



**Edwin L. Cooper**  
***Curriculum Vitae***  
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## Edwin L. Cooper, Ph.D., D.Sc.

**Date of Birth: December 23, 1936**

**Citizenship: USA**

**Married: Two children**

### EDUCATION

Texas Southern University Houston, TX	B.S.	1957	Biology
Atlanta University Atlanta, GA	M.S.	1959	Biology
Brown University Providence, RI	Ph.D.	1963	Biology
University of California, Los Angeles Los Angeles, CA	Postdoctoral Fellow	1962-64	Comparative Immunology

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Student, Marine Biology Laboratory, Woods Hole, Massachusetts, 1958; Marine Laboratory, Salisbury Cove, Maine, 1961; Cancer Trainee, Brown University, 1959-1960; Developmental Biology Trainee, Brown University, 1961-1962; Postdoctoral Fellow, National Cancer Institute, UCLA, 1962-1964; Assistant Professor UCLA 1964-1968; Assistant Professor, Department of Anatomy, UCLA School of Medicine; Guggenheim Fellow, Karolinska Institute, Stockholm, 1970-1971; Associate Professor, Department of Anatomy, UCLA School of Medicine, 1969-1973; Professor, Department of Anatomy and Cell Biology, Department of Neurobiology (name change), UCLA School of Medicine, 1973-present ; Visiting Professor, (UCLA-IPN) Exchange Program, (AID sponsor): Departamento de Morfologia, Instituto Politecnico Nacional, Mexico City, Feb-Aug., 1966; Sept., 1967; July, 1968 and Sept., 1969; University of Complutense, Spain (Summer), 1980 University of Tromso, Norway, 1981 University of Reims, France University of Leon, Spain, 1985 Cairo University, 1985-86 Yamaguchi University, Japan, 1988 University of Palermo, Italy, 1988; Vice-Chairman, Department of Anatomy and Cell Biology, UCLA School of Medicine, 1989-June 30, 1993

**HONORS:** First and Second Prizes in Art, 1951, 52; B.S. *cum laude*; Fellow AAAS, 1963; Guggenheim Fellow (Karolinska Inst.), 1970-71; Honorary Fulbright Scholar, 1970-71; Swedish Medical Research Council Fellow, 1970-71; National Cancer Inst. Fellow, 1970-71; Fulbright Travel Award, 1970-71; Marshall, Hippocratic Oath Ceremony, UCLA, 1975; Founder Div. Comp. Immunol. Am. Soc. Zool., 1975; Founding Editor, *Int. J. Dev. Comp. Immunol.*, 1976; Member, Royal Lymphatic Society, Uppsala, Sweden; Eleanor Roosevelt Fellow, Int. Union Against Cancer, 1977-78' (Ludwig Institute for Cancer Research, Lausanne, Switzerland); Fellow, Fogarty Int. Center, 1977; Co-Founder ISDCI, 1978; Guest Professor Collège de France, 1978; Mayor's Medal, Verona, Italy, 1980; Outside Referee, Premier Prix in Comparative Immunology, Behring-Metschnikoff, 1982; Certificate of Appreciation Kyushu Univ. Med. School and Fukuoka Med. Assoc., Japan, 1983 Mayor of Los Angeles, Dist. Achievement-ISDCI, 1983; Pres. Am. Soc. Zool., 1983; Pres. International Society of Developmental and Comparative Immunology (ISDCI), 1984 Outstanding Service, American Society of Zoologists, 1984; Senior Fulbright Fellow, 1985-86; *Docteur Honoris Causa*, University of Reims, 1986; Doctor of Science, Texas Southern University, 1986; S.M. Nabrit Achievement Award in Science, Atlanta University, 1987; Fellow, Japan Society for the Promotion of Science, 1987-88; Medal, Yamaguchi University, 1988; Honorary Doctor of Science, Brown University, 1988; *Premio di Scienze*, Universita di Lecce, Italy, 1992; Distinguished Professor, German Academic Exchange Program, University of Greifswald, Germany, 1998; Alexander von Humboldt Prize (Federal

