Building a Top-Tier Academic Medical Centre – Learnings from the US

Dr. Ludwig Kanzler
Partner
McKinsey & Company, Inc., Japan

Medical Cluster Symposium

Hiroshima, 22 April 2010

TODAY'S AGENDA

- **Economics of AMCs**
- Success factors and models
- Implications for building an AMC in Japan

WHAT IS AN ACADEMIC MEDICAL CENTER?

Various authorities define Academic Medical Centers (AMCs) in slightly different ways…

"An enterprise of multi-layered, multi-tasking institutions that share common missions: to provide general professional education…; to conduct biomedical, behavioral, clinical, and health science services research; and to champion the application of new knowledge…" – Association of American Medical Colleges

"An allopathic or osteopathic medical school, at least one other health professions school or program, and at least one affiliated or owned teaching hospital" – Association of Academic Health Centers

… but there are some commonly agreed-upon components

- **Clinical:** The provision of leading clinical care through a teaching hospital which is known for quality and, often, clinical innovation
- **Research:** Cutting edge basic science, clinical and translational research conducted by faculty and students, which spins off intellectual property, partnerships and new companies that bring economic benefits
- **Teaching:** Medical school and teaching hospital that train medical students, residents and fellows in the provision of clinical care and, in some cases, conduct of research

AMCs are the anchoring institutions within biomedical hubs that, together with a sustained culture of experimentation and enterprise in the surrounding environment, build towards innovation in biomedical technology and techniques

Sources: AAMC Handbook of Academic Medicine, 2004; Association of Academic Health Centers, 2002

AN AMC IS AN INHERENTLY COMPLEX ORGANISATION

1. Fund transfers
   - Admin/Service/Teaching
   - Directorships/ Svc. Chiefs
   - Teaching
   - Other
2. Junior doctor program size and control
3. Research investment
4. Governance and board composition
5. Dept. chair/ service chief appointments
6. Faculty model (salaried vs. fee-based)
7. IP rights
8. Equity share in hospital

AMC Hospital

Network partners (Community providers – local and national)

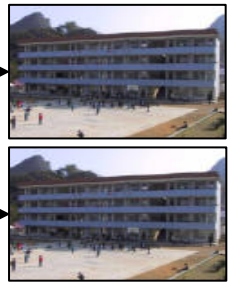
20. Network referrals
21. Resident in/out-rotations

9. Ownership of faculty practice plan
10. Clinical productivity incentives
11. Managed care contracting
12. Clinical resource utilization
13. Faculty referral patterns

8a. Equity share in hospital

Physician affiliation with other hospitals in the local market

Med school



University

Physicians (faculty practice plan)

14. Research productivity
15. Proportion of time spend on academic activities
16. Faculty recruitment

17. Medical school funding by university
18. Financial viability of medical school
19. Closeness of university relationship

