

Research Council

October 5, 2015

- Please open all wrapped or sealed items in your lunch before the presentations begin.
- Please silence your cell phones & pagers. Thank you!

Annual Conversation with the MGH Research Community

**Peter L. Slavin, MD
MGH President**

*MGH Research Council
October 5, 2015*

Agenda

- Awards and Honors
- Research Funding
- Support for Researchers
- Challenges
- Looking Ahead

Awards and Honors

- **National Academy of Engineering**

Emery N. Brown, MD, PhD (Anesthesia)

- **National Academy of Sciences**

Jeannie Lee, M.D., Ph.D. (Molecular Biology)

- **2015 Joseph B. Martin Dean's Leadership Award for the Advancement of Women Faculty**

Merit Cudkowicz, MD (Neurology)

- **Smithsonian American Ingenuity Award**

Rudolph E. Tanzi, PhD (Neurology) & Doo Yeon Kim, PhD (Neurology)

- **Blavatnik National Awards for Young Scientists (Finalist)**

Hakho Lee, PhD (Center for Systems Biology)

Awards and Honors (cont'd)

- **Paul Marks Prize for Cancer Research**

Bradley Bernstein, MD, PhD (Pathology)

- **Endocrine Society's Laureate Outstanding Mentor Award**

Anne Klibanski, MD (Neuroendocrine)

- **John Eisenberg National Award for Career Achievement in Research**

Nancy Rigotti, MD (Internal Medicine)

- **Jacobson Innovation Award**

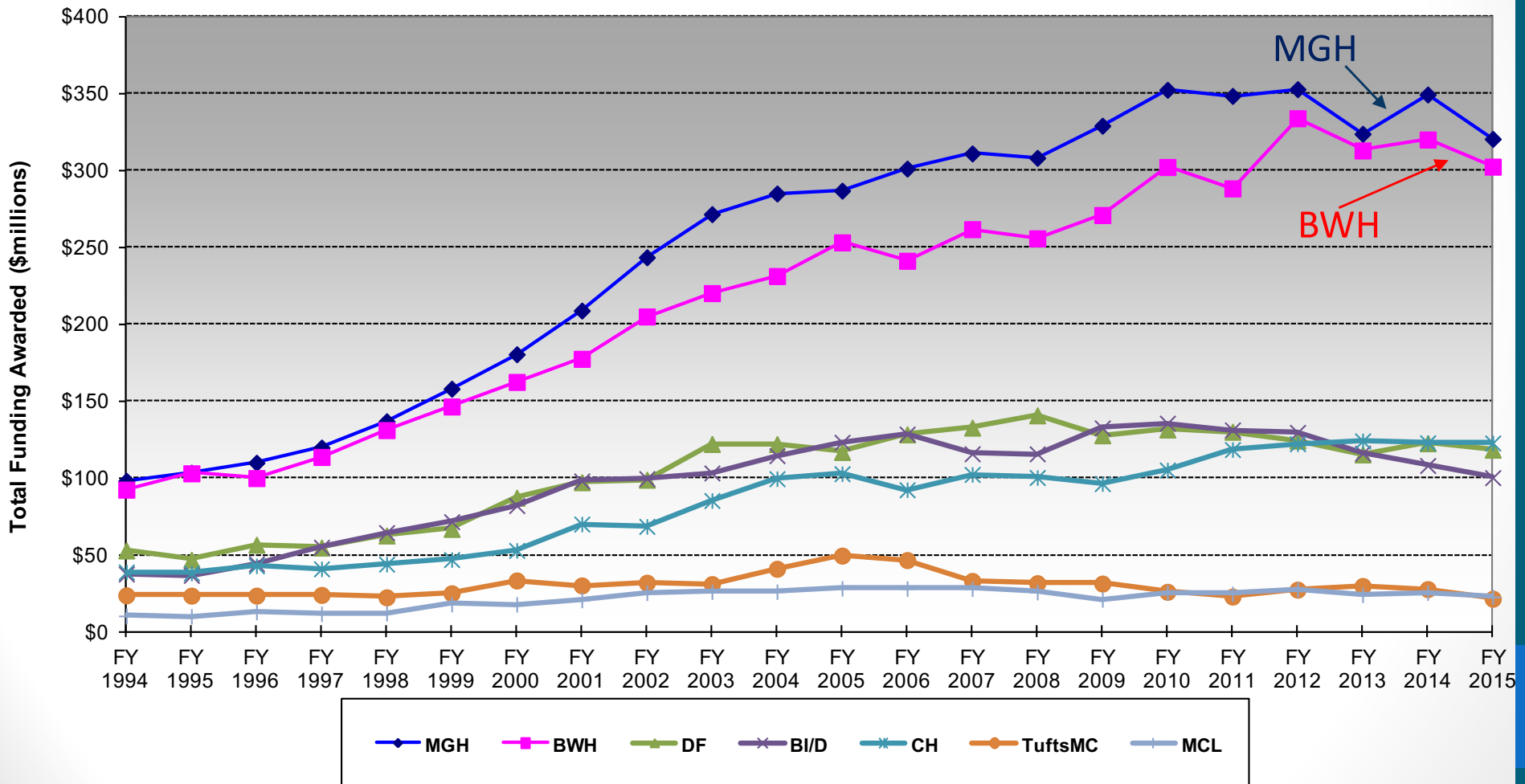
Joseph Vacanti, MD (Pediatric Surgery at MassGeneral Hospital *for Children*)

- **Time Magazine's "100 Most Influential People"**

Rudolph E. Tanzi, PhD (Neurology)

