

The Sheba *Institute of Health* *SIH*

Knowing What We Are Good At
And Doing it Best



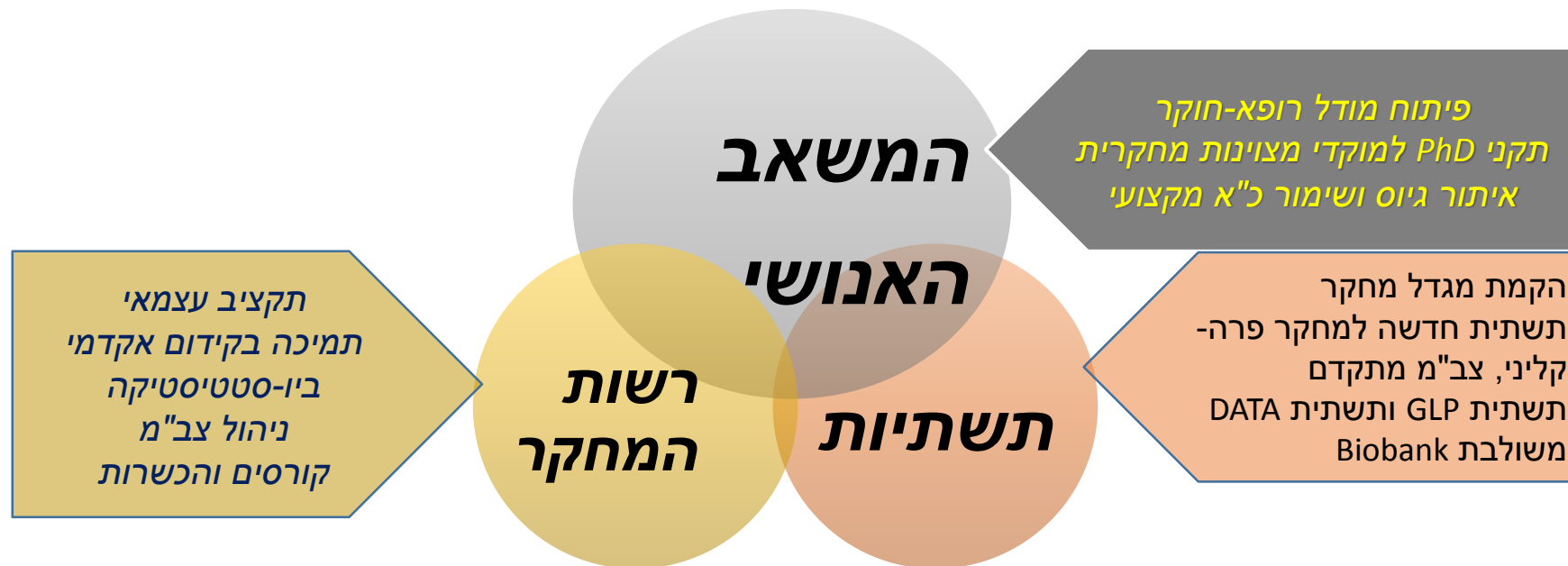
Outline

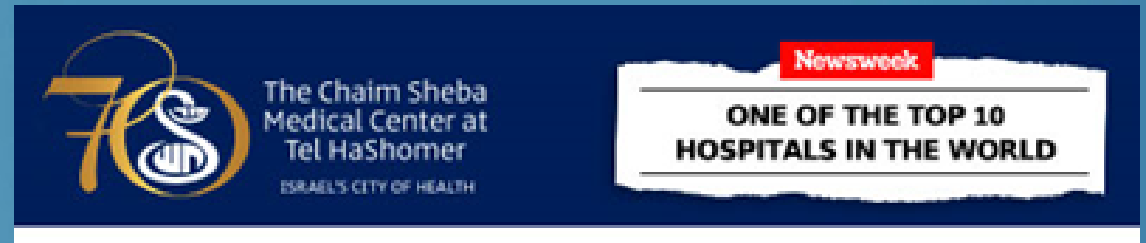
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- 01 Our vision
 - 02 Terminology & Definitions:
Biomedical Research vs. Life Sciences
 - 03 Global cutting edge trends in
biomedical research
 - 04 Where does Sheba stand?

חזון הקמת SIH - Sheba Institute of Health

SIH יוביל מחקר ביו-רפואי פורץ דרך וממוקד מטופל, וימקם את המרכז הרפואי שיבא כמוביל לאומי ובינלאומי בחדשנות רפואית ומחקרית

המרכז יהווה מוקד משיכה לרופאים וחוקרים מצטיינים, ולשיתופי פעולה עם האקדמיה, התעשייה, הקהילה וציבור המטופלים





Sheba Medical Center—or Tel HaShomer Hospital—in Ramat Gan is a leader in medical science and biotechnical innovation, both in the Middle East and worldwide. The center's collaborations with international parties have advanced innovative medical practices, hospital systems and biotechnology. The tertiary referral hospital, affiliated with Tel Aviv University, includes centers for nearly all medical divisions and specialties, and serves over 1 million patients per year. More than 25 percent of all Israeli medical clinical research takes place at its state-of-the-art facilities, and as a hospital it works with nearly every Israeli medical institute to educate students and advance the future of the medical profession.

