The Weizmann Institute of Science

Scienza al servizio della società'

Lia Addadi, Dean of the Feinberg Graduate School

The Weizmann Institute of Science
Chaim Weizmann

Born in the Russian Empire, 1874
Graduated in chemistry in Geneva, CH
Professor of chemistry at the University of Manchester, UK

1911 - Isolated a bacterium that ferments starch and maize to acetone and butanol.

1915 - He filed for a patent (B.P 4,845).

1916 - The patent was licensed to the British Navy, who used it for producing acetone. The world’s first biotech enterprise.
The Weizmann Institute of Science

nasce nel 1934 come Istituto Sieff, un piccolo edificio di ricerca chimica sotto la guida di Weizmann stesso, e si sviluppa come Istituto Weizmann dal 1949. La sua missione non è dare risposte pratiche a problemi applicativi, ma affrontare problemi nuovi dalla radice, cercando di creare nuove discipline, introdurre nuove idee e nuovi campi di conoscenza. Si propone allo stesso tempo di educare generazioni di nuovi scienziati, israeliani e da tutto il mondo, che possano allargare i limiti dello scibile umano, contribuendo a livello mondiale alla costruzione e ricostruzione di un mondo migliore, basato sulla conoscenza scientifica.
In the dedication ceremony Dr. Weizmann said: “The Institute is the fulfillment of a vision and the translation of a dream into reality. It can achieve much for the good of Israel and when peace comes to the Middle East, for the good of our neighbors and the good of mankind.”
Lord Israel Sieff, nella celebre lettera che mando’ a Chaim Weizmann nel 1934: “I am hoping that the institute will be made into a living center of research and practical achievement..... I want this striving for practical achievements to be accompanied by the discovery of knowledge for its own sake. The union of these two ideals - knowledge for its fruit bearing quality, and knowledge for its light-bearing quality - will, I think, determine the success of the Institute.”
Oggi

Un campus che comprende 95 edifici su un’area di 120 ettari. 2500 impiegati coinvolti in circa 1,200 progetti di ricerca a livello internazionale.
The Weizmann Institute of Science
Focused on Research

400
Personale amministrativo

250 professori
A capo di gruppi di ricerca

1,000 students
M.Sc. and Ph.D.

850 scienziati
Post dott, Ph.D.'s, ingegneri tecnici
Organizzazione
The Weizmann Institute of Science
Piccolo, agile e flessibile

Struttura multidisciplinare
Matematica e Computer Science | Fisica | Chimica | Biologia | Biochimica

Dimensioni umane «► facilitano contatti interdisciplinari

Internazionale e cosmopolita

Non conferisce il primo grado di laurea «► elastico e dinamico

Accentratoto sulla ricerca di base
Cerca rivoluzioni scientifiche, non sviluppo
Weizmann President Daniel Zajfman, why is it fun to work at the institute?

The Weizmann Institute of Science in Rehovot was ranked by the New York-based magazine The Scientist this week as the best academic institution for life science researchers to work for outside the United States. Weizmann Institute presi-
October 27, 1958, 4:30 pm: Dewey D. Stone, Founding Chairman of the Weizmann Institute of Science Board of Governors presents a scroll inscribed: “Wisdom is Better than Pearls” declaring the establishment of a Graduate School at WIS.

Corals and crystal are not to be mentioned: And the acquisition of wisdom is above that of pearls. Job 28:18
The Feinberg Graduate School

- Centro di istruzione accademica dell'Istituto Weizmann

- Fondata nel 1958, riconosciuta come Instituto di educazione superiore (Universita’) in Israele

- Conferisce titoli di Master of Science (MSc) e Doctor of Philosophy (PhD) in chimica, biologia, fisica, matematica e computer science, educazione scientifica

- 300 studenti MSc, 740 studenti PhD, >300 postdottoranti

- Studenti in visita da tutto il mondo

Cornerstone laying ceremony, November 2, 1962
The Feinberg Graduate School

✓ Has an absolute charter granted by the Board of Regents of the State of New York (January 26, 1972)
The Feinberg Graduate School

Our Graduates

1966 graduation ceremony
(Judging from the photo, ~30 graduates)

<table>
<thead>
<tr>
<th>Year</th>
<th>M.Sc.</th>
<th>Ph.D.</th>
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<tbody>
<tr>
<td>2013</td>
<td>~140</td>
<td>~140</td>
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</table>
The Feinberg Graduate School

Fatti:

