

CURRICULUM VITAE

April 2014

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DATE OF BIRTH: October 1, 1947

PLACE OF BIRTH: Haifa, Israel

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EDUCATION:

DEGREES:

1970	M.Sc.:	Medical Sciences. Summa Cum Laude. Faculty of Life Sciences and the Department of Biochemistry, "Hadassah" and the Hebrew University School of Medicine, Jerusalem, Israel.
1974	M.D.:	"Hadassah" and the Hebrew University School of Medicine, Jerusalem, Israel.
1981	D.Sc.:	Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.

CLINICAL TRAINING:

1973-1974	Internship. "Rambam" University Medical Center, and the Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
1974-1979	Partial training. Department of Surgery "B", "Rambam" University Medical Center and the Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.

ACADEMIC APPOINTMENTS (Technion):

- 1977-1979 **Research Fellow.** Department of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
- 1979-1981 **Lecturer.** Department of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
- 1984-1987 **Senior Lecturer (with tenure).** Department of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
- 1987-1992 **Associate Professor.** Department of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
- 1992- **Full Professor.** Department of Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
- 2002- **Distinguished Research Professor.**
Technion-Israel Institute of Technology, Haifa, Israel.

ACADEMIC APPOINTMENTS (Foreign Universities):

- 2011- Adjunct Professor and Director. The Institute for Chemistry and Biomedical Studies (ICBS), Nanjing University, Nanjing, China.

ADMINISTRATIVE APPOINTMENTS:

- 1993-2000 **Director.** The Rappaport Family Institute for Research in the Medical Sciences. Technion-Israel Institute of technology, Haifa, Israel.
- 2004-2009 **Founder and Director.** The Lorry Lokey Interdisciplinary Center for Life Sciences and Engineering. Technion-Israel Institute of Technology, Haifa, Israel

VISITING APPOINTMENTS:

- 1978, 1979 **Visiting Scientist.** The Institute for Cancer Research,
1980, 1981 The Fox Chase Cancer Center, Philadelphia, Pennsylvania, USA
(Dr. Irwin A. Rose's laboratory).
- 1981-1984 **Postdoctoral Fellow.** Department of Biology, Massachusetts Institute of
Technology (M.I.T.) and The Whitehead Institute for
Biomedical Research, Cambridge, Massachusetts,
USA (Dr. Harvey F. Lodish's laboratory).
- 1985, 1986 **Visiting Professor.** The Dana Farber Cancer Institute
and Harvard Medical School, Boston, Massachusetts,
USA (Dr. Alan L. Schwartz's laboratory).
- 1987, **Visiting Professor.** Division of Hematology-Oncology,
1988-1989 Department of Pediatrics, Children's Hospital,
1990, 1991 Washington University School of Medicine,
1992, 1993 St. Louis, Missouri, USA. (Dr. Alan L. Schwartz's laboratory).
1994, 1995
1996, 1997
1998, 1999
2001

American Cancer Society Eleanor Roosevelt Memorial Fellow.

- 2000 **Visiting Professor.** Division of Hematology-Oncology, Department of Pediatrics, Children's Hospital, Washington University School of Medicine, St. Louis, Missouri, USA. (Dr. Alan L. Schwartz's laboratory).
- 2002, 2003 **Visiting Professor.** University of Kyoto School of Medicine (within the frame of the JSPS – Japan Society for Promotion of Science – Young Scientist Award (Dr. Kazuhiro Iwai's Laboratory).
- 2003, 2005, 2007, 2009 **Visiting Adjunct Professor.** Northwestern University School of Medicine, Chicago, Illinois, USA. (Department of Medicine and Division of Pulmonary Critical care: Dr. Jacob J. Sznajder's Laboratory).
- 2002, 2003-2004, 2005 **Visiting Professor.** STINT Fellow. Microbiology and Tumor Biology Center (MTC), and the Department of Cell and Molecular Biology (CMB). The Karolinska Institute, Stockholm, Sweden. (Laboratory of Dr. Maria Masucci).
- 2002, 2003-2004, 2005 **Visiting Professor** (within the frame of the JSPS – Japan Society for Promotion of Science – Eminent Scientist Award). City University of Osaka School of Medicine (Dr. Kazuhiro Iwai's Laboratory).
- 2004 **Visiting Professor.** Rockefeller University, New York, NY, USA (Dr. Hermann Steller's laboratory).
- 2007- **Distinguished Visiting Research Professor.**
National Cheng Kung University (NCKU), Tainan, Taiwan.
- 2007- **Member.** The Institute for Advanced Studies,
Honk Kong University of Science and Technology (HKUST)
- 2013-2014 **Extraordinary Professor.** The “TEFAF Oncology Chair”. School of Oncology and Developmental Biology, Faculty of Health, Medicine, and Life Sciences, Maastricht University, Maastricht, The Netherlands.
- 2011- **Co-director.** The Institute for Chemical and BioMedical Sciences (ICBMS), Nanjing University, Nanjing, P.R. China
- 2014- **Director.** The Center for Protein Dynamics, Seoul National University, (SNU), Seoul, South Korea.