* Pathology, anesthesiology, radiology and emergency medicine

Source: Academic Affiliation Agreements; interviews

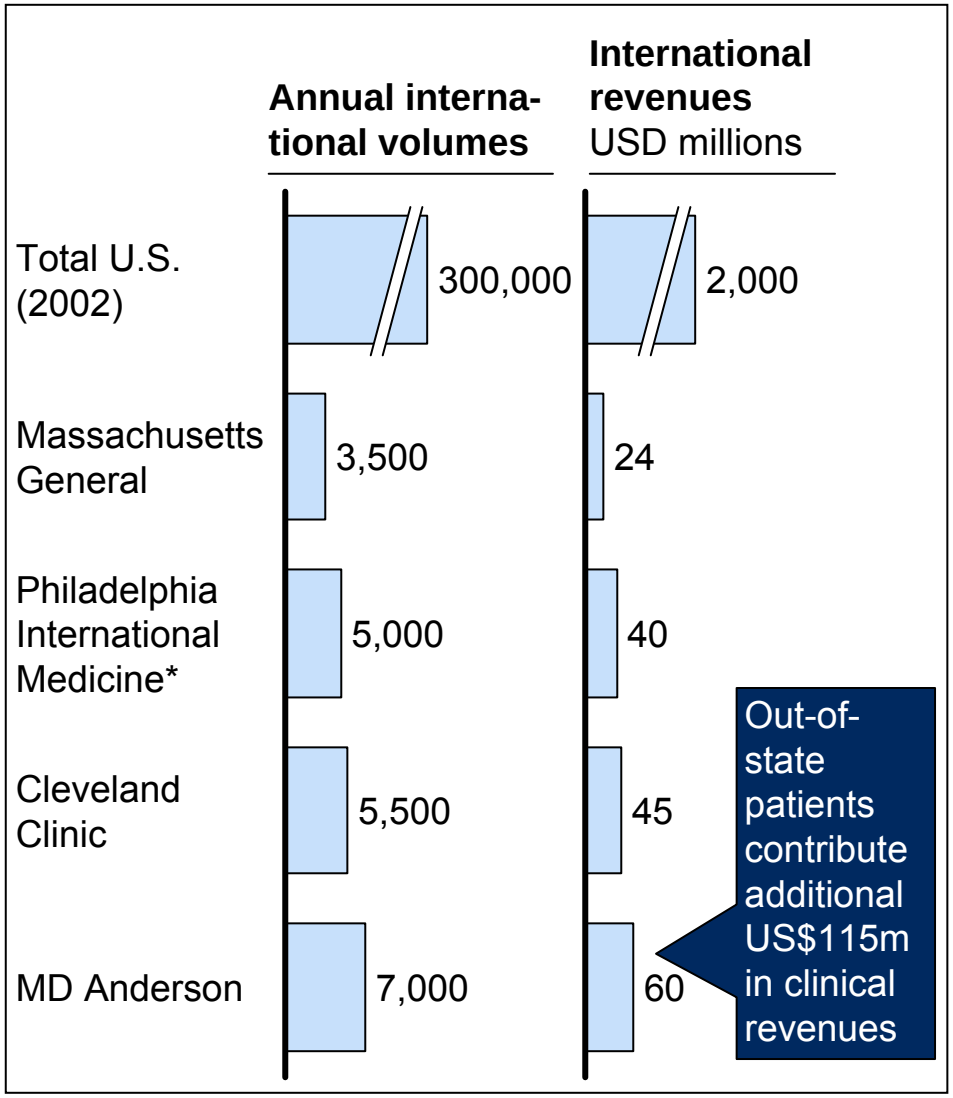
WHAT IS THE VALUE OF BUILDING AN AMC?

	Description
Economic value	▪ Create economic value by accelerating biomedical innovation and attracting high-value international patients
Talent retention & attraction	▪ Provide home for research and innovation-oriented clinicians in the system, who may otherwise leave ▪ Attract world-class talent ▪ Create additional jobs in the service sector
Social mission	▪ Improve quality of healthcare in areas of research and innovation focus, and make it accessible to the public
Reputation	▪ Enhance regional brand of the institution/ biomedical hub

