining Greatness
Research Initiatives in response to challenges

Strategic investments in targeted areas of strength where we can be competitive

New Initiatives in:
- Institute for Genomics & Multi-Scale Biology
- Center for Discovery & Innovation
- Center for Surgical Innovation
- Global Health

New Initiatives in Existing Programs
- Black Family Stem Cell Institute
- Tisch Cancer Institute
- Friedman Brain Institute
- Cardiovascular Institute
- Immunology Institute

Research infrastructure also strengthened to ensure that faculty have adequate resources
- Shared Research Cores
- Biostatistics
- OTBD
Genomics & Multi-Scale Biology

A new model for transformative research and care delivery that directs our understanding of the pathophysiology of disease and treatment, reducing the overall disease burden through faster, safer, more effective and more affordable care.

Some points to highlight:

- We aim to become a hub node connected to all of the disease focused institutes to enhance the interpretation of their data to get at more predictive models of disease.
- Use a systems approach to understanding disease.
- Primary goal will be aiding in the development of novel therapeutics and biomarkers.

Technology in addition to “information wizards” will be key;

- State of the art next generation sequencing technology.
- Lead the third generation sequencing revolution by bringing in new technologies.
- Advanced prototype equipment to observe single molecule biomolecular machines as they carry out their function, to elucidate mechanisms.
- State of the art proteomics.
Creation of Center for Discovery & Innovation

To illuminate new disease targets and the molecules that treat those targets.

This discovery group will identify the most promising research within all of Mount Sinai’s disease-focused institutes.
5 Collaborative Core facilities provide the advanced technologies needed to speed translation of discovery to their therapeutic targets:

**Small Molecule Discovery**
- Investigates and develops drugs based on small molecules, an approach that results in better designed drugs with fewer side effects

**Monoclonal Antibodies**
- Taps into the drug development potential of antibodies made by our own immune system

**High Content Screening/RNAi**
- Analyzes thousands of different drug compounds, identifying the most promising treatments with a speed and accuracy unimaginable just a few years back

**Induced Pluripotent Stem Cell (iPSC)**
- Reprograms a skin cell taken from an adult’s arm into a brain cell and might transform the shape of medicine

**Systems Pharmacology and Network Analysis**
- Uses state of the art computers to forecast likely results before clinical trials commence, saving crucial time
Goals:

Establish multi-specialty surgical translational research and innovation program

Leverage current strengths and build upon work done by innovators in surgical departments at Sinai:

- David Adams – Cardio-Thoracic Surgery
- Eric Genden – Minimally-Invasive Head and Neck Cancer Surgery
- Michael Marin – Vascular Surgery

Integrate surgeons, researchers and machining facilities to develop new instruments/devices and advanced technologies that improve patient care

Develop the ability to go from lab to operating room and measure and report patient outcomes.

Serve as a national surgical translational research model
- Attract and retain the brightest surgical faculty
In anticipation of an increase in commercialization and IP as MSSM’s new translational research strategy is implemented

- OTBD being revitalized under a new leadership team
  - With hands-on commercial and academic experience
    - Redefining business processes and enhancing resources to enable them to better serve their customers (faculty)
  - Work with faculty with most promising ideas
  - Find partners to commercialize and establish agreements to do so
  - Optimize returns on those agreements to benefit institution
  - Increased staffing
Positioning Mount Sinai

Rebranding
The Rebranding of Mount Sinai

- Create a dramatic new identity to reflect a powerhouse twenty first century academic medical center

- Brand architecture (rename Faculty Practice)

- New visual design system
  - Logo
  - Colors
  - Typography
  - Signage
  - Way-finding

- Train the organization to be Brand Ambassadors

- Powerful Launch Program (1st half 2012)
Over the last six months, The Mount Sinai School of Medicine has embraced digital and social media to dramatically increase our digital footprint.

- Utilizing platforms like Facebook, Twitter, YouTube, Linked-in and FourSquare we have improved our reach and visibility

- Creating our own social media platform - MyGsocial - for our graduate students with plans for expansion to additional school programs

- August 2011 was a record month with the highest website traffic to the school ever

- Over 20 mobile web applications across the school and FPA services launched
  - Our mobile web apps facilitate everything from simple tasks such as finding the library or cafe to finding doctors or faculty
Digital and Social Media-2012 Goals

• Digital advertising initiatives for the school and FPA
• New homepages for the school and FPA
• New and improved Find a Doctor, Find a Person and Find a Faculty websites
• Online scheduling for patients
• Mobile app store for students featuring selected iPad, iPhone and Android apps
• Strategic partnerships to create innovative mobile solutions
• Live stream video recruiting sessions for students
• Social media campaigns for academic initiatives
• Translation of rebranding initiative onto all digital platforms
Mount Sinai Must Embrace a Culture of Innovation
Mount Sinai: A Culture of Innovation

• Leaders need to be disciplined and empirical
• Innovation is a blend of creativity and discipline
• Change is measured and thoughtful
• “FAST WORLD” requiring “FAST DECISIONS” and “FAST ACTION” leads to failure

Mount Sinai: A Culture of Innovation

• LEADERSHIP – Consistently set a vision of innovation, provide the environment, the infrastructure, and the incentives

• INNOVATION CHAMPIONS - promote, encourage, prod, nurture, support, and drive innovation
Mount Sinai: A Culture of Innovation

DISRUPTIVE INNOVATION

• Associating:
  • Draw Connections between questions, problems, or ideas from unrelated fields

• Questioning:
  • Pose queries that challenge common wisdom

• Experimenting:
  • Constructing interactive experiences and unorthodox responses to see what insights emerge

• Networking:
  • Meet people with different ideas and prospectives

The Innovators DNA: Mastering the Five Skills of Disruptive Innovators.
Dyer, Gregersen, and Christensen, 2011
Mount Sinai: A Culture of Innovation

HOW DO YOU SYSTEMIZE INNOVATION?

• “The system is there is no system”

• “You need process and discipline for efficiency”

• “And you must say no to 1,000 things to make sure you don’t get on the wrong track”

• “But innovation comes from people meting in the Hallway or calling each other at 10:30 at night with a new idea, or because they realized something that shoots holes in how we have been thinking about a problem. It’s adhoc meetings called by someone who thinks he has figured out the coolest new thing ever and who wants to know what other people think of his idea”

Steve Jobs
Apple
We need to continue to do the BEST work in the history of Mount Sinai

We need to be the BEST at what we do!