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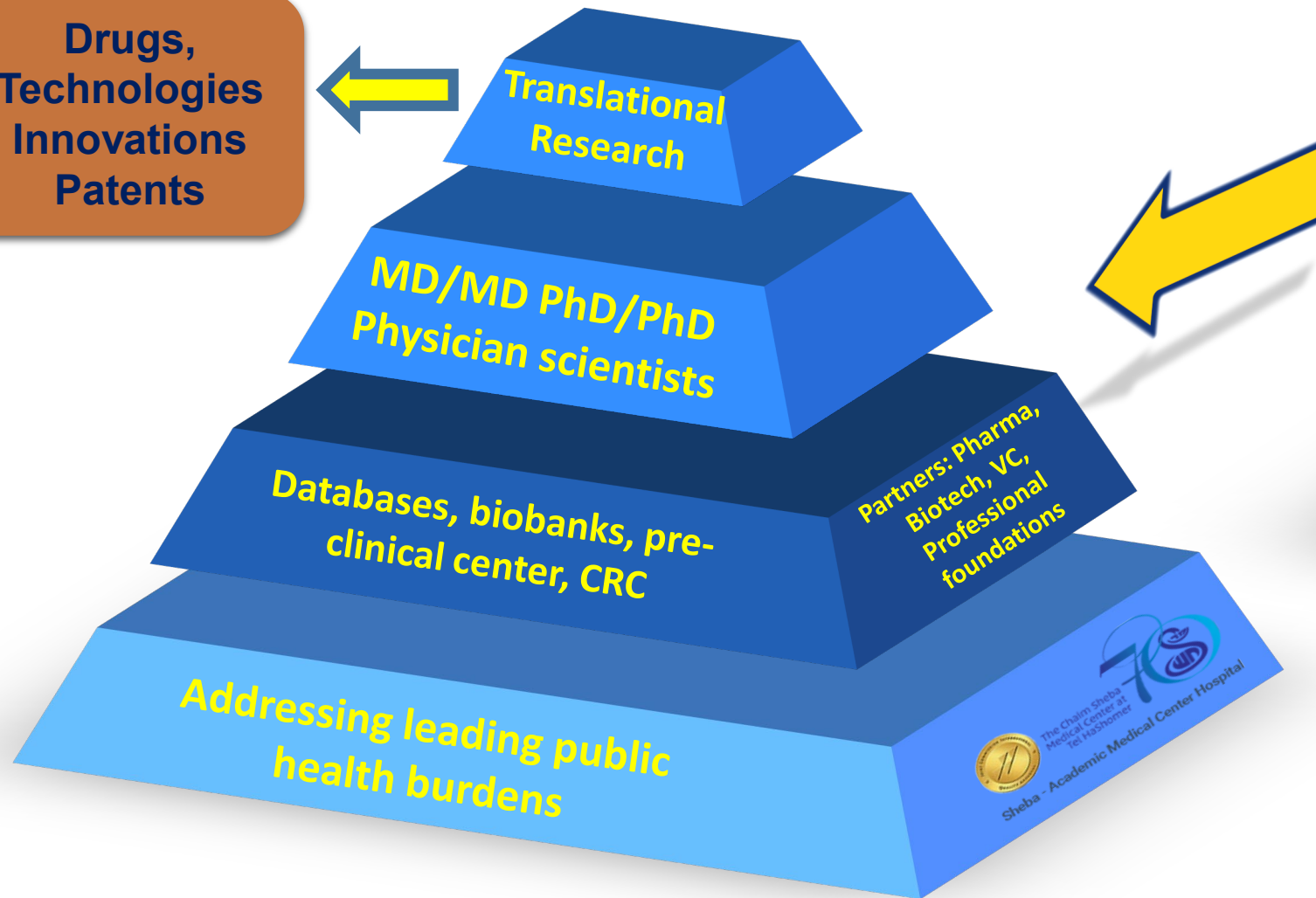


Question 1:

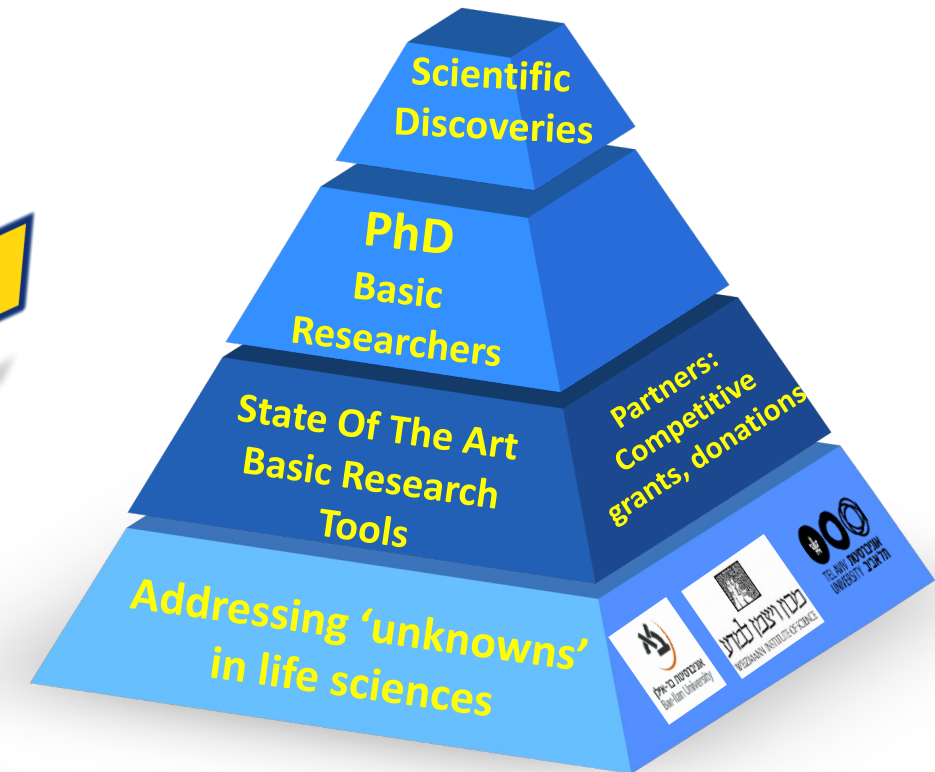
What are the differences between biomedical research and life sciences ?

Sheba Institute of Health SIH

Drugs,
Technologies
Innovations
Patents



Life Sciences



The basis for both 'pyramids': Strong basic research capabilities.
Tools: Researchers, in-vivo & in-vitro infrastructure, core facilities

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A close-up, profile view of a female scientist with blonde hair, wearing a white lab coat, a blue surgical mask, and clear safety glasses. She is holding a glass test tube with a pipette tip, and a blue liquid is being dispensed into it. The background is a blurred laboratory setting with various pieces of equipment.

Question 2:

What are the global trends in biomedical research?

Global Biomedical Research

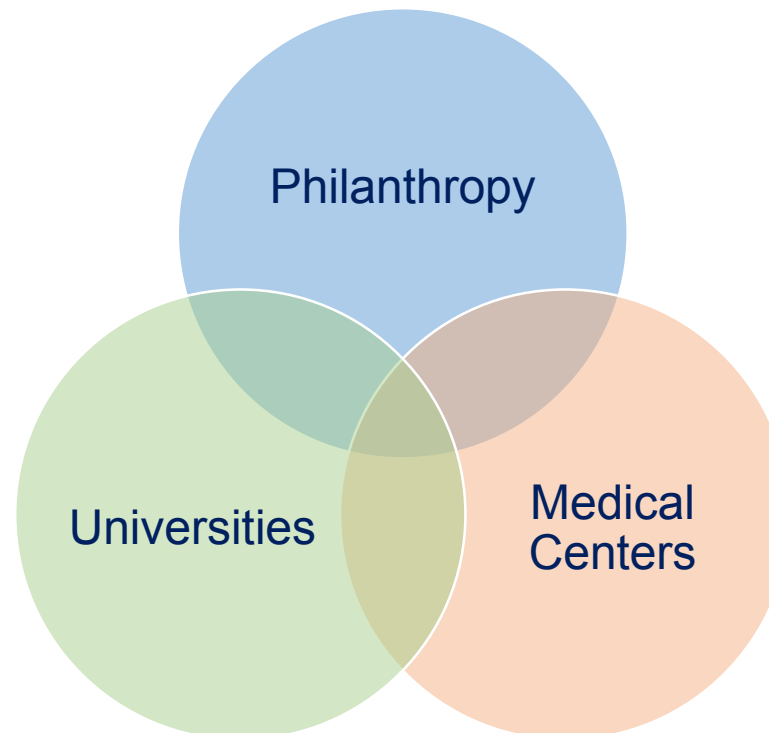
- Advancing biomedical research is the main focus of national health institutes, foundations and medical centers/universities
- In recent years many BRCs established jointly by universities and medical centers
- A third component : non-profit organizations or industry
- Focus is on transformative, translational research for novel therapeutics/diagnostics





Example 1

- The vision -a new organization that is open, collaborative, cross-disciplinary and able to organize projects on any scale.
- Initiated by philanthropists.
- Participating institutions: MIT, the Whitehead Institute, Harvard and the Harvard-affiliated hospitals.