FY1994 – FY2015 NIH Extramural Awards to Top Local Independent Hospitals

FY 1994 - FY 2015* Local Hospitals
NIH Extramural Funding

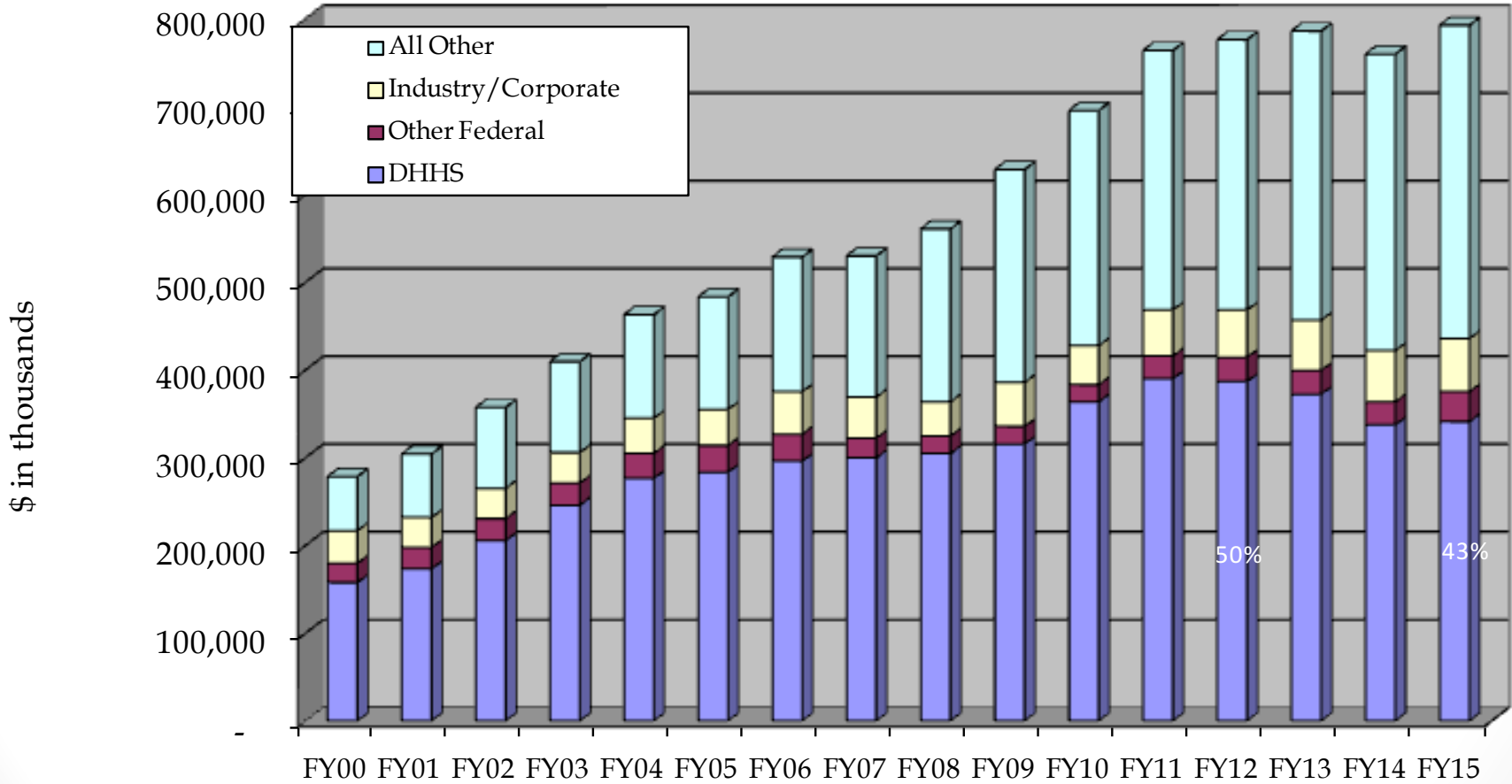


Note: FY15 through 9-7-15; when final, FY15 rankings and growth rates may change.