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Republic of Germany, 1999); The 2004 Norman E. Clarke Lecture November 20, 2004 American College for Advancement in Medicine; Election to Erfurt Academy, Germany 2006

### **MEMBERSHIP IN SCIENTIFIC SOCIETIES**

**ACTIVE:** Fellow, American Association for the Advancement of Science (1963); Founding Member, Society of Invertebrate Pathologists, Pan American; Congress of Anatomy Founder, Division of Comparative Immunology, American Society of Zoologists, 1975 (Chairman *pro tem*, 1975); Member, American Society of Zoologists; American Association of Anatomists Transplantation Society; American Association of Immunologists; Governing Board, American Institute of Biological Sciences, 1982-84; British Society of Immunology; Societe Francaise d'Immunologie; Charter Member, Japanese Association of Developmental and Comparative Immunology (JADCI); Charter Member, International Society of Neuroimmunomodulation; Co-Founder, International Society, Developmental and Comparative Immunology (ISDCI), affiliated with International Union Biological Sciences (IUBS), 1978; International Union of Immunological Societies, 1984 (IUIS); Society for In Vitro Biology.

**INACTIVE:** Genetics Society of America; Society for the Study of Growth and Development; New York Academy of Sciences; The Corporation Mt. Desert Island Biological Laboratory; Salisbury Cove, Maine; Society of the Sigma Xi; Institute of Evolutionary and Environmental Biology (UCLA); Federation of American Scientists; Brain Research Institute, 1994

**UNIVERSITY OF CALIFORNIA:** Associate Member, Jonnson Cancer Center; Member, Dental Research Institute; Brain Research Institute; Latin American Center; Psychoneuroimmunology Group; Graduate Council, (Sub-Committee, Fellowships and Assistantships); Frontier Institute (Interdisciplinary Initiative of Academic Senate)

**CITATIONS:** American Men and Women of Science; Who's Who in America; Bicentennial Memorial Edition of Community Leaders and Noteworthy Americans, International Scholars Directory; Dictionary of International Biography, vol. XVI; Who's Who in Health Care; Who's Who in the West; Who's Who in the World; Who's Who in Science

**TEACHING:** 1964-1969 Co-Chairman, Anatomy 104, Mammalian Histology (Dental students); 1966-1969 Chairman, Anatomy 104, Mammalian Histology (Dental students); 1971 Anatomy 201, Microscopic Anatomy and Cell Biology (Medical students); 1988 Coordinator, Anatomy 201, Microscopic Anatomy and Cell Biology; 1972-1973 Oral Biology 402a, Fundamentals of Oral Biology (2nd year Dental students) As part of the interdisciplinary Course Sequence in Immunology; 1966-1988: Anatomy and Cell Biology 251, Chairman, Developmental and Comparative Immunology; 1973-1988: Anatomy and Cell Biology 265, Chairman, Evolution of Cancer; 1971 Microbiology 260, Chairman, 1981-82 (Immunology Forum); 1971-2001 Neurobiology 201 Microscopic Anatomy and Cell Biology; Faculty Laboratory Coordinator; 1972 Microbiology 186 (undergraduates); 1978-1981 Microbiology 211, Chairman, 1981 (Workshop, General Immunology Methods; 1982-1985 Faculty Research Presentation Seminar, Department of Microbiology and Immunology; 1985 General Immunology (graduate students): Entomology Department; 1985-1986 Faculty of Science, Cairo University, Egypt; Lectured extensively throughout Egypt at the Universities of Cairo, Alexandria, Monofia and Assuit, and at the U.S. Naval Medical Research Unit in Cairo; 1988 Course Comparative Immunology, 18 Lectures Titolare Professor Nicolo Parrinello, Universita di Palermo; 1993 Course Invertebrate Immunity, Universite Blaise Pascal Clermont, Clermont-Ferrand France, 12 lectures, (Professor Christian Vivares); 1994 Course Corso Di Laurea in Scienze Biologiche, Universita di Palermo, 20 lectures, Corso di Zoologia II (Indirizzo Biologico-Ecologico); Titolare Professor Nicolo Parrinello "Environment, Stress and The Immune System; 1996 Neurobiology 201, Cell and Tissue Biology: Microscopic Anatomy and Cell Biology (Medical students). Appointed to prepare Interactive Teaching Program for World Wide Web; 1997 Neurobiology 201, Cell and Tissue Biology: Microscopic Anatomy and Cell Biology (Medical students). Continued preparation of Interactive Teaching Program for World Wide Web; 1997 Neurobiology 201, Cell and Tissue Biology: Microscopic Anatomy and Cell Biology Medical students); Appointed as Faculty Laboratory Coordinator, initiated and monitored Small Groups To Maximize Faculty Assistance of Students; Preparation of Interactive Teaching Program; 1997 Invited For Two Lectures: New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy, September: "Comparative Immunologic Models Can Enhance Analyses of Environmental Immunotoxicity"; "Earthworm