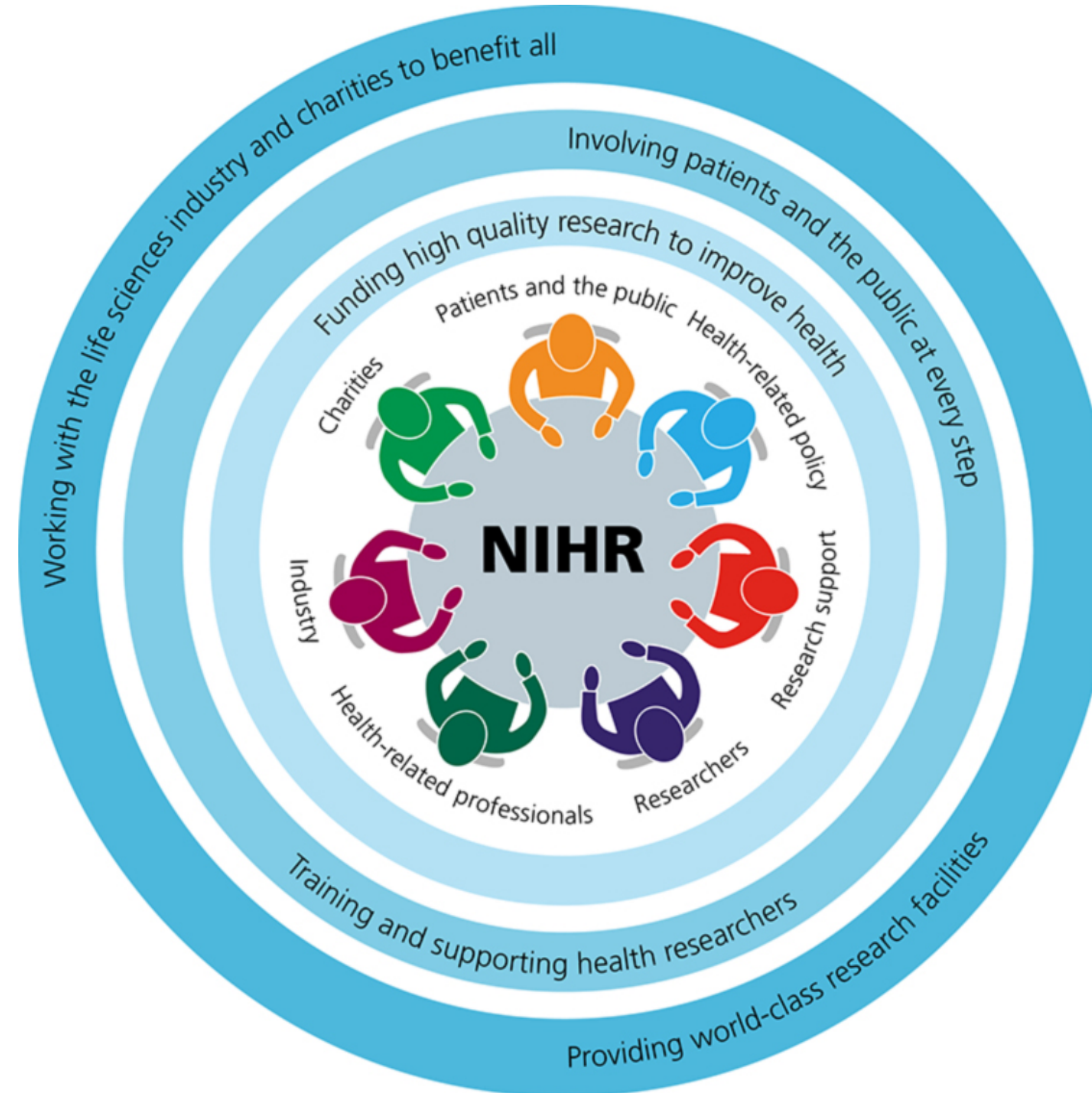




Example 2

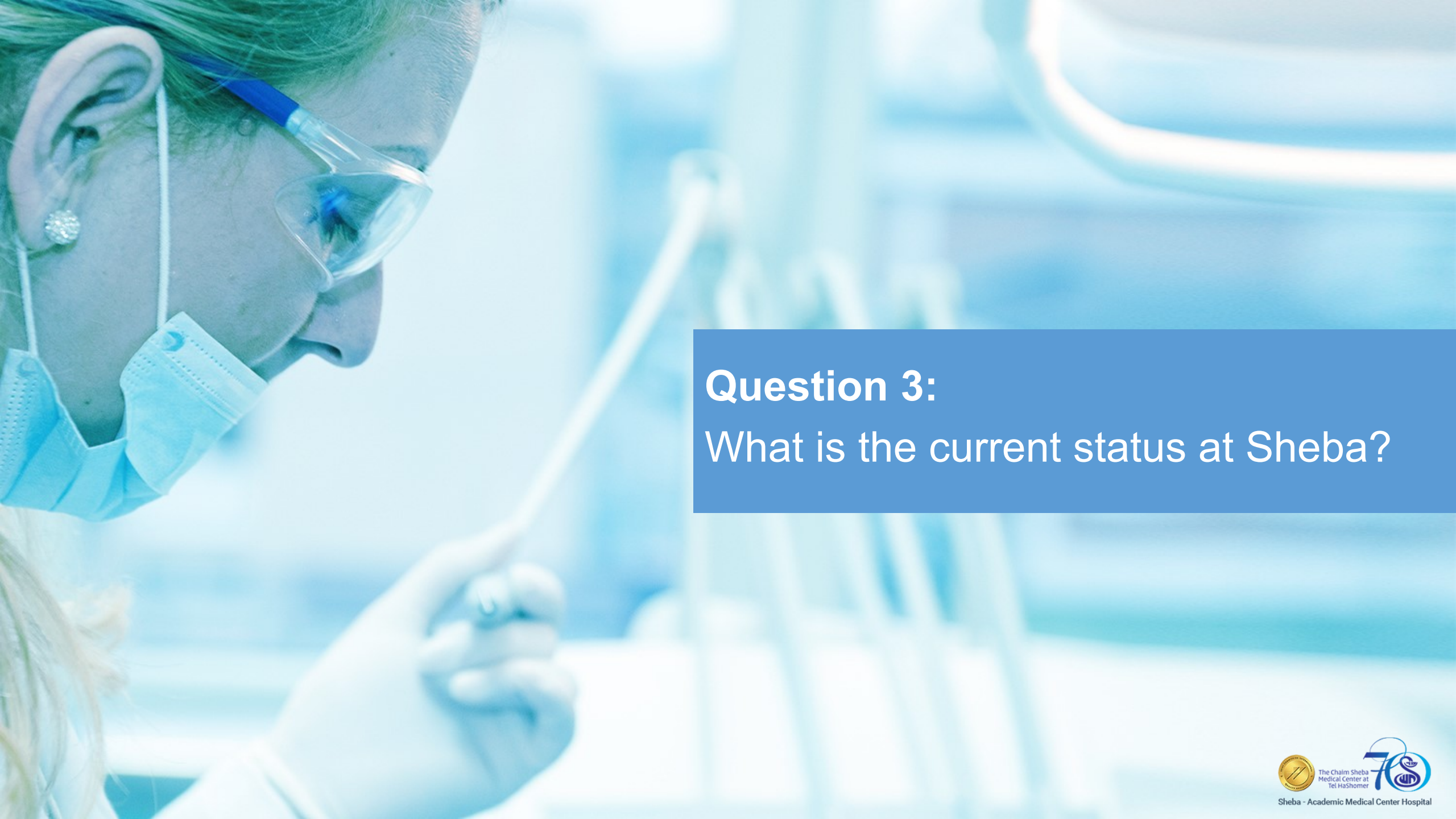
NHS

National Institute for
Health Research



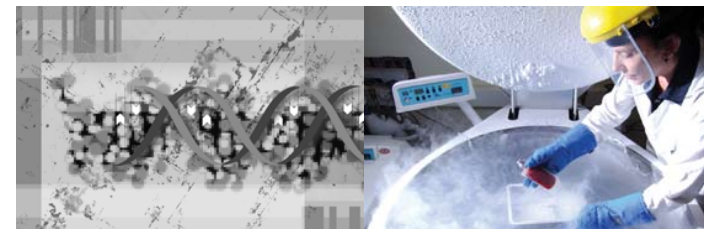
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Question 3:
What is the current status at Sheba?

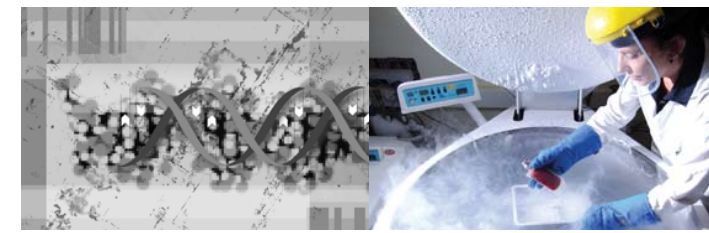
A Medical Research Powerhouse



- >25% of all Israeli medical clinical research is conducted at Sheba.
- A major clinical venue for the Weizmann Institute, Tel-Aviv and Bar-Ilan universities.
- A key partner with industry as testing center for Israeli medical technology and new drugs.
- A unique center in Israel with US Dep. of Health federal wide assurance designation.
- A home to major research centers in regenerative medicine, neuroscience, cancer, heart disease, genetics, microbium cell and gene therapy and more
- Leading Cell , CAR-T, TIL's and Mitochondrial augmentation therapy (MAT) Center



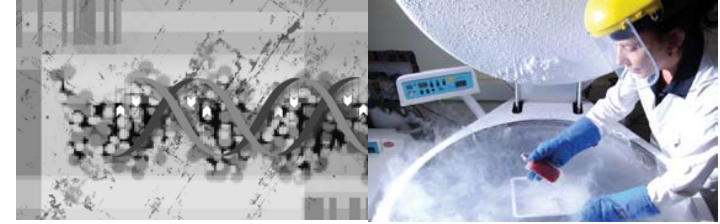
Pre-Clinical Research Facilities



- 75 laboratories spanning 15,000 m² area
- 9 ISO-15189 approved laboratories with Over 200 PhDs
- IVC-SPF small animal facility
- Zebra fish facility
- **Genomic Proteomic and Lipidomic** center equipped with last-generation genome analyzers and microarray facilities
- Advanced Microscopy Unit (multiphoton, microdissection, electron and confocal microscopes)
- **Tissue bank** with over 20,000 specimens and depositions from over 400 new patients per year
- Fully-automated Mega Lab facility performing over 1000 different clinical tests
- Surgery room for big animals with state-of-the-art equipment



Clinical Research Facilities



- Sheba has US Federal Wide Assurance (FWA) designation
- Advanced Surgery and recovery rooms fitting clinical research
- Largest Pathology Dept in Israel
- Medical Simulation Center
- Comprehensive Imaging Research Institute with state-of-the-art facilities
- **phase I** (Cancer) unit for clinical studies
- Key-opinion leaders in all clinical areas
- Access to medical departments, outpatient clinics and
- Cell Therapy and GLP facilities **GMP facility** to inaugurate in 2019
- Over 3000 Clinical Studies are performed in the hospital.
- First in Israel and sometime First In Man