MGH Total Research Revenue Trend

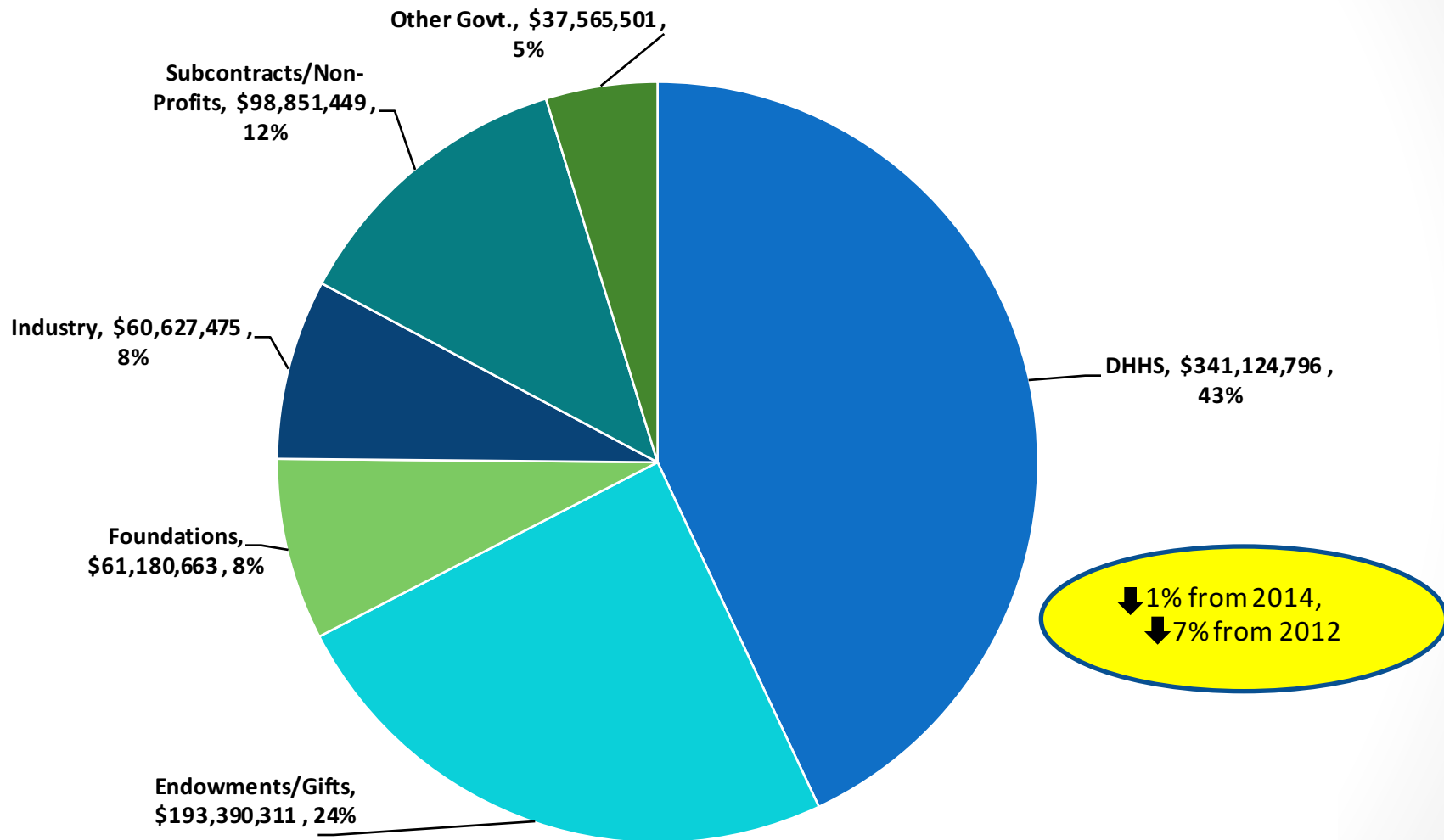
(Including Other Science)

MGH total (Direct + Indirect) research revenue has grown 185% since FY00 to est. \$793M in FY15



MGH Research by Sponsor

FY15 Direct and Indirect Revenues \$793M est.