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Immunology: New Directions"; 1998-1999 Neurobiology 201 Completed preparation of CDROM; Initiated Program for Enhancement of Teaching by inclusion of Residents and Interns; 1998 Neurobiology 101 Dental Histology: Taught in all laboratories; 1998 Biomedical Science 205: Human Microscopic Anatomy: Gave two 1and1/2 hour lectures (Hemopoiesis/Lymphopoeisis) to 24 students in the UCLA UCR class; 1998 Argentina: Visiting Professor: Curso Internacional de Inmunologia Comparada, Vertebrados e Invertebrados Catedra de Inmunologia, Facultad de Farmacia y Bioquimica, Universidad de Buenos Aires Department of Immunology at the University of Buenos Aires, Argentina. Students from Argentina, Brazil and Chile: Title of Five Two Hour Lectures: *Introduction to Comparative Immunology, The Invertebrates, The Ectothermic Vertebrates, The Earthworm and Tunicate Models, Future Research*; 1998 Italy: Visiting Professor, Universita degli Studi di Milano, Dipartimento di Biologia Strutturale e Funzionale, III Facolta di Scienze MM.FF.NN. Varese: Dottorato di Ricerca in Biologia Evoluzionistica e dello Sviluppo; 1998 *Discorsi Sull'Evoluzione: 7<sup>th</sup> of eight lectures by visiting professors: "The evolution of the immune system in invertebrates"; "A primitive model of innate immunity"*; Italian Embryology Congress, Santa Margherita Ligure, *"Origin of Lymphocytes"*; 1998 Germany: Recipient Visiting Professor Lectureship, German American Academic Exchange Program, University of Greifswald; *"History of the International Society of Developmental and Comparative Immunology"*.; 1998 Italy: Presented *Lectura Magistralis*, International Workshop on Cytometry, The Italian Society of Immunology, University of Modena and Reggio Emilia; Presented two lectures: Comparative Immunology and Environmental Problems to Ph.D. Students in Animal Biology, University of Palermo, Italy; 2000 Neurobiology 201 Microscopic Anatomy and Cell Biology (see above, Coordinator, 1997); 2001 Neurobiology 201 Microscopic Anatomy and Cell Biology; 2002 Neurobiology 201 Microscopic Anatomy and Cell Biology; 2001 Neurobiology 104 Histology and Cell Biology; 2002 Neurobiology 298A Comparative Neuroimmunology; 2003 Neurobiology 298A Evolution of Neuroimmune Systems, Winter Quarter; 2003 BioEthics for Graduate Students in Access Program UCLA Fall Quarter; 2003 Block 1 Problem Based Learning, Blood Laboratory Fall Quarter; 2004 Blook 1 Problem Based Learning, Blood Laboratory, Fall Quarter; 2004 Neurobiology 298A Evolution of Neuroimmune Systems Winter Quarter; 2004 Block 4 Problem Based Learning Neurologic, Musculoskeletal and Psychiatric Systems in Medicine Spring Quarter