BOARDS (academic):

- 2005 -2010 Chairman, Scientific Advisory Board, Rambam Medical Center, Haifa, Israel
- 2005- Scientific Advisory Board, National Institute of Biotechnology - NIBN, Ben Gurion University in the Negev, Beer Sheba, Israel
- 2005 - Board of Governors, Ben Gurion University in the Negev, Beer Sheba, Israel
- 2005 - Board of Governors, Haifa University, Haifa, Israel
- 2006- Board of Governors, Israeli Academy for the Hebrew Language, Jerusalem, Israel
- 2006 - Institute of Advanced Studies, Hong Kong University of Science and Technology
- 2006 - Scientific Advisory Board. Britton Chance Center for BioMedicalPhotonics. Huazhong University of Science and Technology, Wuhan, China
- 2006- International Union for Biochemistry and Molecular Biology (IUBMB)

- 2007 - Board of Directors, German-Israeli Foundation (GIF) for Scientific Research and Development
- 2007- Angelman Syndrome Foundation, USA
- 2008- Israel National Council for Research and Development (Molmop)
- 2008 - President's council, NY Academy of Sciences
- 2009- International Institute for Biomedical Science and Technology (IIBMST), Upstate Medical University, Syracuse, NY, USA.
- 2009- National Advisory Board, Government of Singapore
- 2009- Scientific Advisory Board, San Raffaele Scientific Institute, Milan, Italy
- 2009 - Scientific Advisory Board, Venetian Institute of Molecular Medicine - VIMM, Padua, Italy
- 2009- Scientific Advisory Board, CEINGE-Biotecnologie Avanzate, Napoli, Italy
- 2010- Scientific Advisory Board, Rabin-Schneider Pediatric Medical Center, Petach Tikva, Israel.
- 2011- Scientific Advisory Board, Friedrich Miescher Institute (Novartis), Basel, Switzerland

BOARDS (non-academic):

- (1) Achva - Organization of the handicapped people in North Israel
- (2) ALS (Amyotrophic Lateral Sclerosis), Israel
- (3) Children at Risk Organization, Israel
- (4) Genealogical Institute, Jerusalem, Israel
- (5) MadaTech - Youth Science Center and Museum, Hadera, Israel
- (6) Rashi -Saksta Charity Foundation, Israel
- (7) STEP-GTP - Science Training Encouraging Peace - Graduate Training Programs for Israeli and Palestinians, Tufts University, Boston, MA, USA
- (8) Wolfson Family Charitable Foundation, Tel Aviv, Israel
- (9) It is all about Education Foundation (HaKol Hinuch), Israel

SOCIETIES:

- 2010- President (Honorary), Israel Cancer Society
- 2014- President (Honorary) – IsrALS (The Israel Amyotrophic Lateral Sclerosis Society)

FELLOWSHIPS:

- 1981-1984 Fulbright Fellow. Massachusetts Institute of Technology (M.I.T.) Cambridge, Massachusetts, USA (Dr. Harvey Lodish's Laboratory).
- 1981-1983 Leukemia Society of America Fellow. M.I.T.
- 1981-1984 Israel Cancer Research Fund (ICRF), USA Fellow. M.I.T.
- 1983-1984 Medical Foundation and Charles A. King Trust Fellow. M.I.T. Research Career Development Award, Israel Cancer Research Fund (ICRF), USA.
- 1988-1989 American Cancer Society Eleanor Roosevelt Memorial Fellow.
- 2011- Alexander von Humboldt Fellow, Alexander von Humboldt Stiftung, Bonn, Germany.

