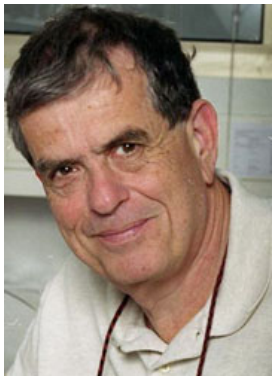
Aaron J. Ciechanover



Date of Birth 1 October 1947

Place Haifa (Israel)

Nomination 12 February 2007

Field Biochemistry

Title Professor, Nobel laureate in Chemistry, 2004

Most important awards, prizes and academies

Awards: The Austria Ilse and Helmut Wachter Prize, University of Innsbruck (1999); The Jewish National Fund Alkales Award for Distinguished Scientific Achievements (2000); The Albert and Mary Lasker Award for Basic Medical Research (2000); The Michael Landau Israeli Lottery (Mifa'al Ha'Peis) Award for a significant breakthrough in Medical Sciences (2001); EMET (Truth) Prize (Israeli Prime Minister Prize), for Arts, Science and Culture (in Life Sciences and Medicine) (2002); The Israel Prize for Biology (2003); Japan Society for Promotion of Science (JSPS) (2003 & 2006); Distinguished Scientist Award (2003); Nobel Prize in Chemistry (shared with Drs. Avram Hershko and Irwin A. Rose) (2004). *Fellowships*: Fulbright Fellow, M.I.T., (Dr. Harvey Lodish's Laboratory) (1981-4); Leukemia Society of America Fellow, M.I.T. (1981-3); Israel Cancer Research Fund (ICRF), USA Fellow, M.I.T. (1981-4); Medical Foundation and Charles A. King Trust Fellow, M.I.T. (1983-4); American Cancer Society Eleanor Roosevelt Memorial Fellow (1988-9). *Academies and professional societies*: American Association for Advancement of Science (AAAS); Member, Council of the European Molecular Biology Organization (EMBO) (1996-present); Member, Asia-Pacific IMBN (International Molecular Biology Network) (1999-present); Member, European Academy of Arts and Sciences (2004); Member, Israeli National Academy of Sciences and Humanities (2004); Fellow (Hon.), Royal Society of Chemistry RCS (UK), HonFRSC (2005); Foreign Member, American Philosophical Society (2005); Honorary Member, Society for Experimental Biology and Medicine (2006); Fellow, Federation of Asian Chemical Societies (FACS) (2006); Member, Pontifical Academy of Sciences (2007). Honours: Janet and David Polak Professor of Life Sciences, Technion-Israel Institute of Technology, Haifa, Israel (1996-present); University Distinguished Professor, Technion-Israel Institute of Technology, Haifa, Israel (2002-present); Professor, Israel Cancer Research Fund (ICRF), USA (2003-present); Cell Stress Society International - CSSi - Medal (2005); Sir Hans Krebs Medal, Federation of the European Biochemical Societies (FEBS) (2006). *Honorary degrees*: Honorary Doctorate (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Tel Aviv University, Tel Aviv, Israel (2001); Honorary Doctorate (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Ben-Gurion University, Beer Sheba, Israel (2004); Honorary Doctorate, City University of Osaka, Japan (2005); Honorary Doctorate, University of Athens, Greece (2005); Honorary Doctorate, National University of Uruguay, Montevideo, Uruguay (2005); Honorary Doctorate, Washington University, St. Louis, Missouri, USA (2006); Honorary Doctorate (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; Honorary Professor, Chinese Academy of Medical Sciences (CAMS), China (2006); Honorary Doctorate (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Hebrew University, Jerusalem, Israel (2007); Honorary Doctor and Foreign Fellow, Polish Academy of Medicine (2007); Honorary Doctorate (Doctor Philosophiae Honoris Causa; Ph.D. Hon.), Bar-Ilian University, Ramat Gan, Israel (2007); Honorary Doctorate (Doctor Honoris Causa), Universidad San Francisco, Quito, Ecuador (2008).

Summary of scientific research

Dr Ciechanover's current research focuses on the regulation of transcriptional factors, tumour suppressors, and onco-proteins, and the development of novel modalities for the treatment of diseases such as malignancies

and neurodegenerative disorders based on a known mechanism of action and aberrations in the activity of the ubiquitin system which he co-discovered.