## Ph.D. AND MASTER'S COMMITTEES

<u>Position</u>	<u>Student</u>	<u>Department</u>
Chairman	Russell K. Hostetter (Ph.D., 1973) (UCLA)	Anatomy
Chairman	Bruce A. Brown (Ph.D., 1974) M.D., 1975; (UCLA)	Anatomy
Chairman	Carlos Lemmi (Ph.D., 1974) (UCLA)	Anatomy
Chairman	Alfredo E. Klempau (Ph.D., 1983) (UCLA)	Biology
Chairman	M.H. Mansour (Ph.D., 1984) (UCLA)	Anatomy
Chairman	Carlos T. Smith (Ph.D., 1986) (UCLA)	Anatomy
Chairman	Hoda Ibrahim Negm (Ph.D., 1986) (UCLA)	Anatomy
Chairman	Karen L. Kelly (Ph.D., 1992) (UCLA)	Anatomy and Cell Biology
Chairman	Michael M. Suzuki (Ph.D.,1994) (UCLA)	Anatomy and Cell Biology
Co-Chairman	Aulogelio Aponte (M.S., 1967) (IPN, Mexico City)	Morfologia
Co-Chairman	Edward White, DDS. (Ph.D., 1969) (UCLA)	Microbiology and Immunology
Co-Chairman	Harold O. Waters (Ph.D., 1970) (UCLA)	Anatomy

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Co-Chairman	Donald H. Marks (Ph.D., 1977) MD, 1978 (UCLA)	Bacteriology
Co-Chairman	Amina El Sayed Hussein (Ph.D., 1989) (Alexandria University, Egypt)	Immunology
Member	Jean Becket (M.S., 1967) (UCLA)	School of Education
Member	Gary N. Trump (Ph.D., 1967) (UCLA)	Microbiology and Immunology
Member	Arden Kelton (Ph.D., 1969) (UCLA)	Radiology
Member	Richard Lane (Ph.D., 1970) (UCLA)	Radiology
Member	William G. Connors (Ph.D., 1970) (UCLA)	Radiology
Member	Lou Reiss (Ed.D., 1970) (UCLA)	School of Education
Member	Eric Hauber (Ph.D., 1970) (UCLA)	Anatomy
Member	John Cantrell (Ph.D., 1971) (UCLA)	Microbiol. and Immunol.
Member	Christopher John Tyson (Ph.D., 1975) (University of Adelaide, Australia)	Faculty of Science
Member	Mamdouh Saad Ahmed Akef (M.S., 1978) (Cairo University, Egypt)	Zoology/Immunology
Member	Mohamed Hesham Mansour Hamed Shaker (M.S., 1979, Cairo University)	Zoology/Immunology
Member	David Kerk (Ph.D. 1981) (UCLA)	Anatomy
Member	Hoda Ibrahim Mohamed Negm (M.S., 1981) (Cairo University, Egypt)	Zoology/Immunology
Member	Thomas P. Bradley (Ph.D., 1982) (UCLA)	Microbiol. and Immunol.
Member	Jerzy Skrobak-Kaczynski (Ph.D., 1982) (UCLA)	Anthropology (Human Evol.)
Member	Amal Kumar Chakraborty (Ph.D., 1983) (University of North Bengal, India)	Center for Life Sciences
Member	Lisbeth C. Smith (Ph.D. 1984) (UCLA)	Microbiol. and Immunol.
Member	Salwa Fouad Ibrahim, (M.S., 1985) (Cairo University, Egypt)	Zoology/Immunology
Member	Azza Saad Amine, (M.S., 1985) (Cairo University, Egypt)	Zoology/Immunology
Member	Abdel-Hakim Saad (Ph. D., 1985) (Cairo University, Egypt)	Zoology/Immunology
Member	Mona M. El Moataz B.M. (M.S. 1986) (Cairo University, Egypt)	Entomology/Immunol.
Member	Wegdan M.M.Bassiouni (Ph.D., 1986) (Cairo University, Egypt)	Zoology/Immunology
Member	El Darwish Isaad Mokhtar (Ph.D., 1990) (Cairo University, Egypt)	Zoology/Immunology
Member	Patrick Joseph Mock (Ph.D., 1990) (UCLA)	Biology
Member	Saurav K. Sarkar (Ph.D., 1991) (University of North Bengal, India)	Biology