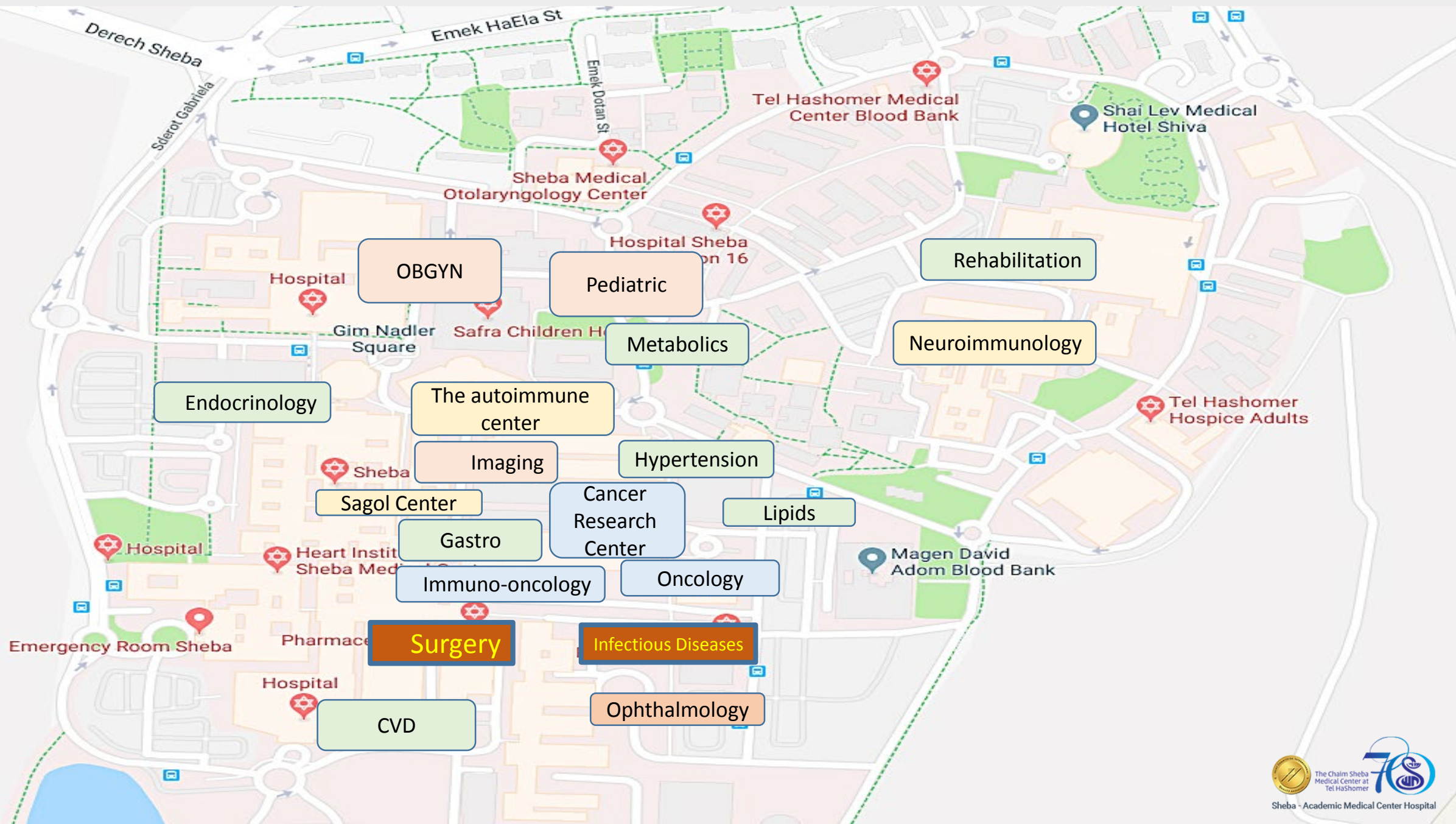


קבוצות המחקר בשיבא

- מעל 90 קבוצות מחקר הבנויות מחוקרים ורופאים-חוקרים המבצעים מחקרים בקבוצה או באופן עצמאי
- שעיקר עיסוקם מעבדות השרות) PhD עוסקים במחקר (בנוסף לבעלי תואר (PhD) כ-120 חוקרים שאינם רופאים
 - מעל 500 עובדים במערך המחקר למרביתם תארים אקדמיים



Sheba's research centers - laboratory infrastructure



שתופי פעולה בישראל



SGI - CLINICAL & RESEARCH COLLABORATIONS



Core Facilities

Imaging

MRI

IVIS/PET

Body
composition

Pathology

Electronic
microscope

Digital scan

Nanostring

FISH

Histology

Immunohistochemistry

Preclinical Research Center

Operating
Rooms

Procedures

OMICS

Proteomics

Sequencing

Lipidomics/
Metabolomics

BIOBANK

Tissue Bank

blood draw,
body fluid,
collection and
storage

פרויקטים חדשים לשנת 2000

- רופא – חוקר
- Phase I
- CRO
- מכון לטיפול מיטוכונדריאלי
- הקמת מרכז ל- Advanced Therapies
- מחקר השתלת ריאה

רופא-חוקר

Physician-Scientist Training Program

Physician-Scientists: Win-Win situation

Physician-scientists have been a driving force in biomedical research and have made major contributions to medical breakthroughs, they have the capability to transpose clinical observations into testable research hypotheses and translate research findings into medical advances:

~37% of the winners of Nobel Prizes :Physiology/Medicine/Chemistry.