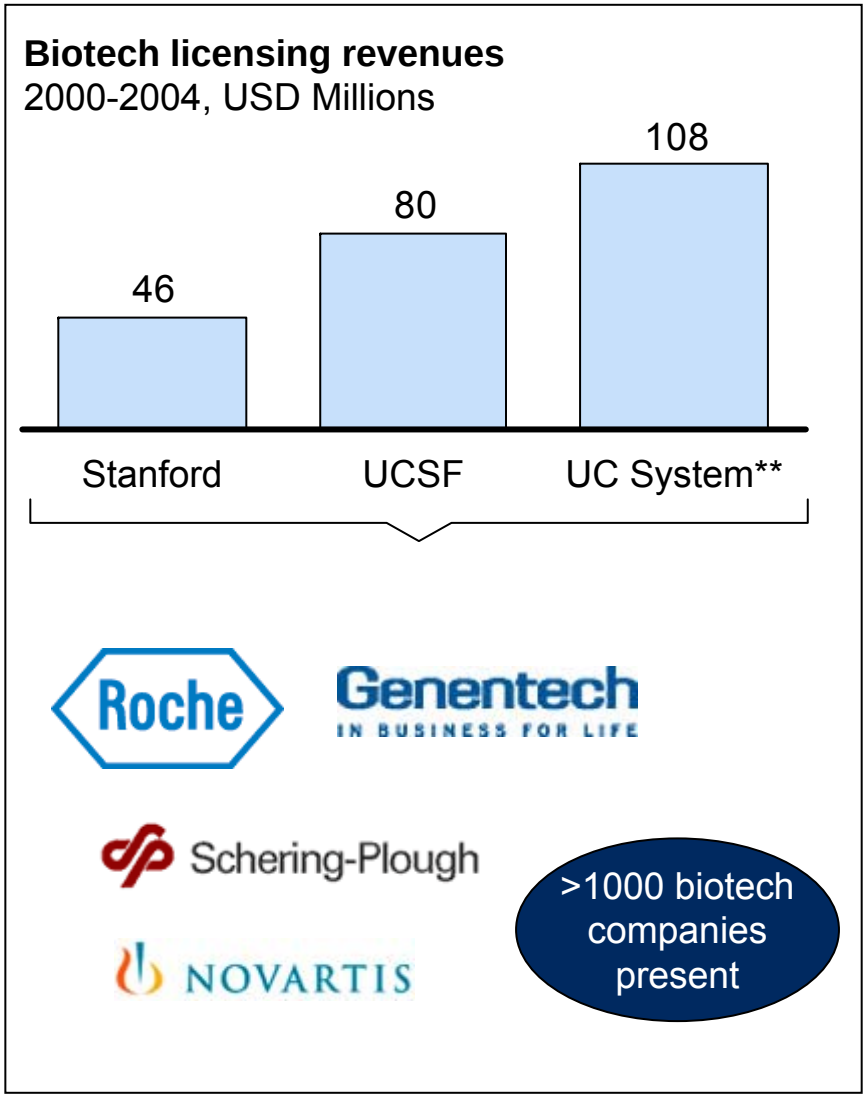
Sources: Team analysis

AMCs CAN CREATE REAL ECONOMIC VALUE

From high-value patient service



From product and device innovation



* Comprises Philadelphia University Hospital, Temple University Hospital, and the Children's Hospital of Philadelphia

** Does not include UCSF

Source: Manhattan Chamber of Commerce; MD Anderson; Portsmouth Herald; www.biospace.com; literature search; team analysis

DIFFERENT AMCs HAVE DIFFERENT APPROACHES TO VALUE-CREATION

2005

Hospital	US Ranking	No. of Beds	Patient revenues, US$m	Patient-related margin** %
Mayo Clinic*	2	2,544	4,480	7.0
UCLA	5	670	733	-18.3
UCSF	9	780	1,014	-2.0
Stanford	13	613	1,049	4.2

Key questions

- Do clinically focused AMCs (e.g. Mayo) have higher patient margins?
- Are innovation oriented AMCs (e.g. Stanford) subsidised by product revenues?
- How does funding play a part in an AMC's profit and loss?

* Figures are combined for all 5 Mayo Clinic hospitals
** May not include fixed cost allocations
Source: US News & World Report 2006; Annual reports; http://www.oshpd.state.ca.us/; team analysis