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Member	Mervat Nazy El Masri (Ph.D. 1992) (Cairo University, Egypt)	Zoology/Immunology
Member	Andrew Conrad (Ph.D. 1992) (UCLA)	Anatomy and Cell Biology
Member	Iqbal Grewel (Ph.D., 1993) (UCLA)	Microbiol./Mol. Genetics
Member	Abu El Yosser R. Z. Ali (M.S., 1993) (Cairo University, Egypt)	Immunology
Member	Asha Sinha (Ph.D., 1993) (University of North Bengal)	Immunology
Member	D. F. M. Teleb (Ph.D., 1994) (Cairo University, Egypt)	Zoology/Physiology
Member	W. N. El Mazny M (Ph.D., 1994) (Cairo University, Egypt)	Immunology
Member	E. H. Abd El-Rahman (Ph.D., 1994) (Cairo University, Egypt)	Zoology/Immunology
Member	Patrice Ville (Ph.D., 1994) (University of Bordeaux France)	Applied Biochemistry
Member	Giorgia Gri (B.Sc. Honors, 1994) (University of Modena, Italy)	Zoology/Immunology
Member	N. M. Ahmed Abd El-Whab (M.S., 1995) (Cairo University, Egypt)	Immunology
Member	Tahany H. H. A. Ayyad. (Ph.D., 1995) (Cairo University, Egypt)	Entomology/Immunology
Member	Amany S. M. Amer (M.S., 1996) (Cairo University, Egypt)	Zoology/Immunology
Member	Manar M. H. A. Gawad (M.S., 1996) (Cairo University, Egypt)	Zoology/Immunology
Member	Sami D. A. S. Dawod (M.S., 1996) (Cairo University, Egypt)	Zoology/Immunology
Member	Nagwa I. T. Taalab (M.S., 1996) (Cairo University, Egypt)	Zoology/Immunology
Member	Naglaa Ali El-Saied Moussa (Ph.D., 1997) (Alexandria University, Egypt)	Zoology/Immunology
Member	R. Asokan (Ph.D., 1996) (University of Madras, India)	Zoology/Immunology
Member	S. Murali (Ph.D., 1997) (University of Madras, India)	Zoology/Immunology
Member	Allene Marie Whitney (M. S., 1998) Western Washington University	Environmental Toxicology
Member	Mohadetheh G. R. Moulana (M. S., 1999) Kuwait University	Zoology/Immunology
Member	Amal Fahmy Mohamed (M. S.1999) (Cairo University, Egypt)	Immunology/Zoology
Member	M.R. Basil Rose (Ph.D., 1999) Manonmaniam Sundaranar University, India	Zoology/Immunology
Member	Ari Mayer Mackler (Ph.D., 1999) (Loma Linda University, California)	Reproductive Immunology
Member	Patrick Frost (Ph.D., 1999) (University of California. Los Angeles)	Anatomy and Cell Biology
Member	Mohey El Din Gomaa Mobarez, Ph.D. 1999 (Cairo University, Egypt)	Immunology/Parasitology
Co-Chair	Lutz Wiesner, Ph.D., 2001 (University of Greifswald, Germany)	Invertebrate Immunology