Insegnamento in inglese
(spesso con forte accento straniero)

Non ci sono tasse d’istruzione

Tutti gli studenti ricevono una borsa di studio senza obbligo di insegnamento

~250 gruppi di ricerca, ~1000 studenti (MSc+PhD) in media 4 studenti per gruppo

Attenzione individuale
Atmosfera informale
Stimolo di rapporti fra gruppi diversi e interdisciplinari
Gli studenti sono partners in pieno della vita scientifica dell’istituto
Programs offered by the FGS

**M.Sc. program:**
for holders of B.Sc. or equivalent degree **2 years**

**Ph. D. program:**
for holders of M.Sc. or equivalent degree **4.5 years**

**Direct Ph.D. program:**
for holders of B.Sc. or equivalent degree **5.5 years**

**Visiting students:**
Enrolled in other universities **up to 1 year**

**Post-doctoral program:**
For holders of Phd, up to **3 years**
The Feinberg Graduate School

Students and postdoctoral Fellows (October 2013):

<table>
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<th></th>
<th>M.Sc.</th>
<th>Ph.D.</th>
<th>Fellows</th>
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<tr>
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<td>262</td>
<td>712</td>
<td>302</td>
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<tr>
<td>Female</td>
<td>50%</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>Foreign</td>
<td>5%</td>
<td>5%</td>
<td>34%</td>
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### Field of Study

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<tr>
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<tr>
<td>Physical Sciences</td>
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<tr>
<td>Chemical Sciences</td>
<td>68</td>
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<td>Science Teaching</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>495</strong></td>
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## Current Postdoctoral Fellows at WIS by Faculties *

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<th>Faculty</th>
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<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
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<td>4</td>
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<td>37</td>
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<td>12</td>
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<td>101</td>
<td>140</td>
<td>46</td>
<td>21</td>
<td>116</td>
<td>192</td>
<td>151**</td>
<td>157</td>
<td>30</td>
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* Excluding those who continue for up to a year in their PhD group
** F = 77 [51%]; M = 73 [49%]
157 [51%] of the postdoctoral fellows are foreign citizens from 33 different countries.
### Visiting students

~200/anno per periodi che variano da 1mese-1anno

Uno studente visiting ha tutti i diritti di uno studente della FGS, puo’ partecipare a corsi, fare esami e registrare gli esami fatti nella sua universita’.

Verso il WIS, ha il solo dovere di fare ricerca nel gruppo che lo ha accettato.

Tutti gli altri doveri accademici sono nei riguardi della sua universita’ madre.

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<th>Field of Study</th>
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<tr>
<td>Zambia</td>
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+Young Weizmann scholars ~30/year
Fields of studies

- Chemical Sciences
- Life Sciences
- Mathematical Sciences
- Physical Sciences
- Science Teaching

Interdisciplinary programs:

- Neurobiology (Life Sciences)
- Materials & Biomaterials (Chem Sci)
- Nanosciences (Chem Sci)
- Bio-informatics (Math, Life Sci)
- Applied Physics (Phys Sci)
- Structural and Molecular Biology (Chem Sci)
- Biophysics (Phys Sci)
- Atmospheric/Environmental Science (Chem Sci)
Normal Course of M.Sc. studies

Month 1-~9: **Chemical and Life Sciences:**
- 3 x 12 week rotations in different groups
- **Phys. Sci.** : intensive lab course
- **Math. Sci.** : project with scientist

Month ~9 At end of 1st yr, choose M.Sc. Group

Month 24 Submit M.Sc. Thesis, give presentation pass oral exam

Month 1-9 COURSES, lots of courses

Month 13-21 few more courses
Normal Course of Ph.D. studies

Month 1-12: Candidacy
At end of period - choose research topic
- prepare proposal
interview on research proposal
by ad hoc thesis committee

After up to 18 more months:
interim research report

After up to 18 more months
summary final report

After up to 6 more months
submit thesis
Direct Ph.D. program:

1st year: as for regular MSc students

2nd year:
- Month 21: ask to move to direct track with supervisor’s approval
- Month 24: submit MSc thesis/PhD proposal
  - Presentation of MSc research work
  - Oral exam with ad hoc committee

Approval
- move to PhD track 2nd year
- Get MSc degree
Le borse Lombroso hanno la durata di un anno, con possibilità di estensione per un altro anno.

La posizione migliore è quindi di post-dottorante, o di visiting student per gli studenti che stanno facendo il dottorato o la laurea magistrale in una università italiana.