MOST AMCs RELY ON A COMPLEX ARRAY OF FUNDS, WITH SIGNIFICANT GOVERNMENT SUPPORT FOR RESEARCH

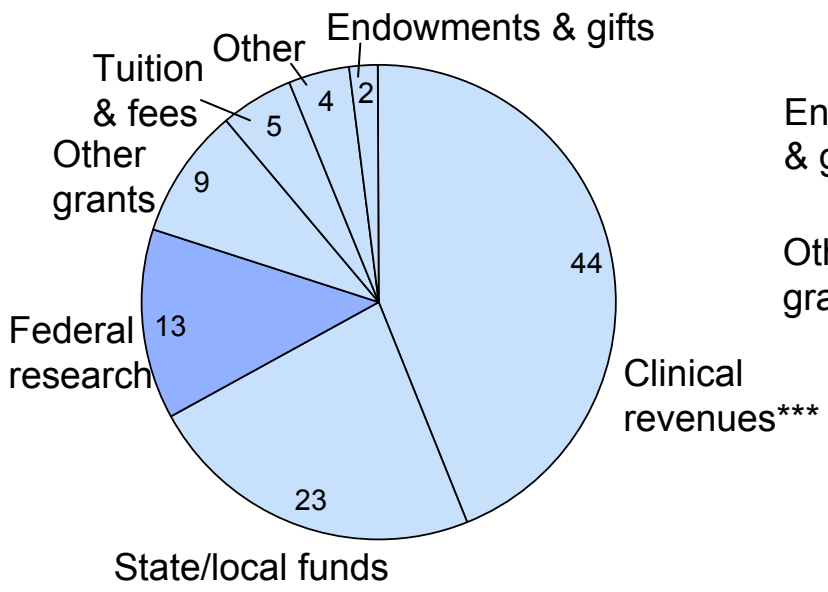
U.S. EXAMPLE

Percent

Community based*

Focused principally on training primary care physicians for the local community

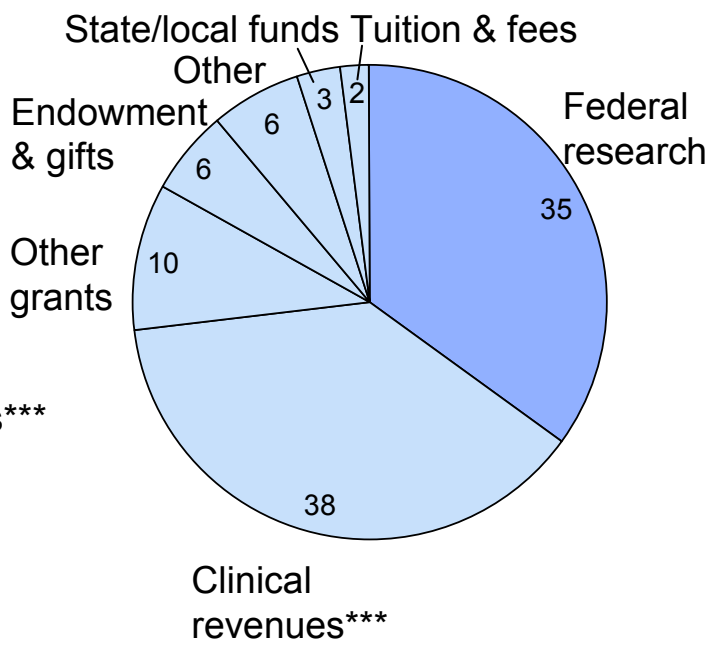
100%= $106 million



Research intensive**

Focused principally on conducting cutting edge medical research

100%= $926 million