MILITARY SERVICE:

1974-1977 National Compulsory Service, Israel Defense Forces. Military Physician, Israeli Navy and the Unit for Research and Development, Surgeon General Headquarters.

EDITORIAL BOARDS:

1999- Israel Medical Association Journal (IMAJ)
2006- Experimental Biology and Medicine
2007- Cell Death and Differentiation (CDD; Nature Group)
2008- Science China - Life Sciences
2005- Structural Chemistry (Springer)

AWARDS (academic):

1999 The Austria Ilse and Helmut Wachter Prize, University of Innsbruck (along with Dr. Avram Hershko).
2000 The Jewish National Fund Alkales Award for Distinguished Scientific Achievements.
2000 The Albert and Mary Lasker Award for Basic Medical Research (along with Drs. Avram Hershko and Alexander Varshavsky)
2001 The Michael Landau (Mifa'al Ha'Peis) Award in Medical Sciences (along with Dr. Avram Hershko).
2002 EMET (Truth) Prize (Israeli Prime Minister Prize), for Arts, Sciences and Culture (in Life Sciences and Medicine along with Drs. Avram Hershko and Leo Sachs). Awarded by the AMAN Foundation.
2003 The Israel Prize for Biology
2003-2006 Japan Society for Promotion of Science (JSPS) Eminent Scientist Award
2004 Nobel Prize in Chemistry (shared with Drs. Avram Hershko and Irwin A. Rose)

HONORS (academic):

1996- Janet and David Polak Professor of Life Sciences. Technion-Israel Institute of Technology, Haifa, Israel
2002- University Distinguished Research Professor. Technion-Israel Institute of Technology, Haifa, Israel.
2003- Professor. Israel Cancer Research Fund (ICRF), USA.
2006 Sir Hans Krebs Medal. Federation of the European Biochemical Societies
2007 Medical Magnus Medal. Polish Academy of Medicine.
2010 Lee Kuan Yew Visiting Professorship and Award, Singapore.
2011 IUBMB (International Union of Biochemistry and Molecular Biology) Medal for Distinct Contribution to Science, Society and the IUBMB Mission
2012 Distinguished University Professor (Honorary), Kyushu University, Fukuoka, Japan.
2013 Extraordinary Professor. TEFAF Oncology Chair, Maastricht University.

MEMBERSHIPS (academies, etc.):

- 1996- Member, Council of the European Molecular Biology Organization (EMBO).
- 1999- Member. Asia-Pacific IMBN (International Molecular Biology Network)
- 2004- Member. European Academy of Arts and Sciences.
- 2004- Member. European Academy of Sciences.
- 2004- Fellow. European Academy of Sciences.
- 2004- Member. Israeli National Academy of Sciences and Humanities.
- 2004- Member (Hon.). American Chemical Society (ACS)
- 2005- Fellow (Hon.). Royal Society of Chemistry RCS, (UK). HonFRSC.
- 2005- Member (Foreign). American Philosophical Society
- 2005- Cell Stress Society international (CSSi) Medal and Distinguished Life Member.
- 2006- Honorary Member. Society for Experimental Biology and Medicine.
- 2006- Fellow. Federation of Asian Chemical Societies (FACS).
- 2007- Member. Pontifical Academy of Sciences, The Vatican.
- 2007- Member. Polish Academy of Medicine.
- 2007- Member. Albert Schweitzer World Academy of Medicine.
- 2007- Member. National Academy of Science and Technology of South Korea
- 2007- Associate (Foreign). National Academy of Sciences of the USA (NAS USA).
- 2008- Fellow (Honorary; Foreign). American Academy of Arts and Sciences (AAAS).
- 2008- Associate (Foreign). Institute of Medicine of the National Academies of the USA (IOM).
- 2009- Member (Foreign), Ukrainian Academy of Sciences
- 2009- Member (Founding), European Academy of Cancer Sciences
- 2009- Member, Academia Europaea
- 2011- Member (Honorary). Hellenic Society for Biochemistry and Molecular Biology
- 2011- Member (Honorary). World Immunopathology Organization (WIPO)
- 2011- Member (Foreign). Russian Academy of Sciences
- 2011- Alexander von Humboldt Fellow, Alexander von Humboldt Stiftung, Bonn, Germany.
- 2012- Member (Foreign). Georgian Academy of Sciences, Tbilisi, Georgia
- 2012- Member (Honorary), Georgian Association of Allergology and Clinical Immunology
- 2012- Member, American Association for Cancer Research (AACR) Academy.
- 2013- Fellow, American Academy for Cancer research (AACR).
- 2013- Member (Foreign), Chinese Academy of Sciences (CAS).