**~70% of chief scientific officers at top 10 pharmaceutical companies
institute directors, hold M.D.**





Quality & Quantity

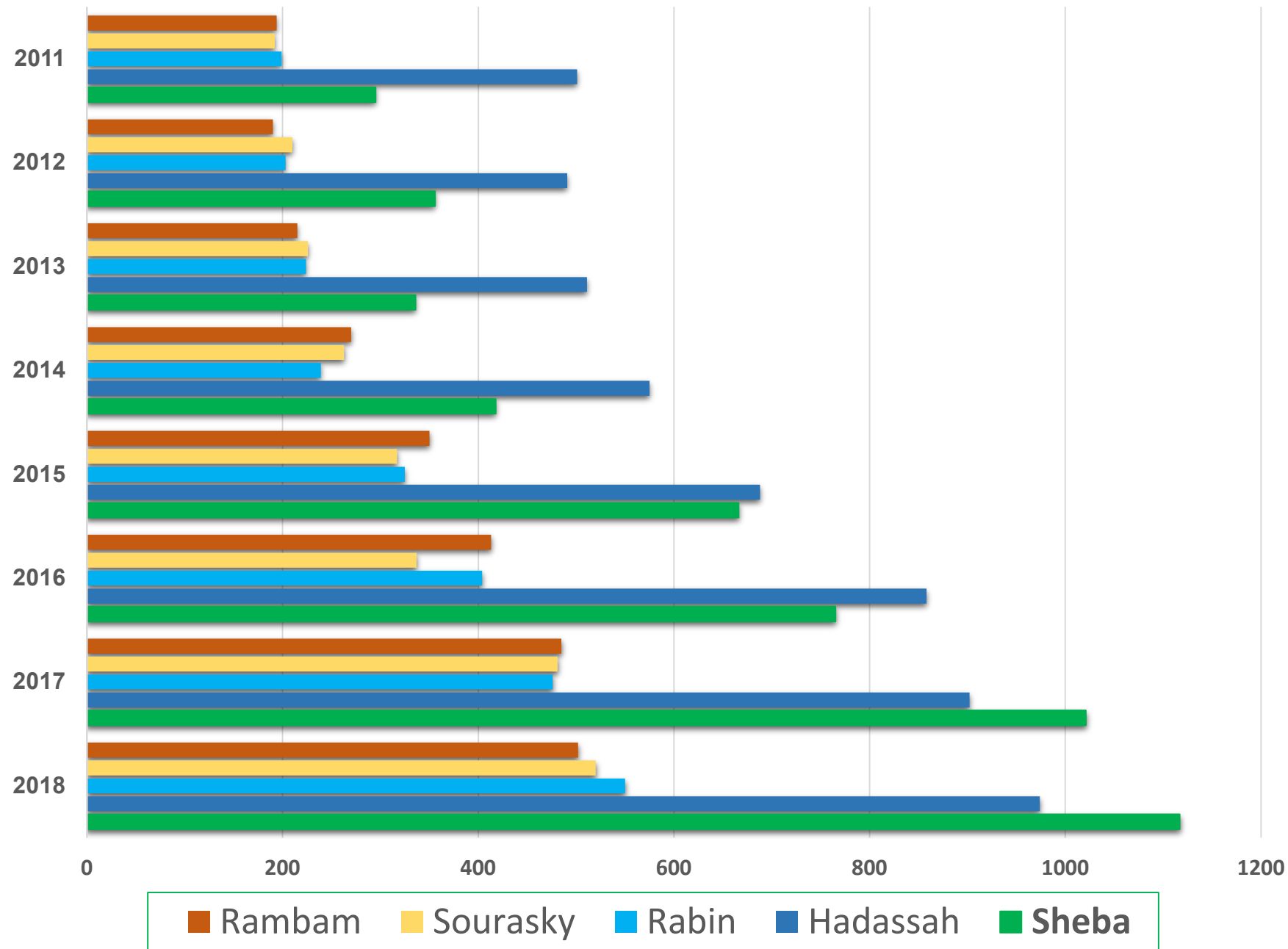


The Chaim Sheba
Medical Center at
Tel Hashomer

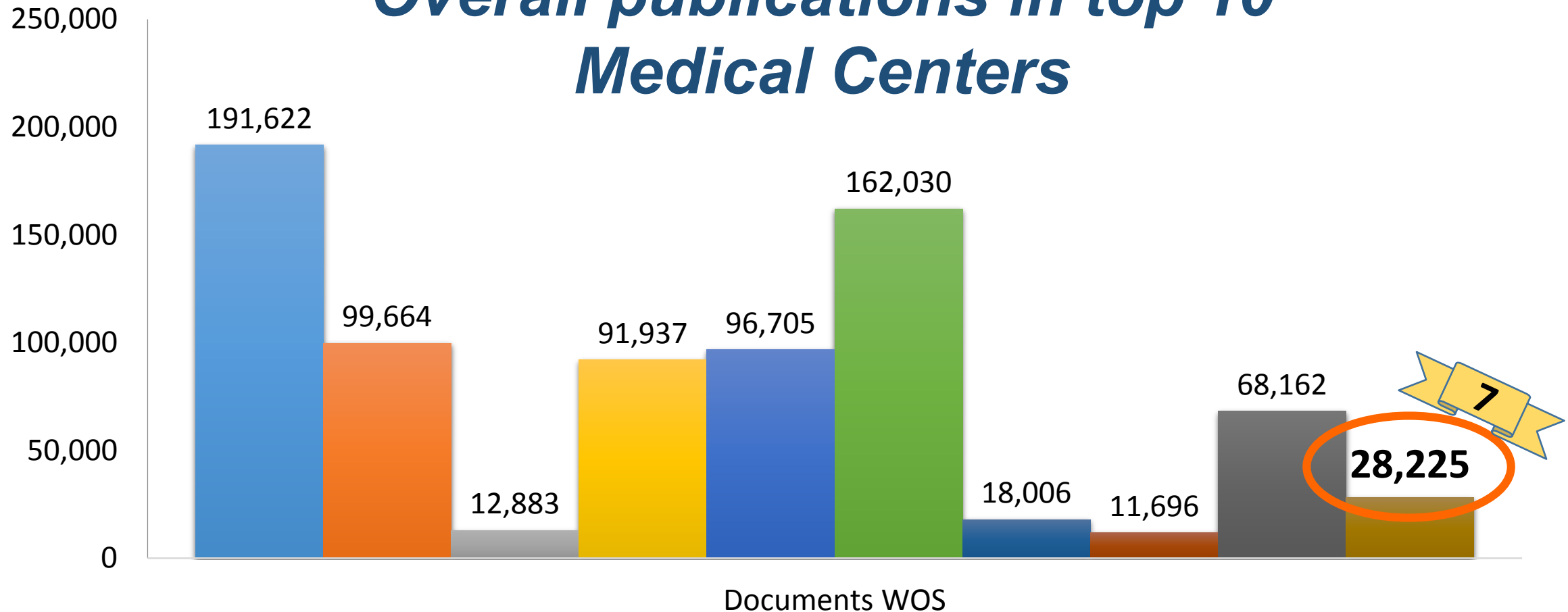


Sheba - Academic Medical Center Hospital

Number of publications per year - Leading medical centers in Israel



Overall publications in top 10 Medical Centers



Mayo Clinic

Cleveland Clinic

Singapore General Hospital

Johns Hopkins Hospital

Charité

Massachusetts General Hospital

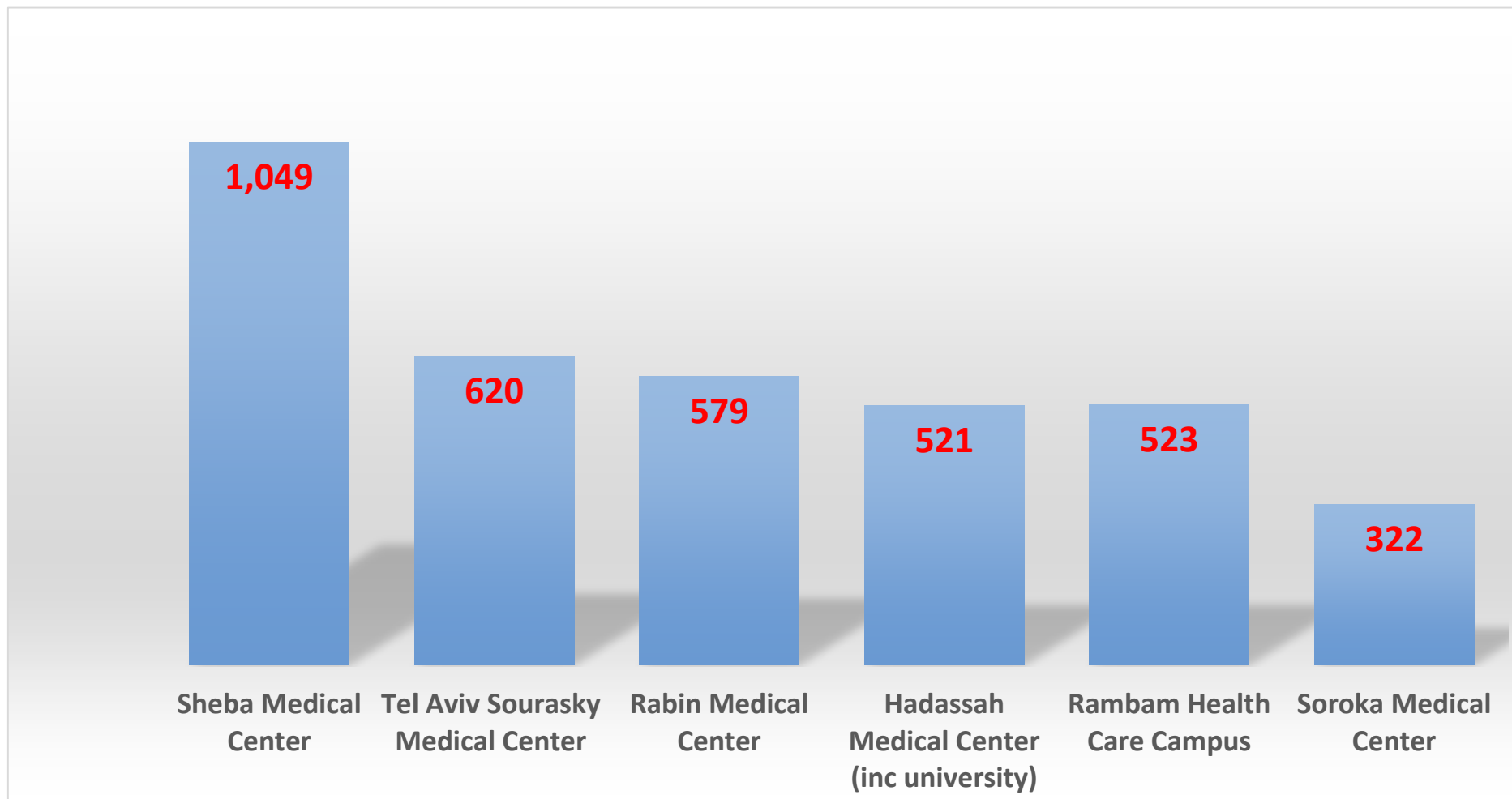
Toronto General Hospital

University of Tokyo Hospital

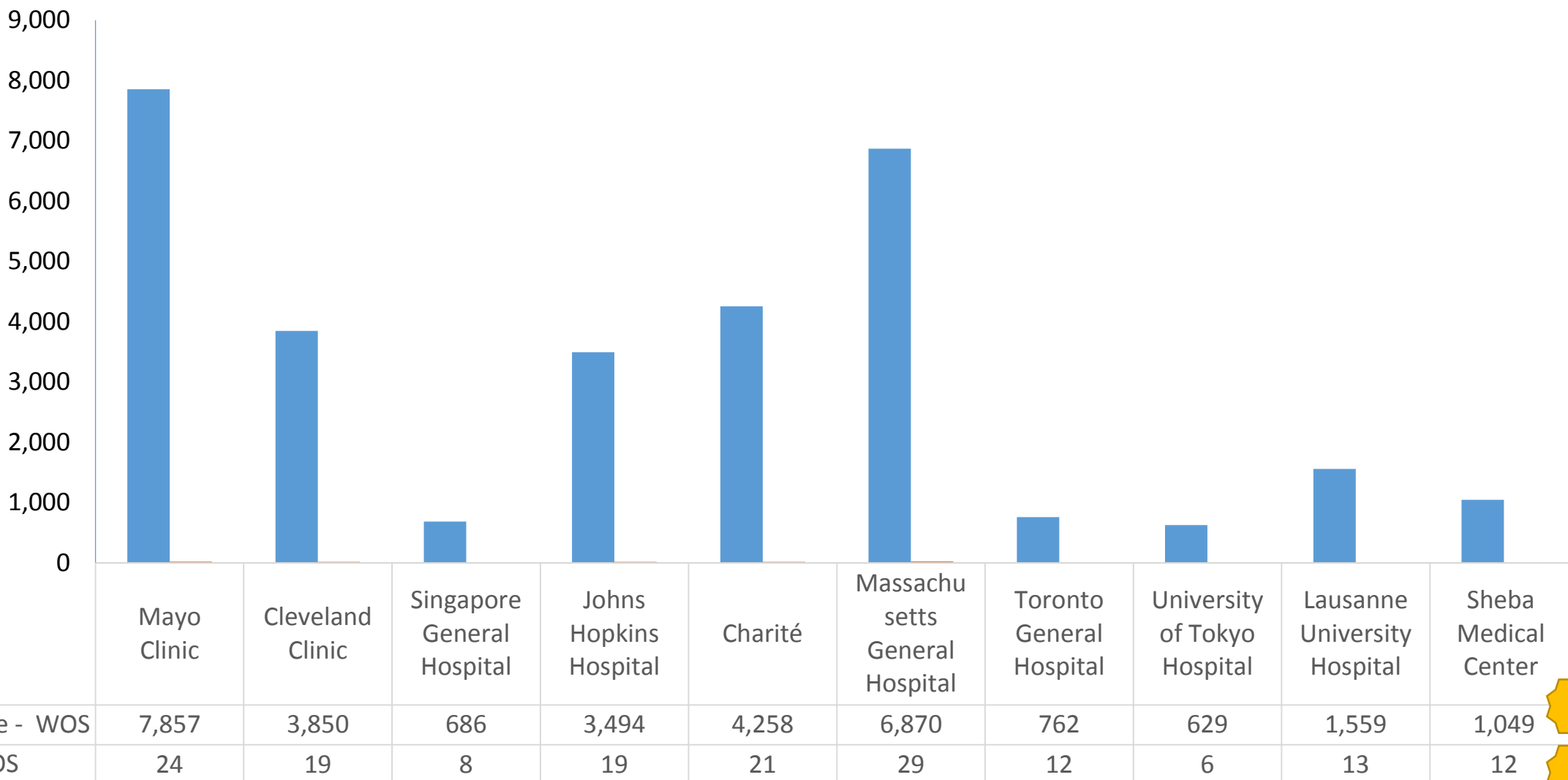