- Research intensive AMCs spend up to 9 times as much as community based ones
- The NIH gave out $23.4b in research grants in 2005; 18% went to the top 10 recipients

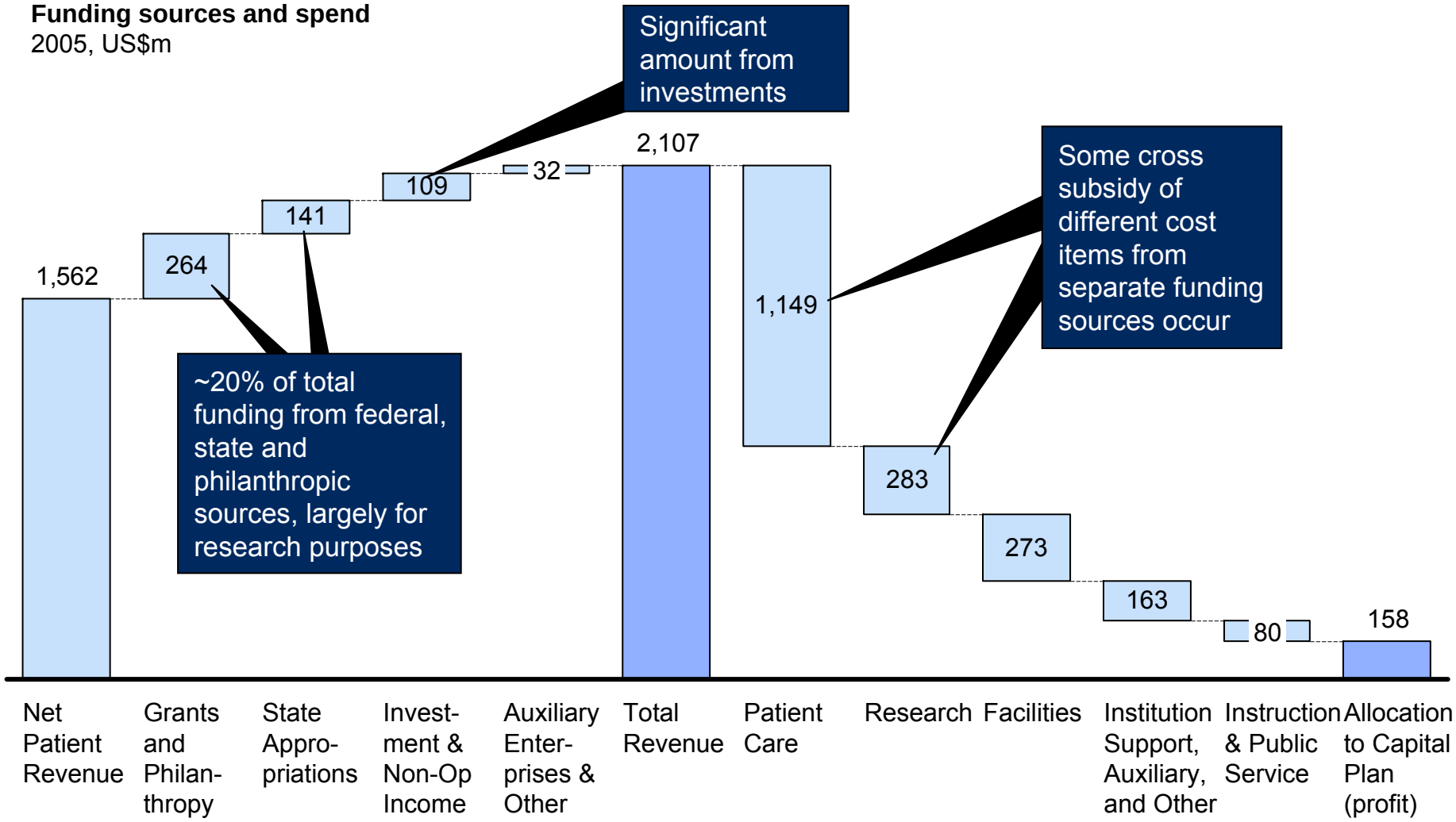
* 17 hospitals are community-based according to AAMC definition
** Defined as the top 20 recipients of NIH grant funding
*** Includes co-payment and private insurance payments
Source: AAMC, The Handbook of Academic Medicine, 2004