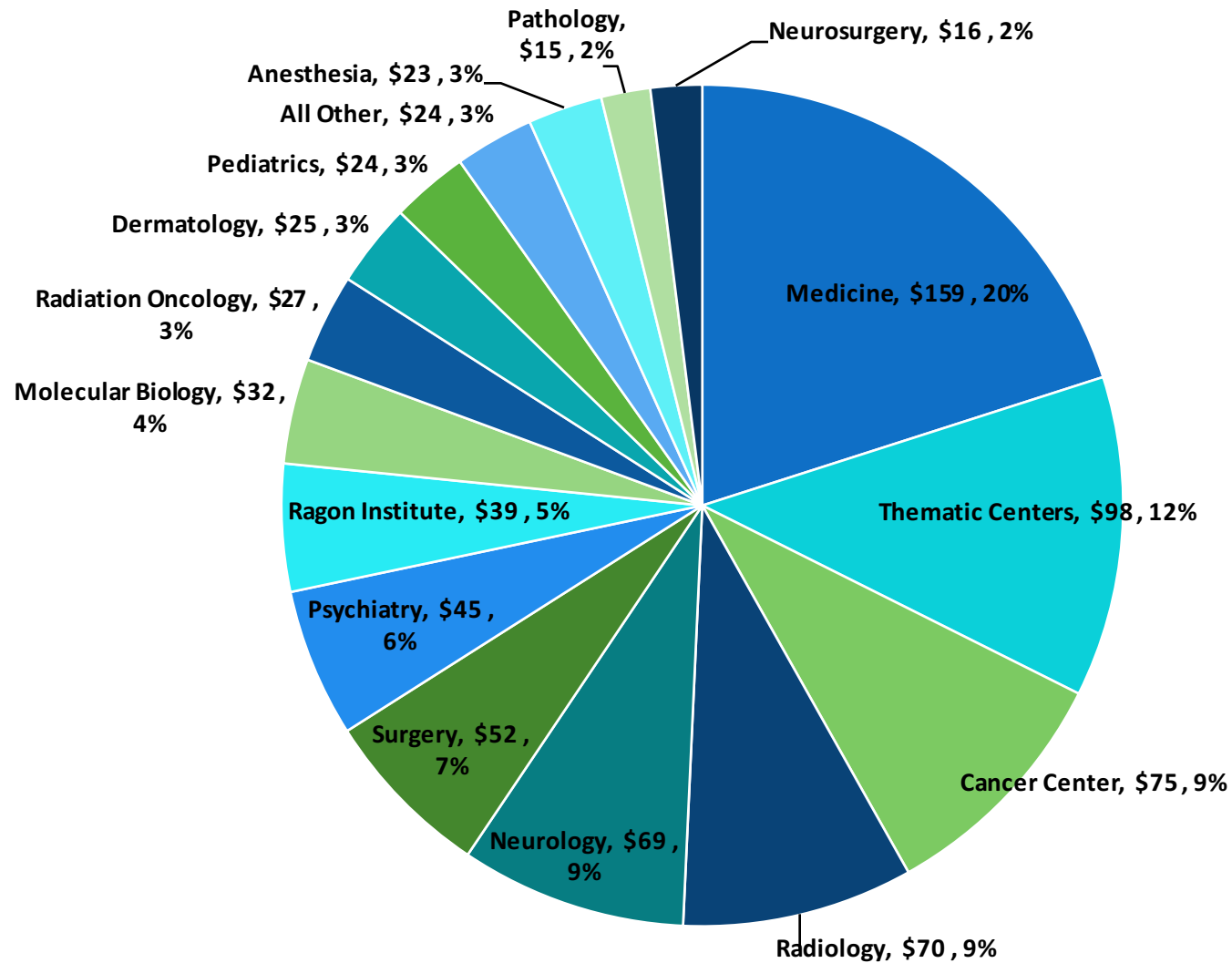


Note: Other Gov't includes Other Federal and State/Local

MGH Research by Department

FY15 Direct and Indirect Revenues \$793M est.

(Shown in \$Millions)



Proposals FY15 vs. FY14

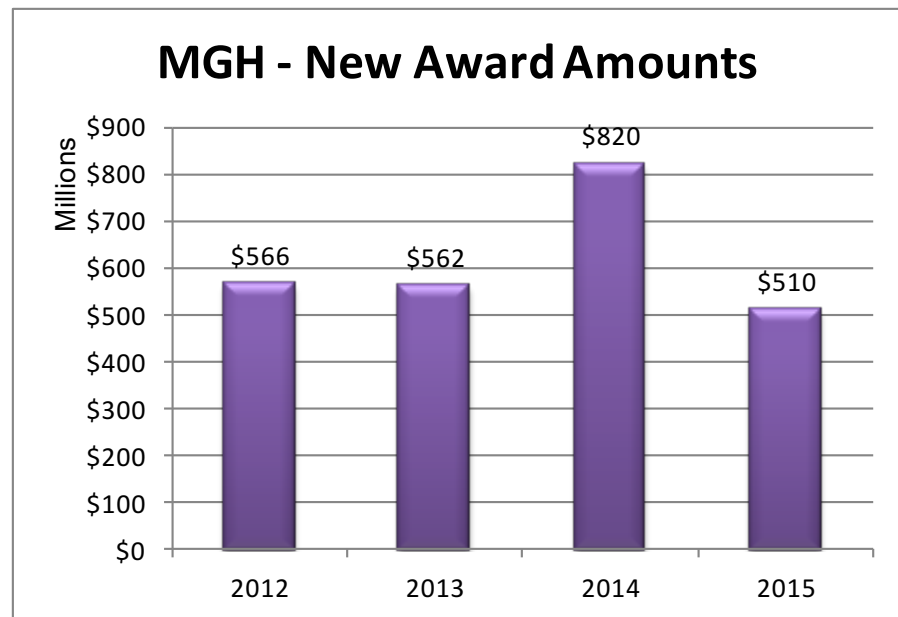
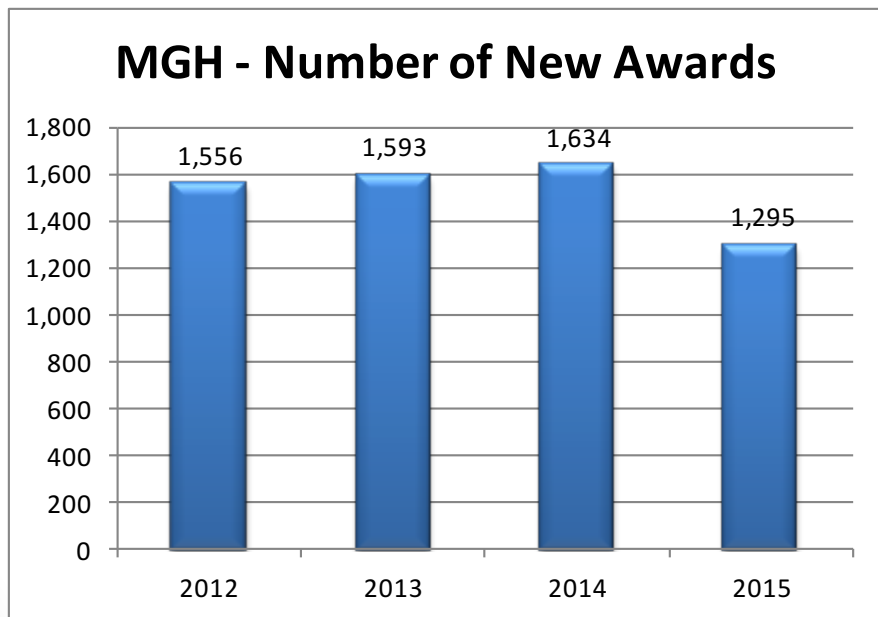
- 4,053 proposals submitted in through August FY15, up 2% versus all of FY14

Fiscal Year	DHHS	Foundations	Industry/ Corporate	Non-Profit	Other Federal	All Other Sponsors	Total
2014	1,018	651	448	1,277	173	407	3,974
2015	1,124	587	511	1,376	134	321	4,053
Difference	106	(64)	63	99	(39)	(86)	79
% Change	10%	-10%	14%	8%	-23%	-21%	2%

Notes:
 -All Other Sponsors include Internal, Miscellaneous, and state/local sponsors. Excludes confidentiality agreements.
 -FY15 figures are only through August. FY14 is the complete fiscal year

New Award Trends

- MGH has the highest number and amount of new awards of any institution within Partners.
- There are 1,295 new awards in FY15 (as of 9-14-15); however, this number should increase as additional awards are received in the last 2 weeks of September (September is typically the strongest award month of the year) and DHHS subcontracts from non-profit sponsors are received in the next 5 months.
- New awards amounts has decreased from last year. However, we expect new award budget amounts to be slightly higher than FY12 and FY13, after all FY15 awards have been received.