É possibile però anche essere accettati come studenti di dottorato o di laurea magistrale regolare.

L'accettazione come borsista Lombroso e l'accettazione della Feinberg Graduate School sono due processi indipendenti, ma collegati.

Nella posizione di visiting student o di post-dottorante, i criteri sono eccellenza accademica, e aver stabilito un contatto con un laboratorio che è interessato ad ospitare l'applicante.

Nella posizione di PhD o MSc student, lo studente deve rispondere a tutti i requisiti richiesti, passare il colloquio di accettazione etc.
2002 **Susanna Di Segni** Visiting student Dpt. di Chimica Organica Prof Mati Fridkin
Sintesi e studio di neurormoni

2003 **Letizia Carramusa** Postdoc Dpt di Biologia Molecolare Prof. Eli Canaani
Geni coinvolti in leucemie acute, delle cellule linfoidi e mieloidi

2003 **Emanuel Perugia PhD student** Dpt Organic Chemistry Prof Mati Fridkin amyloids

2004 **Marco Cortesi PhD student** Radiation Detection Physics Laboratory Prof Amos
Breskin
Sviluppo ed analisi di un innovativo metodo diagnostico per il cancro alla prostata
spettroscopia X in fluorescenza (XRF)

2004 **Melania Tesio visiting student** Prof. Lapidot del Dipartimento di Immunologia
Caratterizzazione del ruolo di proteine nel processo di mobilizzazione delle cellule staminali
emopoietiche in pazienti affetti da neoplasie ematologiche

2004 **Michael Miglioli Postdoc** Prof. Zelig Eshar dipartimento di immunologia
carcinoma prostatico
2005 **Eleonora Marrazzo visiting student** Prof Varda Rotter Dipartimento di Biologia Cellulare e Molecolare  
ruolo della proteina p73 nella risposta al trattamento con farmaci antitumorali.

2006 **Fabio Antonioli Postdoc**  
Prof Yossi Yarden, Biological regulation  
La terapia con anticorpi monoclonali contro fattori di crescita tumorale


2006 **Elena Monticelli visiting Student** Mati Fridkin Dpt di Chimica Organica amyloids

2007 **Giovanna Bordigari visiting student** Prof Lea Eisenbach Dipartimento d’Immunologia  
Lo sviluppo di tolleranza verso i Linfociti T nella progressione tumorale

2007 **Irene Carne M. Sc. visiting student** Prof Amos Breskin, Dpt. di Fisica delle Particelle  
Sviluppo di un rivelatore per la terapia dei tumori basata su reazioni di cattura neutronica

Meccanismi della tumorigenesi, ricerca di nuovi marker tumorali.
2008 **Giacomo Bartesaghi visiting student** Prof. Breskin (Physics Department). BNCT (Boron Neutron Capture Therapy) nei tumori

2009 **Emmanora Di Capua Msc visiting Student** Dpt di Biologia Cellulare e Molecolare Prof Moshe Oren Processi biochimici e biologi che sottendono al ruolo di p53 come oncosoppressore.

2009 **Georg Mahlknech postdoc** Prof. Michael Sela ed il Prof. Yosef Yarden. recettori ad attività tirosino chinasi nella segnalazione dell’evoluzione biologica del tumore.

2009 **Alessia Vivanti post-doc** prof. Avri Ben-Ze'ev Dipartimento di Biologia Cellulare e Molecolare. Il cancro del colon-retto (CRC)

2009 **Mattia Lauriola postdoc** prof. Yarden del Dipartimento di Biological regulation studio della trasformazione neoplastica, che nello specifico del cancro del colon, è responsabile della migrazione cellulare, dalla sede del tumore primario agli organi distali.

2009 **Giorgio Carlo Brambilla visiting student** prof Amos Breskin Physics nuovo metodo non invasivo di rilevamento e classificazione di adenocarcinomi tramite una sonda XRF

2009 **Pier Giorgio Amendola visiting Student.** Prof.ssa Varda Rotter Molecular cell biology. Il suo studio del gene oncosoppressore p53
2010 **Gabriele D’Uva PhD visiting student** prof. Lapidot Dipartimento di Immunologia. Mobilitazione delle cellule staminali emopoietiche in modelli funzionali preclinici in vivo.