Lausanne University Hospital

Sheba Medical Center

No. of Publications - 2019 to date



No. of Publications - 2019 to date: Top 10 Hospitals



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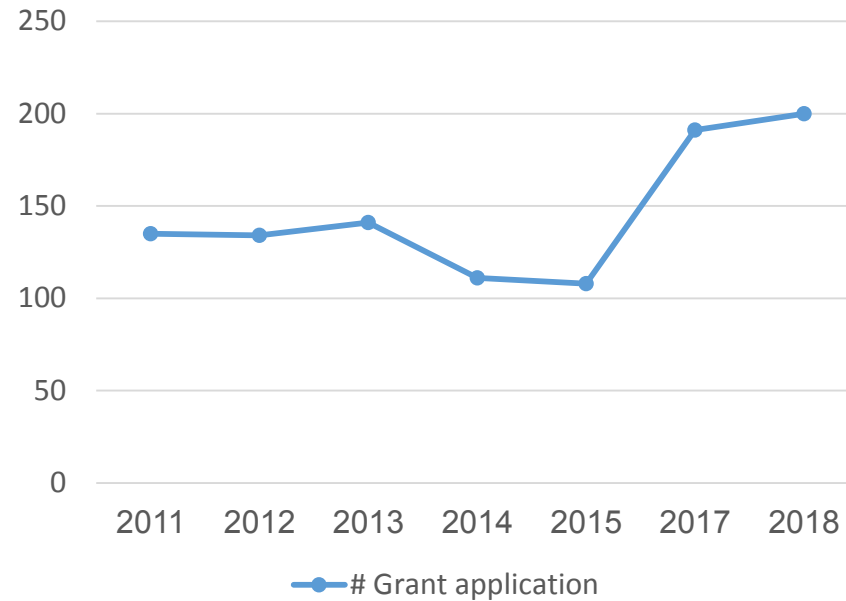
פרסומים ע"י רופאי וחוקרי שיבא לשנת 2019

Journal	IF	No. of Publications
NEJM	71	4
Lancet	59	2
JAMA	51	1
Nature	43	1
Cell	36	2
Lancet Oncology	35	5
Nature Medicine	31	2
Nature Methods	28	1
J. Clinical Oncology	28	3
Nature Genetics	25	2
European Heart J.	25	2
Cancer Cell	24	1
Nature Immunology	24	1
Circulation	23	1
JAMA Internal Medicine	21	1
Total No. of Publications		29

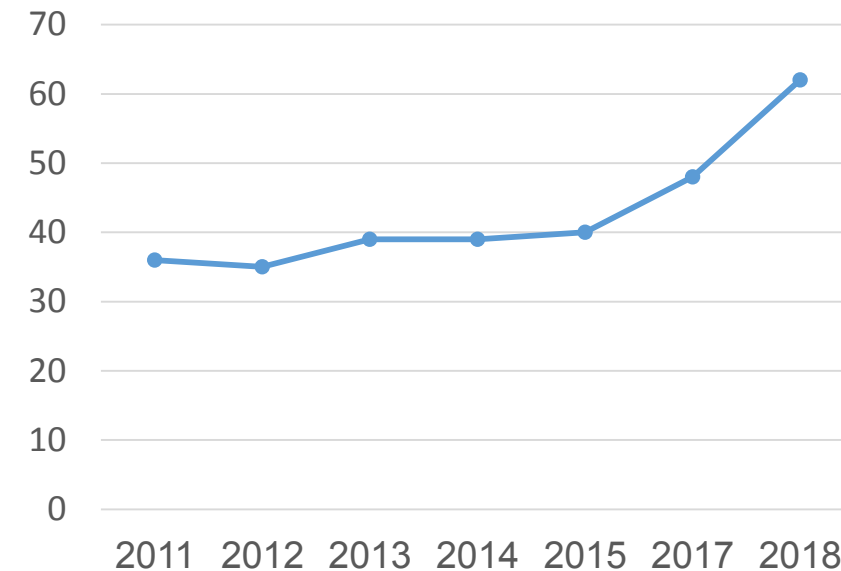