Notes:

- 1) New award amounts include total budget amounts for all years of project. New award volumes are based on the number of parent proposal awards.
- 2) New awards as of 9/15/15.

NIH Funding Market Share Trends

MGH accounts for 1.6% of the NIH Budget

BWH accounts for 1.5% of the NIH Budget

Partners overall accounts for 3.2% of the NIH Budget

Our share is increasing:

FY07 1.3%; FY13 1.5%; FY15 1.6%

FY15 NIH Extramural Awards Ranking: All Institutions (as of 9/7/2015)

FY14	FY15	ORGANIZATION	AWARDS	FUNDING
1	1	JOHNS HOPKINS UNIVERSITY	1112	\$524,929,237
2	2	UNIVERSITY OF CALIFORNIA, SAN FRANCISCO	1121	\$511,522,417
3	3	UNIVERSITY OF PENNSYLVANIA	1019	\$424,851,773
5	4	UNIVERSITY OF PITTSBURGH AT PITTSBURGH	891	\$403,981,009
6	5	UNIVERSITY OF MICHIGAN	970	\$401,531,748
4	6	UNIVERSITY OF WASHINGTON	820	\$390,938,068
8	7	STANFORD UNIVERSITY	828	\$366,653,020
7	8	UNIV OF NORTH CAROLINA CHAPEL HILL	809	\$356,895,029
10	9	WASHINGTON UNIVERSITY	776	\$354,452,607
9	10	UNIVERSITY OF CALIFORNIA SAN DIEGO	777	\$347,937,119
11	11	YALE UNIVERSITY	802	\$336,360,905
12	12	UNIVERSITY OF CALIFORNIA LOS ANGELES	798	\$329,556,464
13	13	MASSACHUSETTS GENERAL HOSPITAL	702	\$320,635,881
14	14	DUKE UNIVERSITY	670	\$318,262,878
15	15	BRIGHAM AND WOMEN'S HOSPITAL	497	\$302,596,219
16	16	COLUMBIA UNIVERSITY HEALTH SCIENCES	713	\$288,421,928
17	17	VANDERBILT UNIVERSITY	680	\$267,629,483
19	18	UNIVERSITY OF WISCONSIN-MADISON	568	\$253,726,516
18	19	EMORY UNIVERSITY	602	\$253,056,067
22	20	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	461	\$224,787,886

FY15 NIH Ranking: Independent Hospitals (as of 9/7/2015)

FY14	FY15	ORGANIZATION	AWARDS	FUNDING
1	1	MASSACHUSETTS GENERAL HOSPITAL	702	\$320,635,881
2	2	BRIGHAM AND WOMEN'S HOSPITAL	497	\$302,596,219
3	3	CHILDREN'S HOSPITAL CORPORATION	296	\$122,806,447
4	4	DANA-FARBER CANCER INST	206	\$118,425,313
6	5	BETH ISRAEL DEACONESS MEDICAL CENTER	218	\$100,272,323
5	6	CHILDREN'S HOSP OF PHILADELPHIA	179	\$96,762,929
7	7	CINCINNATI CHILDRENS HOSP MED CTR	227	\$89,788,516
8	8	ST. JUDE CHILDREN'S RESEARCH HOSPITAL	89	\$50,950,757
12	9	CEDARS-SINAI MEDICAL CENTER	87	\$38,658,278
9	10	NEW YORK STATE PSYCHIATRIC INSTITUTE	85	\$38,307,094
10	11	SEATTLE CHILDREN'S HOSPITAL	78	\$35,386,632
16	12	NATIONAL JEWISH HEALTH	51	\$32,846,122
11	13	BOSTON MEDICAL CENTER	72	\$29,802,297
15	14	ROSWELL PARK CANCER INSTITUTE CORP	66	\$28,221,593
14	15	MCLEAN HOSPITAL	75	\$22,700,748
17	16	RHODE ISLAND HOSPITAL	62	\$22,598,199
13	17	TUFTS MEDICAL CENTER	39	\$21,491,077
18	18	CHILDREN'S HOSPITAL OF LOS ANGELES	45	\$19,952,300
19	19	MASSACHUSETTS EYE AND EAR INFIRMARY	39	\$18,674,077
21	20	HENRY FORD HEALTH SYSTEM	30	\$14,656,374

Support for Researchers

Faculty Support

- **Special Grants Program for Faculty**

- Goodman Award: 1 @ 300K
- Martin Prizes (basic/clinical): 2 @ 100K
- Claflin Awards: 5 @ \$100K
- Multicultural Awards: 2 @120K

- **Postdoctoral Fellowships**

- Tosteson and Fund for Medical Discovery (FMD) Awards
 - 22 Awards @ 40K each
 - Clinical Research FMD – 4 awards @ \$40K