2010 **Barbara Costa post-doc** Prof Mike Fainzilber Dpt. Chimica Biologica Neuroblastomi e il medulloblastomi

2010 **Alessandra Tieri visiting student** Dr Michal Sharon
Metodo analitico MS per lo studio della composizione di proteasomi nelle cellule in base alle loro condizioni fisio-patologiche

2011 **Giulia Caglio tesi visiting student** Prof Tsvee Lapidot, Dipartimento di Immunologia Influenza del sistema nervoso sulla migrazione e lo sviluppo delle cellule staminali ematopoietiche

2011 **Luca Moleri visiting student** Prof Amos Breskin Physics
Sviluppo tecniche radioterapia diagnostica di tumori

2011 **Ludovico Sepe visiting student** Prof. Chaim Kahana Dpt di Genetica Molecolare, Il fattore eucariotico di inizio di traduzione di una proteina presente in diverse linee cellulari tumorali e altamente conservata tra le specie
2012 **Chiara Medaglia Visiting Student** prof. Tsvee Lapidot, Dpt. di Immunologia
L’espressione di h-Prune nei tumori del colon e del pancreas è correlata all’invasività neoplastica. Ruolo di proteine all’interno della nicchia metastatica

2012 **Giuseppe Condomitti PhD visiting student** Prof Anthony Futerman Dpt. di Biochimica.
Coinvolgimento di Ceramide Sintasi in numerosi processi patologici tra i quali il cancro.

2013 **Ambra Spolverini postdoc** Prof. Oren del Dipartimento di Biologia.
Regolazione del soppressore tumorale p53 e il suo ruolo nell’insorgenza e nello sviluppo del tumore.
I ricercatori

Leukocyte trafficking
Prof. Ronen Alon, Department of Immunology
smoking, COPD, and lung cancer

Immuno-genomics
Dr. Ido Amit, Department of Immunology
genomic code enabling immune cells to differentiate into specific subtypes and devise a specific response to invading pathogens, primarily concerning cancer and inflammatory bowel disease

Computational systems biology
Prof. Eytan Domany, Department of Physics of Complex Systems

Cancer, metastasis, and immunotherapy
Prof. Lea Eisenbach, Department of Immunology
Cancer genetics and metabolism
Dr. Ayelet Erez, Department of Biological Regulation
A physician-scientist, Dr. Erez is working to decipher the dynamics of cellular metabolism at different disease states childhood diseases, most notably metabolic changes that accompany neurological impairments and cancer. These patients have direct relevance to her research, as her research group studies the metabolic consequences of different genes alterations and their contribution to the disease state.

Programmed cell death
Prof. Adi Kimchi, Department of Molecular Genetics

Cellular senescence in tissue damage response, cancer, and aging
Dr. Valery Krizhanovsky, Department of Molecular Cell Biology

Regulation of normal and leukemic human stem cells
Prof. Tsvee Lapidot, Department of Immunology
Cell signaling in cancer development and metastasis
Prof. Sima Lev, Department of Molecular Cell Biology

DNA repair, mutagenesis, and cancer
Prof. Zvi Livneh, Department of Biological Chemistry

Imaging of angiogenesis
Prof. Michal Neeman, Department of Biological Regulation

Mechanistic links between regulation of gene expression and cancer
Prof. Moshe Oren, Department of Molecular Cell Biology

Transplantation immunology
Prof. Yair Reisner, Department of Immunology

p53 in normal and tumor cells
Prof. Varda Rotter, Department of Molecular Cell Biology

ER stress and tumor progression
Prof. Menachem Rubinstein, Department of Molecular Genetics

Functional genomics in melanoma
Prof. Yardena Samuels

Prof. Samuel’s group aims to discover recurrent tumor-specific mutations in melanoma using high-throughput, whole-exome, and whole-genome sequencing approaches. Once mutations are identified, the group focuses on characterizing the biochemical, functional, and clinical aspects of the most highly mutated genes.
Computation and systems biology
Prof. Eran Segal, Department of Computer Science and Applied Mathematics and the Department of Molecular Cell Biology
Prof. Segal’s group develops computational models aimed at understanding how molecular components interact to carry out complex biological functions

Intracellular signaling pathways
Prof. Rony Seger, Department of Biological Regulation

Epigenomics and evolution
Dr. Amos Tanay, Dept of Computer Science and Applied Mathematics; Dept of Biological Regulation
Dr. Amos Tanay’s group is studying the physical interfaces that associate genomic information with mechanisms that interpret it in the nucleus.

Oncogenic receptor tyrosine kinases
Prof. Yosef Yarden, Department of Biological Regulation