MEMBERSHIPS (professional organizations):

- 1984 - American Association for Advancement of Science (AAAS)

HONORARY DEGREES (academic institutions):

2001	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Tel Aviv University, Tel Aviv, Israel.
2004	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Ben-Gurion University, Beer Sheba, Israel.
2005	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), City University of Osaka, Osaka, Japan.
2005	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), University of Athens, Greece.
2005	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), National University of Uruguay, Montevideo, Uruguay.
2006	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Washington University, St. Louis, Missouri, USA
2006	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Cayetano Heredia University, Lima, Peru.
2006	Honorary Professor. Capital University of Medical Sciences (CPUMS), Beijing, China.
2006	Honorary Professor. Peking Union Medical College (PUMC). Beijing, China.
2006	Honorary Professor. Chinese Academy of Medical Sciences (CAMS), China.
2007	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Hebrew University, Jerusalem, Israel.
2007	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Bar-Ilan University, Ramat Gan, Israel.
2007	Honorary Professor. Henan University, Keifang, China.
2007	Honorary Professor. Nankai University, Tianjin, China.
2007	Honorary Professor. 1 st . Teaching Hospital Medical School, XinJiang University, Urumqi, China.
2007	Honorary Professor. 4 th Military Medical University, Xi'an, China.
2007	Honorary Professor. Shihezi University, Shihezi, China.
2007	Honorary Doctor (Doctor Honoris Causa of Science; D.Sc. Hon.), Albert Schweitzer World Academy of Science.
2007	Honorary Professor. Jiaotong University, Xi'an, China.
2007	Honorary Professor. Northwest University, Xi'an, China.
2008	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Weizmann Institute of Science, Rehovot, Israel.
2008	Honorary Doctor (Doctor Honoris Causa), Universidad San Francisco, Quito, Ecuador.
2008	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Universidad del Norte, Asuncion, Paraguay.
2008	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Angeles University, Angeles City, The Philippines.
2008	Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), University of New South Wales (NSW), Sydney, Australia
2008	Honorary Professor. Nanjing University, Nanjing, China.
2009	Honorary Causa. The Academic College, Netanya, Israel.