- **ECOR Institutional Support**

- For Shared Instrumentation Grant (SIG) applications
- FY15 budget – \$500,000

Support for Research Programs

- **Interim Support Fund (ISF)**
 - Provides funding to bridge programs with grant scores that are good but are not fundable
 - The number of worthy applications has increased as the pay line at NIH has decreased
 - NIH now commonly does not fund the first competing submission (the 'A') but funds the second ('A1') creating a situation where funding gaps are becoming the norm
- In FY15, we awarded \$7.6M to 87 investigators

Return on Investment

$$\text{ROI} = \frac{\text{Gain from Investment} - \text{Cost of Investment}}{\text{Cost of Investment}}$$

ECOR Grants

NIH Grants

	Grants	Total ECOR Awarded	Grants	Total NIH Awarded	ROI
Formulaic	251	\$15,611,250	151	\$253,009,527	15:1
Deliberative	354	\$24,612,764	115	\$169,759,499	6:1
Total	605	\$40,224,014	266	\$422,769,026	10:1

ISF Awards and NIH Funds Received from 2006 – September 2015

MGH Scholars Launched in 2011

Goal: support outstanding MGH investigators doing basic, translational and clinical research

- 36 Scholars named in last five years
 - 5 Scholars in May 2011
 - 8 Scholars in May 2012
 - 7 Scholars in March 2013 (3 more named, but moved)
 - 8 Scholars in March 2014
 - 8 Scholars in March 2015
- Awards of \$100,000 per year for 5 years
- Multi-level selection process
- Future: Expect to continue with *at least 5* per year in next several years

2015 MGH Research Scholars



Harald Ott, MD

Assistant Professor, Center for Regenerative
Medicine/Surgery

*“Organ Engineering Based on Native Matrix and Patient
Derived Cells”*



Mikael Pittet, PhD

Associate Professor, Center for Systems Biology/Radiology

“Manipulating cancer-host cell interactions”



Mark Poznansky, MD, PhD

Associate Professor, Infectious Disease

*“Rapid Vaccine and Immunotherapy Development for
Emerging Infectious Diseases”*

2015 MGH Research Scholars



Sridhar Ramaswamy, MD
Associate Professor, MGH Cancer Center
“Targeting Sleeper Cancer Cells”



Michael Talkowski, PhD
Assistant Professor, Center for Human Genetic
Research/Neurology
*“Translational Genomics in the Laboratory and in the
Clinic”*



Elsie Taveras, MD, MPH
Associate Professor, Pediatrics
*“Altering Early-Life Systems to Prevent Obesity among
Vulnerable Populations”*

2015 MGH Research Scholars



Lawrence Wald, PhD

Associate Professor, Martinos Center/Radiology

“Magnetic Particle Imaging for Breast Cancer Screening and Monitoring”



Rochelle Walensky, MD, MPH

Professor, Infectious Disease

“Novel Approaches to Clinical Trial Design and Development”

Funding the MGH Research Scholars Program

- Launched in 2011 with an anonymous donation of \$10 million, as a matching incentive to encourage “naming” gifts of \$500,000 or greater
- Since 2011 an additional \$9 million has been raised

Program Challenges

- **Sustainability:** Need to average at least \$2.5 million per year in donations long term

Overall Challenges

- **Reduction in NIH Funding**
 - Ongoing, MGH holding its own
- **Hospital Budget**
 - FY15 results: finished below budget and expect similar challenges in FY16
 1. Shift from commercial to government payers
 2. Reimbursement rates lower than inflation
 3. Increase in expenses (drugs and devices)
- **Continuing challenges in political and regulatory environment**

Looking Ahead

- **MGH-MIT Strategic Partnership**
- **Strategic Planning**
 - **Launching the MGH Research Institute!**

MGH-MIT Strategic Partnership: Challenge Grants

Rationale

- MGH and MIT aim to bring together approaches from engineering and basic science with clinical medicine
- The Ragon Institute is proof of concept of the this paradigm
- Magnet for philanthropic fund-raising and industrial support

Grand Challenge 1: Diagnostics

Goal: Make diagnosis cost-effective and accurate, and guide individual clinical decisions based on real-time monitoring and massive patient data sets.

Round 1

- Received **44** Letters of Intent
- Received **33** Applications
Awarded **6** Grants

Round 2

- Received **20** Letters of Intent
- Received **16** Applications
- Awarded **2** Grants

Grand Challenge 1 – Round 1

Grants Awarded

Large Grant - \$150,000 for up to 2 years

- Herbert Y. Lin, MD, PhD, FASN (Renal) & Michael J. Cima, PhD
- Anand Dighe, MD, PhD (Pathology) & Peter Szolovits, PhD

Small - \$50,000 for 1 year

- Michael Filbin, MD (ED) & Thomas Heldt, PhD
- Raymond Chung, MD (GI) & Sangeeta Bhatia, MD, PhD
- Matt Bianchi, MD, PhD (Neurology) & Dina Katabi, PhD
- Anthony Samir MD, MPH (Radiology) & Brian Anthony, PhD

Grand Challenge 1 – Round 2

Grants Awarded

Large Grant - \$137,500 for up to 2 years

- **David Hooper, MD (Infectious Disease) & John Gutttag, PhD**
- **Jonathan Alpert MD, PhD (Psychiatry) & Rosalind Picard, ScD**

Grand Challenge 3 : Neurosciences

Goal: Develop joint ventures which link basic and clinical research in order to accelerate progress towards more effective diagnostic approaches and therapies in clinical neuroscience.