EXAMPLE OF HOW AN AMC USES ITS FUNDING SOURCES: MD ANDERSON

CASE STUDY

THE UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER

Funding sources and spend
2005, US$m



Source:MD Anderson annual report 2005

TODAY'S AGENDA

- Economics of AMCs
- **Success factors and models**
- Implications for building an AMC in Japan

WE HAVE TRIED TO CHARACTERIZE AMC'S INTO DIFFERENT MODELS, BUT MOST OF THEM HAVE SPECIFIC, UNIQUE CONTEXT

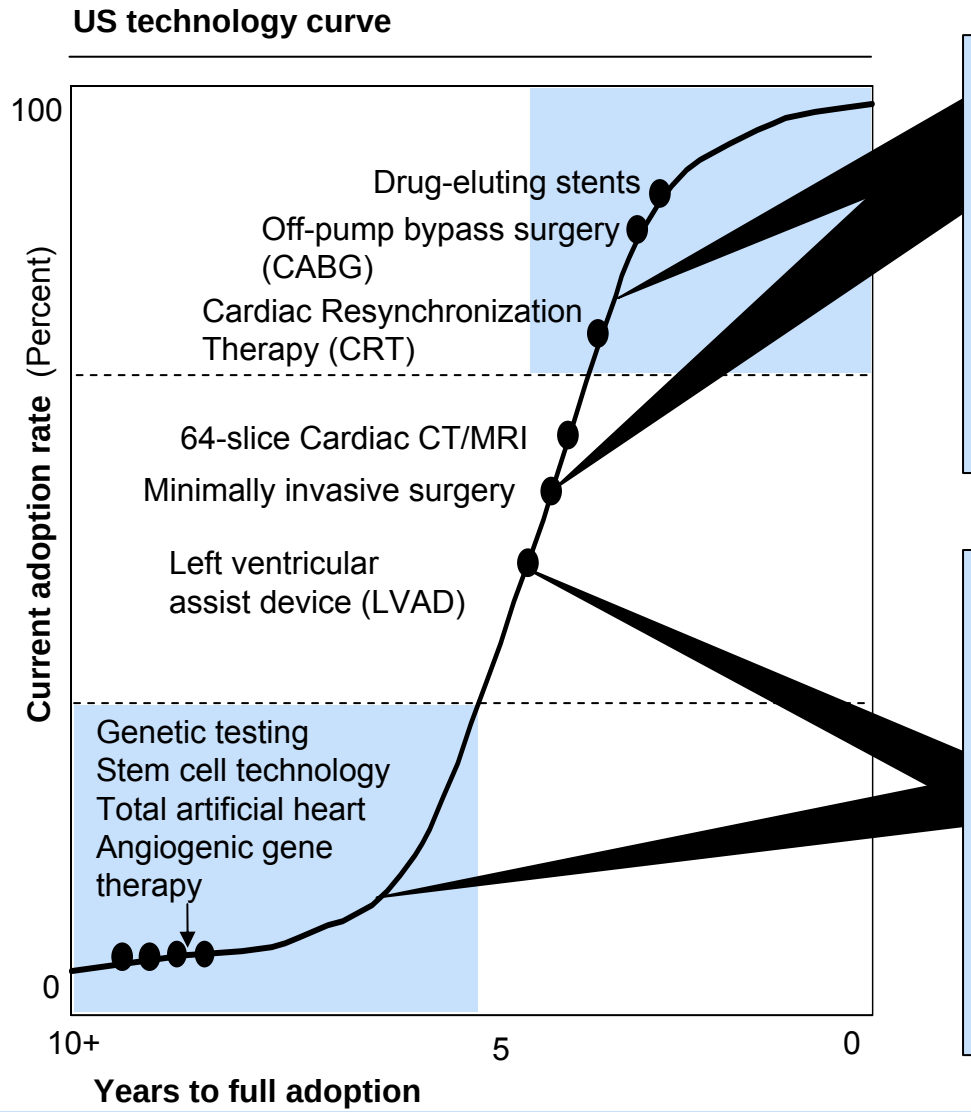
ILLUSTRATIVE

Common models	Description	Examples
"Broad clinical"	▪ Overall strategy: Often community focused entities with some exceptions, excellent in a broad range of specialties built over time ▪ Clinical: Multiple specialty strengths ▪ Research: Broad basic sciences and clinical research ▪ Teaching: Strong affiliations to one or two university-based medical schools	Mayo Clinic; Johns Hopkins Medicine; Massachusetts General Hospital; UCSF Medical Center
"Specialty focused"	▪ Overall strategy: Can be public or private hospitals; usually good in a range of specialties with excellence in 1-2 core clinical and research areas ▪ Clinical: Core specialty strength ▪ Research: Specialty or disease focused research ▪ Teaching: Affiliation to one or multiple medical schools	The University of Texas MD Anderson Cancer Center; Hospital for Special Surgery; H. Lee Moffitt Cancer Center & Research Institute; Cleveland Clinic
"Entrepreneurial"	▪ Overall strategy: Can be public or private hospitals, but often with strong private affiliations and entrepreneurial culture supported by VC industry ▪ Clinical: Core/ multiple specialty focus ▪ Research: Broad basic sciences and clinical research ▪ Teaching: Affiliation to one or multiple medical schools	Stanford Hospital & Clinics, Stanford University Medical Center; Weizmann Institute of Science

"When you've seen one AMC, you've seen one AMC"

Source: Team analysis

EACH AMC PLACES A DIFFERENT FOCUS ON CLINICAL SERVICE PROVISION AND DEPTH OF RESEARCH



Clinical service provision

- **Strong emphasis on patient care**
- **Inclination towards innovation in therapies/ procedures and/or surgical devices (depends on specialty)**
  - E.g. Mayo Clinic: Use of pharmaco-genomics - tailoring treatment to an individual's genetic makeup - to develop tests and treatments for inherited kidney disorders

Research depth

- **Strong emphasis on academia and basic science research**
- **Often prolific journal publishers and/or device/ drug innovators depending on clinical strengths**
  - E.g. Harvard: World's most prolific contributor to biomedical journals
  - E.g. Stanford: One of the world's most vibrant biomedical device innovation centers

Source: Team analysis

AMCs FORM THE CORE OF A WIDER "BIOMEDICAL HUB"