- 2009 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.),
The National University of Cambodia, Phnom Pen, Cambodia
- 2010 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
The Government of the People's Republic of China via Huazhong
University of Science and Technology (HUST), Wuhan, China.
- 2010 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Haifa University, Haifa, Israel.
- 2010 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Medical University of Armenia, Yerevan, Armenia.
- 2010 Honoraris Causa. The Tel Hai College, Qiryat Shmona, Israel.
- 2010 Honorary Professor. Nanjing University of Technology, Nanjing, China.
- 2011 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.),
Warsaw University of Technology, Warsaw, Poland.
- 2011 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Warsaw University, Warsaw, Poland.
- 2011 Honorary Professor. Chongqing Medical University, Chongqing, China.
- 2011 Scientific Consultant, The City of Chongqing, China.
- 2012 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
University of Łódź, Łódź, Poland.
- 2012 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Medical University of Łódź, Łódź, Poland.
- 2012 Honorary Professor. Guandong University Medical College,
Zhanjiang, Guandong, China.
- 2012 Honorary Professor. Wuhan University, Wuhan, China.
- 2012 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Shota Rustaveli State University, Batumi, Georgia.
- 2012 Distinguished Honorary Professor. South China Normal University,
Guangzhou, China.
- 2013 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Mount Sinai School of Medicine, New York, NY, USA.
- 2013 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
State University of New York (SUNY), Upstate Medical College,
Syracuse, NY, USA.
- 2013 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
University of Croatia, Split, Croatia.
- 2013 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
SPIT-Saint Petersburg Institute of Technology, St. Petersburg, Russia.
- 2013 Honoris Causa. Law and Science Gates College (מכללת שערי משפט ומדע),
Hod Hasharon, Israel.
- 2013 Honorary Professor. Haikou People's Hospital,
Central South University Medical School, Changsha, China.
- 2013 Consultant, The Chongqing Academy of Science and technology,
Chongqing, China.
- 2014 Honorary Doctor (Doctor Philosophiae Honoris Causa; Ph.D. Hon.).
Kazan University, Kazan, Russia.
- 2014 Fellow (Honorary), the Interdisciplinary Center, Hezeliya, Israel.

HONORS (non-academic):

2005	Honorary Citizenship, City of Haifa, Israel
2005	Sakura Award, the City of Osaka, Japan.
2005	Special Award, the Mayor of Osaka, Japan.
2006	Honorary Citizenship, City of Montevideo, Uruguay.
2006	Honorary Citizenship, City of Lima, Peru
2008	Honorary Citizenship, City of Quito, Ecuador
2008	Special Distinction for Contribution to Education, Minister of Education, Government of Ecuador
2008	Honorary Citizenship, City of Manila, The Philippines
2010	The Highest Award of Recognition, Minister of Science and Technology, Armenia.
2011	Honorary Citizenship, City of Cajamarca, Peru.
2012	Honorary Citizen, Nanjing, Jiangsu Province, China

HONORARY MEMBERSHIPS (non-academic):

2004-	The Roule Wallenberg Foundation
2005-	The World Innovation Foundation, WIF
2005-	Academy of Achievement, USA.

PUBLICATIONS:

Original Papers:

1. **Ciechanover, A.** and Hershko, A. (1976). Early Effects of Serum on Phospholipid Metabolism in Untransformed and Oncogenic Virus Transformed Cultured Fibroblasts. *Biochem. Biophys. Res. Commun.* **73**, 85-91.
2. **Ciechanover, A.,** Hod, Y. and Hershko, A. (1978). A Heat-stable Polypeptide Component of an ATP-dependent Proteolytic System from Reticulocytes. *Biochem. Biophys. Res. Commun.* **81**, 1100-1105.
3. Hershko, A., **Ciechanover, A.** and Rose, I.A. (1979). Resolution of the ATP-dependent Proteolytic System from Reticulocytes: A Component that Interacts with ATP. *Proc. Natl. Acad. Sci. USA* **76**, 3107-3110.
4. **Ciechanover, A.,** Heller, H., Elias, S., Haas, A.L. and Hershko, A. (1980). ATP-dependent Conjugation of Reticulocyte Proteins with the Polypeptide Required for Protein Degradation. *Proc. Natl. Acad. Sci. USA* **77**, 1365-1368.
5. Hershko, A., **Ciechanover, A.,** Heller, H., Haas, A.L. and Rose, I.A. (1980). Proposed Role of ATP in Protein Breakdown: Conjugation of Proteins with Multiple Chains of the Polypeptide of ATP-dependent Proteolysis. *Proc. Natl. Acad. Sci. USA* **77**, 1783-1786.
6. **Ciechanover, A.,** Elias, S., Heller, H., Ferber, S. and Hershko, A. (1980). Characterization of the Heat-stable Polypeptide of the ATP-dependent Proteolytic System from Reticulocytes. *J. Biol. Chem.* **255**, 7525-7528.
7. **Ciechanover, A.,** Heller, H., Etzion-Katz, R. and Hershko, A. (1981). Activation of the Heat-stable Polypeptide of the ATP- dependent Proteolytic System. *Proc. Natl. Acad. Sci. USA* **78**, 761-765.
8. Hershko, A., **Ciechanover, A.** and Rose, I.A. (1981). Identification of the Active Amino Acid Residue of the Polypeptide of ATP-dependent Protein Breakdown. *J. Biol. Chem.* **256**, 1525-1528.
9. **Ciechanover, A.,** Elias, S., Heller, H. and Hershko, A. (1982). "Covalent Affinity" Purification of Ubiquitin Activating Enzyme. *J. Biol. Chem.* **257**, 2537-2542.
10. Hershko, A., Eytan, E., **Ciechanover, A.** and Haas, A.L. (1982). Immunochemical Analysis of the Turnover of Ubiquitin-protein Conjugates in Intact Cells: Relationship to the Breakdown of Abnormal Proteins. *J. Biol. Chem.* **257**, 13964-13970.
11. **Ciechanover, A.,** Schwartz, A.L. and Lodish, H.F. (1982). The Asialoglycoprotein Receptor Internalizes and Recycles Independently of the Transferrin and Insulin Receptors. *Cell* **32**, 267-275.
12. Dautry-Varsat, A., **Ciechanover, A.** and Lodish, H.F. (1983). pH and the Recycling of Transferrin During Receptor Mediated Endocytosis. *Proc. Natl. Acad. Sci. USA* **80**, 2258-2262.
13. Hershko, A., Heller, H., Elias, S. and **Ciechanover, A.** (1983). Components of Ubiquitin-protein Ligase System: Resolution, Affinity Purification and Role in Protein Breakdown. *J. Biol. Chem.* **258**, 8206-8214.
14. **Ciechanover, A.,** Schwartz, A.L., Dautry-Varsat, A. and Lodish, H.F. (1983). Kinetics of Internalization and Recycling of Transferrin and the Transferrin Receptor in a Human Hepatoma Line: Effect of Lysosomotropic Agents. *J. Biol. Chem.* **258**, 9681-9689.