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Advisor	Shinji Kasahara Ph.D. 2006 (University of Washington)	Neuroimmune Immunity
Advisor	Pablo M. Ros, Jr., 2001 Milton Academy MA	Earthworm Immunology
Member	Maghil Denis, Ph.D., 2001 Manonmaniam Sundaranar University, India	Invertebrate Immunology
Member	Shar Ragab el Hadad, Ph.D., 2001 Cairo University, Egypt	Immunology/Zoology
Member	Wael Ibrahim Zaki Ashour, M.Sc., 2001 Cairo University, Egypt	Immunology
Member	Jane Louise Radford, Ph.D. 2003	Invertebrate Immunology
Member	M. Nalilni, Ph.D. 2003 University of Madras	Invertebrate Immunology
Member	S. Jayasuriya, Ph.D. 2003 Manonmaniam Sundaranar University	Invertebrate Immunology
Member	P. A. Ogutu, Ph.D. 2004 University of Madras	Invertebrate Immunology
Member	A. Colantonio Ph. D. 2008 UCLA	Microbiol. Immunol. Gene.

**POSTDOCTORAL FELLOWS AND RESEARCH ASSOCIATES:** Francisco Garcia Herrera, M.D., Professor, Departamento de Morfologia, Escuela de Medicina, Instituto Politecnico Nacional, Mexico; Aulogelio Aponte, M.D., Departamento de Morfologia, Universidad Centro-Occidental, Barquisimeto; Edo. Lara, Venezuela; Buena S. Baculi, M.D., Providence Hospital, Portland, Oregon; Edward J. Moticka, Ph.D., Department of Medical Microbiology and Immunology, Southern Illinois University; Holliston B. Riviere, Ph.D., Rancho Palos Verdes, California; Zacherie Brahma, Ph.D., School of Medicine, University of Indiana, Indianapolis; Michael Mandell, D.D.S., Sherman Oaks, California; Richard K. Wright, Ph.D., Los Angeles; R.R. Avtalion, D.V.M., Department of Life Sciences, Bar-Ilan University, Ramat-Gan, Israel; Elizabeth Stein, Ph.D., Department of Surgery, School of Medicine, UCLA; Jacques Toupin, M.D., Immunodiagnostic Laboratory, Institut de Microbiologie et d'Hygiene de Montreal, Quebec, Canada; Erich Eipert, Ph.D., National Marine Fisheries Service, Seattle, Washington; M.B. Widmer, Ph.D., Department of Immunology, University of Minnesota, Minneapolis; J.A. Ramirez, Sc.D., Instituto Politecnico Nacional, Mexico City, Mexico; A.G. Zapata, Sc.D., Rosa Gomariz, Sc.D. and Javier Laceta, Sc.D., Universidad Complutense, Spain; P. Roch, Sc.D., CNRS, Montpellier, France; A. Villena, Sc.D., Universidad Leon, Spain; S. Tochinai, Sc.D., Department of Zoology, Hokkaido University, Sapporo, Japan; A. Wojdani, Ph.D., Private Business, Los Angeles, California S. Etesami, Sc.D., Private Business, Los Angeles; M. Ghoneum, Ph.D., Department of Pathology, Drew Medical School, Los Angeles, California; I. A. Sadek Ph.D., Faculty of Science, Kuwait University; M.H. Ravindranath, Ph.D., UCLA; M. H. Mansour, Ph.D., Cairo University; Abdel-Hakim Saad, Ph.D., Cairo University; D.A. Raftos Ph.D., University of Technology, Sydney, Australia; M. Faisal, Ph.D., Virginia Institute of Marine Sciences, Gloucester, Virginia; Ossama Aboul Dahab, University of Alexandria, Egypt; Tomoo Sawada, Japan Zhiqing, Zhang, Department of Virology, Chinese Academy of Sciences, Beijing, China; Ellen Kauschke, University of Greisfswald, Germany; Sharifa Shaker, Alexandria University, Egypt; Arnaud Lacoste, Ph.D., University of Paris (Roscoff Marine Station) Psychoneuroimmunology Program with Prof. Chris Evans; Paula Cabrera, Ph.D. University of Buenos Aires, (Department of Pathology, UCLA with Professor Linda Baum)