Hubs	AMCs present	Description
California, USA	UCSF Medical Center; Stanford Hospital & Clinics; Stanford University Medical Center; St. Mary's Medical Center CHW; University of California, San Diego Medical Center	▪ One of the world's largest biotech industry hub, driven by deep culture of research and product innovation in Stanford and strong VC presence ▪ Clinical strengths in endocrinology and neurology for UCSF and cardiology in Stanford; UCSD is world pioneer in pulmonary thrombosis
Boston Massachusetts, USA	Dana-Farber Cancer Institute; Brigham and Women's Hospital, A Teaching Affiliate of Harvard Medical School; Spaulding Rehabilitation Hospital Network; Massachusetts General Hospital; Children's Hospital Boston, The Hospital for Children; Beth Israel Deaconess Medical Center	▪ A combination of general and specialty hospitals creating a dynamic healthcare system which contributes $20b in total economic impact to the state of Massachusetts ▪ Collaboration and affiliation among some institutions (MGH, Brigham, Dana-Farber) as Partners Healthcare
London, UK	King's College London, University of London; Imperial College London; UCL	▪ The UK leads Europe in biotechnology, with 12% of the global pharmaceutical market ▪ Strength in research driven by universities: 200 technology life-science spin-offs from universities in 2004, and 9 IPOs with a combined value of >US$1.1b ▪ Nationwide research collaboration encouraged through the UK Clinical Research Network (UKCRN)
Israel	Hadassah Medical Organization; The Tel Aviv Sourasky Medical Center; Weizmann Institute of Science	▪ Two of Israel's most prominent medical centers located in Jerusalem (Hadassah) and Tel Aviv (Sourasky); ▪ Research collaboration with Weizmann, one of Israel's best known research institutes located in Rehovot ▪ National culture of research with strong VC industry supportive of medical device innovation in all AMCs ▪ Ranked No.1 in civilian expenditures on R&D at 4.6% of GDP, Israel is the largest biotech industry outside U.S.

Source: Interviews; literature search; team analysis

THREE KEY SUCCESS FACTORS COMMON TO TOP-TIER AMCs

1. Each of the elements of the triumvirate mission of AMCs – **teaching, research, clinical care – must be of world-class quality**

2. Top AMCs develop overarching strategies which excel along several dimensions, with clear mission and **specialized focus** on pursuing distinction in **specific academic research and/or clinical areas**

3. **Tight linkages among teaching, research and clinical care**, achieved with the help of "relationship enablers", such as governance, incentive structures, manpower policies and facilities/ infrastructure

Top-tier AMCs tend to create a rising tide of clinical quality which in turn is central to attracting patients who seek high-end, complex treatment

IT TAKES A LOT OF TIME, CAPABILITY BUILDING AND INVESTMENT TO BUILD A BIOMEDICAL HUB

ISRAEL CASE STUDY

Description

Time

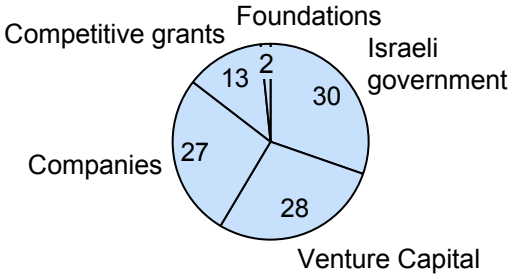
- **40 years**: Began in 1960s with the establishment of foreign pharmaceutical companies' subsidiaries
- **2000-2010:** Biotechnology plan officially launched as part of national agenda

Capabilities

- **"Natural" biotech talent** due to R&D demands of war and defence strategy: 22% of PhDs major in life sciences; 50% of research and 2/3 of biotech drugs are in neurology disorders, cancer and auto-immunology
- Teva, an Israeli generic pharmaceutical company, alone achieved global sales of $5.3b in 2005

Investment

- Annual national spend of more than **US$1b:**



- Office of the Chief Scientist (OCS) of the Ministry of Trade and Industry with yearly budget of $430m
- Government support through national technology incubators and private equity funding (Heznek)

- Israel is the world's top spender in civilian R&D, and produces the most medical device patents per capita

- Despite its earlier start and "natural" R&D capability advantage over Singapore, Israel still faces **several challenges in commercializing inventions**
  - "The country lacks the infrastructure to commercialize on a large scale" – *Milken Institute*
  - "Instead of supplying product to a US enterprise, VCs end up licensing the IP to maximize return on investments, so Israel ends up selling just the IP, which does not benefit the country" – *Jack Tawfik, MD, JANT Pharmacal Corp*

- **Without the right capabilities, investment, and commercial infrastructure, Singapore may face the same problems**

Source: Milken Institute; Team analysis

TODAY'S AGENDA

- Economics of AMCs
- Success factors and models
- **Implications for building an AMC in Japan**