15. **Ciechanover, A.**, Schwartz, A.L. and Lodish, H.F. (1983). Sorting and Recycling of Cell Surface Receptors and Endocytosed Ligands: The Asialoglycoprotein and the Transferrin Receptors. *J. Cell. Biochem.* **23**, 107-130.
16. **Ciechanover, A.**, Finley, D. and Varshavsky, A. (1984). The Ubiquitin Mediated Proteolytic Pathway and Mechanisms of Energy Dependent Intracellular Protein Degradation. *J. Cell. Biochem.* **24**, 27-53.
17. Finley, D., **Ciechanover, A.** and Varshavsky, A. (1984). Thermolability of Ubiquitin Activating Enzyme from the Mammalian Cell Cycle Mutant ts85. *Cell* **37**, 43-55.
18. **Ciechanover, A.**, Finley D. and Varshavsky, A. (1984). Ubiquitin Dependence of Selective Protein Degradation Demonstrated in the Mammalian Cell Cycle Mutant ts85. *Cell* **37**, 57-66.
19. Patel, V.P., **Ciechanover, A.**, Platt, O. and Lodish, H.F. (1985). Mammalian Reticulocytes Lose Adhesion to Fibronectin During Differentiation to Erythrocytes. *Proc. Natl. Acad. Sci. USA* **82**, 440-444.
20. **Ciechanover, A.**, Wolin, S.L., Steitz, J.A. and Lodish, H.F. (1985). Transfer RNA is an Essential Component of the Ubiquitin and ATP-dependent Proteolytic System. *Proc. Natl. Acad. Sci. USA* **82**, 1341-1345.
21. **Ciechanover, A.**, Finley, D. and Varshavsky, A. (1985). Mammalian Cell Cycle Mutant Defective in Intracellular Protein Degradation and Ubiquitin Protein Conjugation. *Prog. Clin. Biol. Res.* **180**, 17-31.
22. Neutra, M.R., **Ciechanover, A.**, Owen, S.L. and Lodish, H.F. (1986). Intracellular Transport of Transferrin- and Asialoorosomuroid- colloidal Gold Conjugates to Lysosomes after Receptor Mediated Endocytosis. *J. Histochem. Cytochem.* **33**, 1134-1144.
23. Ferber, S. and **Ciechanover, A.** (1986). Transfer RNA is Required for Conjugation of Ubiquitin to Selective Substrates of the Ubiquitin- and ATP-dependent Proteolytic System. *J. Biol. Chem.* **261**, 3128-3134.
24. Jahngen, J.H., Haas, A.L., **Ciechanover, A.**, Blondin, J., Eisenhauer, D. and Taylor, A. (1986). The Eye Lens has an Active Ubiquitin-lens Protein Conjugation System. *J. Biol. Chem.* **261**, 13760-13767.
25. Teeters, C.L., Lodish, H.F., **Ciechanover, A.** and Wallace, B.A. (1986). Transferrin and Apotransferrin: pH-dependent Conformational Changes Associated with Receptor-mediated Uptake. *Ann. N.Y. Acad. Sci.* **463**, 403-407.
26. Schwartz, A.L., **Ciechanover, A.**, Merritt, S. and Turkewitz, A. (1987). Antibody-induced Receptor Loss: Different Fates for Asialoglycoproteins and the Asialoglycoprotein Receptor in HepG2 Cells. *J. Biol. Chem.* **261**, 15225-15232.
27. **Ciechanover, A.** (1987). Regulation of the Ubiquitin Mediated Proteolytic Pathway: Role of the Substrate α -NH₂ Group and of Transfer RNA. *J. Cell. Biochem.* **34**, 81-100.
28. Ferber, S. and **Ciechanover, A.** (1987). Role of Arginine-tRNA in Protein Degradation by the Ubiquitin Pathway. *Nature* **326**, 808-811.
29. **Ciechanover, A.**, Ferber, S., Ganoth, D., Elias, S., Hershko, A. and Arfin, S. (1988). Purification and Characterization of Arginyl-tRNA-Protein Transferase from Rabbit Reticulocytes: Its Involvement in Posttranslational Modification and Degradation of Acidic N-Termini Substrates of the Ubiquitin Pathway. *J. Biol. Chem.* **263**, 11155-11167.

30. Kulka, R.G., Raboy, B., Schuster, R., Parag, H.A., Diamond, G., **Ciechanover, A.**, and Marcus, M. (1988). A Chinese Hamster cell Cycle Mutant Arrested at G2 Phase Has a Temperature-Sensitive Ubiquitin-Activating Enzyme, E1. *J. Biol. Chem.* **263**, 15726-15731.
31. Schwartz, A.L., **Ciechanover, A.**, Brandt, R.A. and Geuze, H.J. (1988). Immunoelectron Microscopic Localization of Ubiquitin in Hepatoma Cells. *EMBO J.* **10**, 2961-2966.
32. Mayer, A., Gropper, R., Schwartz, A.L. and **Ciechanover, A.** (1989). Purification, Characterization and Rapid Inactivation of Ubiquitin Activating Enzyme from the Mammalian Cell Cycle Mutant ts85. *J. Biol. Chem.* **264**, 2060-2068.
33. Mayer, A. Siegel, N.R., Schwartz, A.L. and **Ciechanover, A.** (1989). Degradation of Proteins with Acetylated Amino Termini by the Ubiquitin System. *Science* **244**, 1480-1483.
34. Bercovich, Z., Rosenberg-Hasson, Y., **Ciechanover, A.** and Kahana, C. (1989). Degradation of Ornithine Decarboxylase in Reticulocyte Lysate is ATP-Dependent but Ubiquitin-Independent. *J. Biol. Chem.* **264**, 15949-15952.
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Patents:

1. Development of an anti-tumor agent from Serum.
Along with Drs. Ofer Binah and Gila Maor, Faculty of Medicine, Technion.
Applied December 2002.
2. Utilization of pro-apoptotic peptides to promote apoptosis in malignant cells.
Along with Dr. Hedva Gonen, Faculty of Medicine, Technion, and
Drs. Hermann Steller and Hyung-Don Ryoo, Rockefeller University, NY, USA.
Applied September 2002.