No. of Publications IF>10	41
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Competitive Grants at Sheba Medical Center

Grant applications by year



Grants awarded by year



2018- 48M NIS

2017- 47M NIS

2014- 28M NIS

Sheba Medical Center

Local IRB – Clinical Trials

Trials	2017	2018	% of growth
Total active trials	3341	3413	2.16
Active trials funded by industry	940	1041	10.74
Active trials funded by grants	319	340	6.6

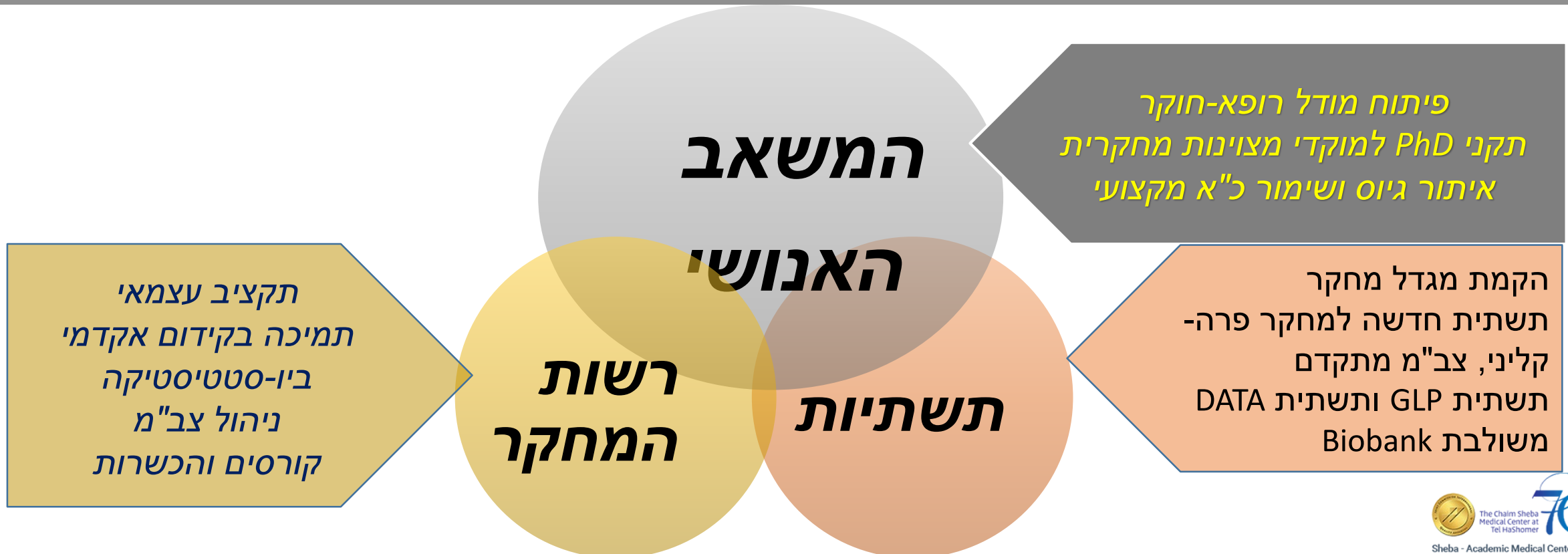
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ובינלאומי בחדשנות רפואית ומחקרית

המרכז יהווה מוקד משיכה לרופאים וחוקרים מצטיינים, ולשיתופי פעולה עם האקדמיה, התעשייה,

הקהילה וציבור המטופלים





Thank you