Main publications

Hershko, A., Heller, H., Ganoth, D., and Ciechanover, A. (1978), Mode of degradation of abnormal globin chains in rabbit reticulocytes, *Protein Turnover and Lysosome Function* (H.L. Segal & D.J. Doyle, eds.) Academic Press, New York, pp. 149-69; Ciechanover A., Hod, Y., and Hershko, A. (1978), A heat-stable polypeptide component of an ATP-dependent proteolytic system from reticulocytes, *Biochem. Biophys. Res. Common*. 81, 1100-5; 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, 1365-8; 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, 1783-6; 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, 7525-8; 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, 1525-8; Ciechanover A., Heller H., Katz-Etzion R., Hershko A. (1981) Activation of the heat-stable polypeptide of the ATP-dependent proteolytic system, *Proc. Natl. Acad. Sci. USA*, Feb 78(2):761-5; Ciechanover, A., and Ben-Saadon R. (2004), N-terminal ubiquitination: More protein substrates join in, *Trends Cell Biol.* 14, 103-6; Ciechanover, A., Elias, S., Heller, H. & Hershko, A. (1982), 'Covalent affinity' purification of ubiquitin-activating enzyme,*J. Biol. Chem.* 257, 2537-42; 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, 8206-14; 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, 13964-70; Finley, D., Ciechanover, A., and Varshavsky, A. (1984), Thermolability of ubiquitin-activating enzyme from the mammalian cell cycle mutant ts85, *Cell* 37, 43-55; 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; Ciechanover A., Finley D., Varshavsky A. (1984) Ubiquitin dependence of selective protein degradation demonstrated in the mammalian cell cycle mutant ts85, *Cell*, May 37(1):57-66; Ciechanover A., Wolin S.L., Steitz J.A., Lodish H.F. (1985), Transfer RNA is an essential component of the ubiquitin- and ATP-dependent proteolytic system, *Proc. Natl. Acad. Sci. USA*, Mar 82(5):1341-5; Ferber S., 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.*, Mar 5;261(7):3128-34; Ferber S., Ciechanover A. (1987) Role of arginine-tRNA in protein degradation by the ubiquitin pathway, *Nature*, Apr 23-29; 326(6115):808-11; Ciechanover A., Ferber S., Ganoth D., Elias S., Hershko A., Arfin S. (1988) Purification and characterization of arginyl-tRNA-protein transferase from rabbit reticulocytes. Its involvement in post-translational modification and degradation of acidic NH2 termini substrates of the ubiquitin pathway, *J. Biol. Chem.*, Aug 15;263(23):11155-67; Mayer A., Siegel N.R., Schwartz A.L., Ciechanover A. (1989) Degradation of proteins with acetylated amino termini by the ubiquitin system,*Science*, Jun 23;244(4911):1480-3; Elias S., Ciechanover A. (1990) Post-translational addition of an arginine moiety to acidic NH2 termini of proteins is required for their recognition by ubiquitin-protein ligase, *J. Biol. Chem.*, Sep 15;265(26):15511-7; Ciechanover, A., DiGiuseppe, J.A., Bercovich, B., Orian, A., Richter, J.D., Schwartz, A.L., and Brodeur, G.M. (1991), Degradation of nuclear oncoproteins by the ubiquitin system in vitro, *Proc. Natl. Acad. Sci. USA* 88, 139-43; Breitschopf K., Bengal E., Ziv T., Admon A., Ciechanover A. (1998) A novel site for ubiquitination: the N-terminal residue, and not internal lysines of MyoD, is essential for conjugation and degradation of the protein, *EMBO J.* Oct 15;17(20):5964-73; Glickman, M.H., and Ciechanover, A. (2002), The ubiquitin-proteasome pathway: Destruction for the sake of construction, *Physiological Reviews* 82, 373-428; Ciechanover, A. (2005), From the lysosome to ubiquitin and the proteasome, *Nature Rev. Mol. Cell Biol.* 6, 79-86; Ciechanover A. (2005). Intracellular protein degradation: from a vague idea, through the lysosome and the ubiquitin-proteasome system, and onto human diseases and drug targeting (Nobel lecture), *Angew. Chem. Int. Ed. Engl.* Sep 19;44(37):5944-67.