**RESEARCH STUDENTS (Medical [M]; Dental [D]; High School [H]; Undergraduate [U]):**

Maria P. Rodriques [M] (Mexico), Stephen White [M], Stephen Bailey [D], Daniel Olson [D], D.W. Schaeffer [H], Larry Winger [H] (California Museum of Science), Martin Montague [H], Joey Baker [H], James Beller [D], Steven Hayes [U], Elliot Hills [U], Doris Green [U], Donald Legler [D], Frank Galef [U], Katherine Haglund [U], Fred Birnberg [U], Teresa Reddy [U], Deborah Cletsway [H] (CAST Program), Emelda Rosas [U], Roger Lallone [U], H. Florey [U], Soheil Younai [M], Abdullah Moravati [U], Pejman Rahimian [U], Daniel Chavez [M], Kathy Emanuel [U], Carlos Marroquin [M], Dave Schwartz [M], Bang Hoang [M], Tony Hsu [U], Tung Huynh [M], Phillip Oliff [U], Steve Sarafian [U], Dan Stillman [U], Rick Fairhurst [M], Adrian Casillas [M], Jeffrey Zhang [U], Tony Hsu [U], Andrew Vuong [U], Jeannie Shen [U], Jenny Li [U], Andy Yang [U], Trong Nguyen, Yong

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Cha, Eileen Kim, David Sarkissian, Hambik Oktanyan [U], Leigh Sekimoto, Robin Reisz [D] (SRP) Student Research Program, Yong Cha, Steve Hsu, Agnes Lau, Mimi Yang, Minal Patel, Andrew Kan, Shyama Kamat, Daniel Kim, Nikhil Daga, Ray Hahn, David Tahour, Pooya Boktoor, Eric Jeng

**STUDENT RESEARCH PROGRAM:** Alfred Lee, An Bui, Eric I-Hun Jeng, Michael Elist, Nir Maghen, Pooya Boktoor, Sepand Salehian; Erica, Michelle, Reid, Antony, Johnny

**ELECTIONS AND APPOINTMENTS (Departmental and University Committees)**

**UNIVERSITY SERVICE**

**Member:** Dental Admissions Committee; Animal Research Committee; Council on Research; Committee on Committees; VRAAC; STEM; Executive Committee, Latin American Center: Brain Research Institute (Psychoneuroimmunology Program) Zebrafish Affinity Group.

**Chair:** *Ad hoc* CAP; CAP Review of Chair, Neurobiology;

**Chair:** Latin American Center Working Group: Environment and Public Health

**NATIONAL SERVICE:** Member of Study Section Institute of Allergy and Infectious Diseases

**INTERNATIONAL SERVICE AND APPOINTMENTS:** Founding Editor in Chief 2003 *Evidence Based Complementary and Alternative Medicine eCAM* (OXFORD UNIVERSITY PRESS); Member 2003 Collaborative Centers for Integrative Medicine (CCIM) UCLA; Member International Congress of Zoology Committee (XIX Congress Beijing China, August 23-27, 2004); Member Scientific Committee (XIX Congress Beijing China, August 23-27, 2004); Invited Plenary Speaker Comparative Immunology (XIX Congress Beijing China, August 23-27, 2004); Organizer Symposium: Comparative Immunology (XIX Congress Beijing China, August 23-27, 2004); Chair, Section 4A Molecular Biology and Oriental Medicine, 12<sup>th</sup> International Congress Oriental Medicine, November 2003 Taipei Taiwan.