- Received **46** Letters of Intent
- Received **43** Applications
- Awarded **6** Grants

Grand Challenge 3

Grants Awarded

Large Grant - \$150,000 for up to 2 years

- Klaus van Leyen, PhD (Radiology) & Mounqi Bawendi, PhD
- Dara Manoach, PhD (Psychiatry) & Matt Wilson, PhD

Small - \$50,000 for 1 year

- Ovidiu Andronesi, MD, PhD (Radiology) & Elfar Adalsteinsson, PhD
- Peter Caravan, PhD (Radiology) & Alan Jasanoff, PhD
- Eva-Maria Ratai, PhD (Radiology), Nancy Kanwisher, PhD & Caroline Robertson, PhD
- Alik Widge, MD, PhD (Psychiatry) & Earl Miller, PhD

Strategic Planning Implementation – The Research Institute

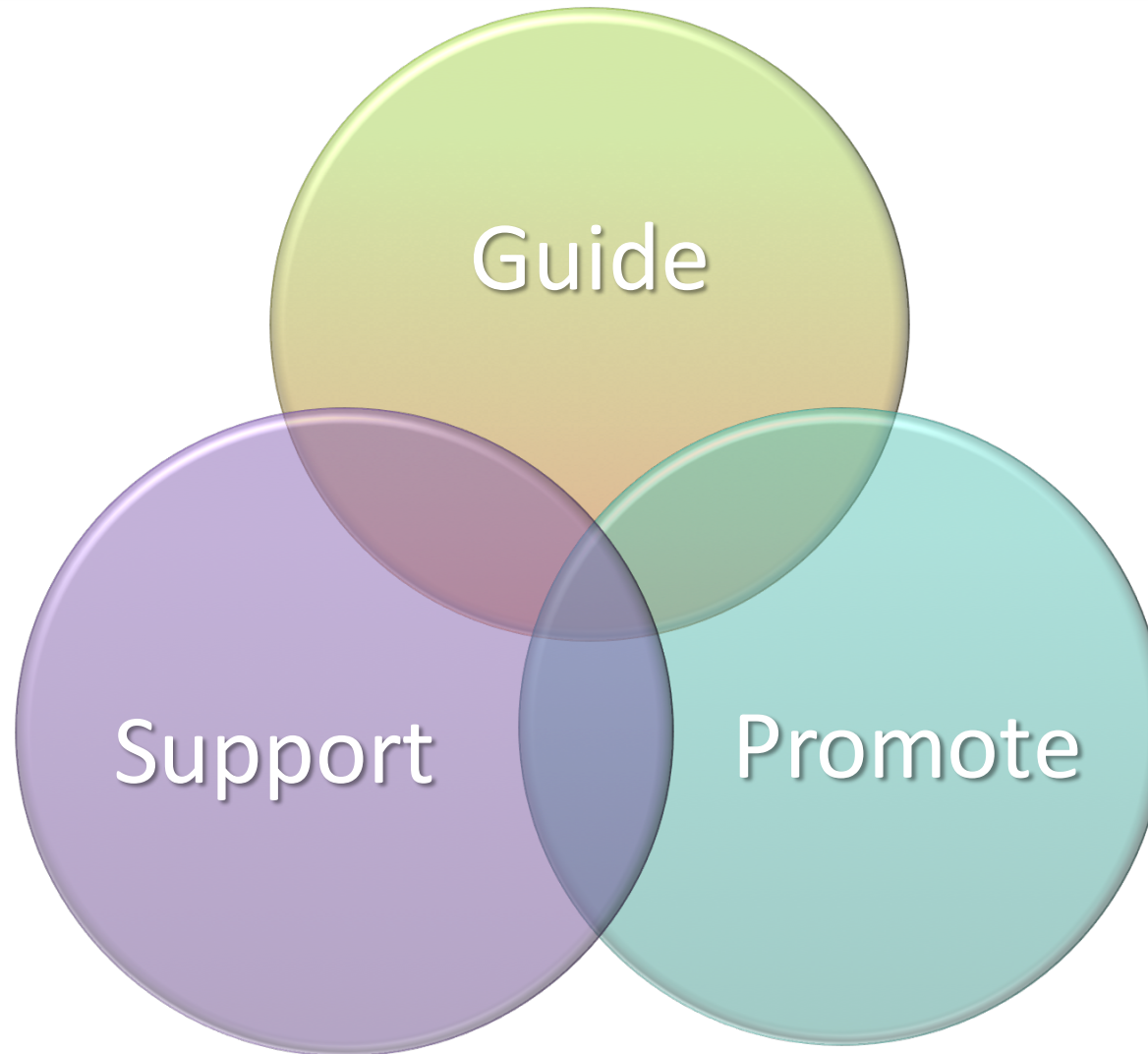


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Driven by hope.

The Mission of the Research Institute

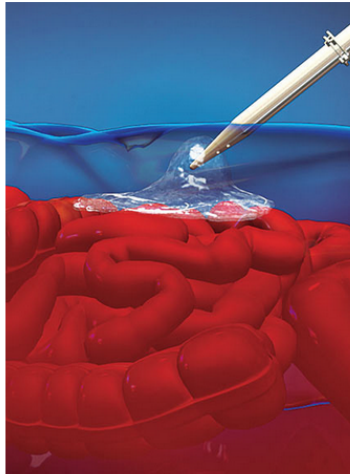


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proto

MASSACHUSETTS GENERAL HOSPITAL // DISPATCHES FROM THE FRONTIERS OF MEDICINE



PUBLISHED ON JUN 10, 2015

TECHNOLOGY

The Foam of Life

A new foam technology might prolong life for those wounded on the battlefield.

It takes a full hour, on average, for a soldier who has been wounded to arrive at a medical facility for treatment. By then, the soldier is often beyond saving, frequently because of internal **bleeding**.

David King, a trauma and acute care surgeon at Massachusetts General Hospital and combat surgeon for the US Joint Special Operations Command, has led an interdisciplinary collaboration to develop a technology that can help: ResQFoam. This trauma foam is created when two liquids are injected into the abdomen where they combine and expand to 35 times their original volume. The foam applies pressure to internal organs and staunches internal bleeding.



MGH Researcher's Diabetes Quest Takes Big Step...

Published 2 months ago by Albert McKeon in [Diabetes](#), [Donor Recognition](#), [Medical Research](#)

The FDA approves the second phase of Dr. Denise Faustman's clinical testing of a type 1 diabetes vaccine, an exciting next step in her pursuit of a therapy to reverse the disease.

 **Massachusetts General Hospital**
Published by Christina Lally [?] · September 23 at 8:58am · 🌐

Imagine your doctor could take some of your cells, slide them into a compartment on a smartphone and tell you if you had cancer in just an hour. A team at MGH has created such a device.



Smartphone Device Can Quickly Diagnosis Cancer
MGH researchers have developed a smartphone device that can diagnosis cancer and, in the process, reduce patients' anxiety and improve access to care.
GIVING.MASSGENERAL.ORG

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 **Chris O'Neil** first medical tricorder?
Like · Reply · 17 hrs

 **Anne Leoffler Schuler** Unbelievable, thank you Brilliant Scientists!!
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58.1K People Reached **2.7K** Post Clicks

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Partners Biobank at MGH

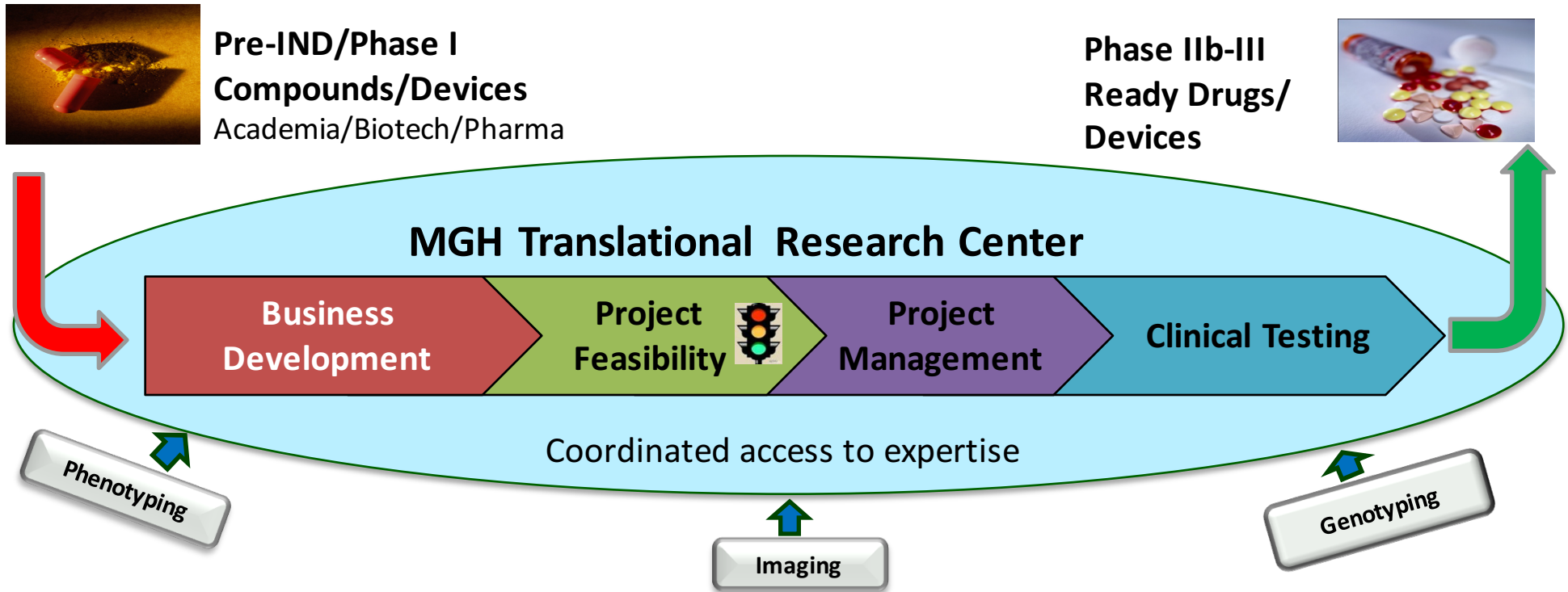
- Over **32,000** consented participants
- Adding ~1000 consented patients per month
- New Yawkey 3 Biobank phlebotomy lab opening this week
- Genotyping of the first 5,000 samples is complete and will be available to investigators in late fall. A total of 25,000 samples will be genotyped by spring of 2017.
- biobank@partners.org

“Discovery Starts With You”



“Research Gems”

MGH Translational Research Center (TRC)



UNDER CONSTRUCTION ON WHITE 12

Division of Clinical Research (DCR)



Mission: Increase the **quantity, quality and efficiency** of translating basic science advances into improved care for our patients

Contact us: <http://www.massgeneral.org/research/dcr>



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Questions?