**Anatomy / Anatomy and Cell Biology / Neurobiology:** Member, Graduate Student Affairs, 1965-1977; Graduate Adviser (Chairman, Graduate Student Affairs Committee, 1968-1969); Spanish Language Examination Committee, 1966; Elected Committee for Promotions of Associate Professors, 1976-78, 1987-92, Alternate 1981-84; Financial Resources Committee, 1981-1984; Distinguished Lecturer Series, 1988; Committee on Distinguished Speakers, 1988; Graduate Student Affairs Committee, 1988; Vice Chair, Department of Anatomy & Cell Biology 1989-1993; *Ex-Officio* Member, Graduate Program Committee (GPC) 1989-present; Subcommittee on Seminars (GPC), 1989; Task Force on Administration 1989, Teaching Committee, 1995 Member Alumni Fund Raising Committee Neurobiology, 2004

**Interdepartmental:**

Chairman, Committee to Formulate Interdisciplinary Ph.D.; Program in Immunology, 1976, 1981-82

**School of Medicine:** Admissions, 1971-1972; Liaison for Prebiomedical Students, 1971; Three Subcommittees; Prepared and won grant from O.E.O.: "Increasing Educational Opportunities in the Health Sciences" (for minority students); Relations with Foreign Medical Schools, 1970; Member, Aesculapians, Support Group for UCLA Medical School, 1988-present; Hippocratic Oath Ceremony Committee, 1988-present; Steering Committee for Liaison Committee on Medical Education (LCME) Accreditation Process, 1988; LCME Subcommittee on Graduate Education in the Sciences Basic to Medicine/Basic Science Departments, 1990-1991; Committee For New Faculty Housing MOP (Mortgage Loan Program); Member, Chancellor's Selection Committee: Award for Postdoctoral Research, 1998

**School of Dentistry:** Admissions, 1970-1973, 2000-2003

**University:** Academic Senate, Ad Hoc Faculty Promotion Committees, 1964-present; Elected to Membership, Legislative Assembly, Academic Senate, Los Angeles Division, Group X, April 7, 1969; Academic Affirmative Action, 1975-1977; Interim Space Task Force to the Space Planning Committee of the Cancer Center, 1975;



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Graduate School Affirmative Action Council, 1981-1983; Search Committee - Director, Dental Research Committee, 1982; First Awards Committee, Dental Research Institute, 1982; Member, Selection Committee, Danforth Fellows, 1982; Member, Selection Committee, Summer Minority Student Fellows, 1982, 1985; Member, Graduate Council Review Team, Graduate Program, Department of Physiology, 1982; Member, Dental Research Institute; Member, Jonsson Cancer Research Center; Member, Executive Committee, The Royce 270 Senior Support Group for Science and the Performing Arts, 1988-present; Chair, *ad hoc* Committee, Council on Academic Personnel, 1990-present; Member, Committee on Outstanding Graduate Student, UCLA Alumni Association, 1993; Graduate Council, Sub-Committee, Fellowships and Assistantships, 1995; Member: Review Team, Department of Epidemiology, School of Public Health, 1996; Department of Molecular, Cell and Developmental Biology, 1997; Chair, Review Team, Department of Anthropology, UCLA; Reviewed, Department of Biology, California State University at Northridge; UCLA: UCLEADS, 2000-present; Applied Anatomy College, (School of Medicine, 2000-2002); Legislative Assembly, Academic Senate, 2000-present; Council on Research; 2002-present; Animal Research Committee, 2002-present; **Member** Dental Admissions Committee; Animal Research Committee; Council on Research; Committee on Committees; VRAAC; STEM; Executive Committee, Latin American Center: Brain Research Institute (Psychoneuroimmunology Program) Zebrafish Affinity Group; **Chair** *Ad hoc* CAP; CAP Review of Chair, Neurobiology; **Chair**: Latin American Center Working Group: Environment and Public Health

**ELECTIONS AND APPOINTMENTS (Local, National, International):** 1965-1976 Member, Curbstone Clinic, California Junior Academy of Sciences, California Museum of Science and Industry; 1971 Committeeman-at-Large for Section Committee of Section on Biological Sciences, (FG) American Association for the Advancement of Science Council; 1973-1977 Member, American Association for the Advancement of Science Council; 1975-1976 Chairman-Elect, American Association for the Advancement of Science, Section G; 1976-1977 Chairman, American Association for the Advancement of Science, Section G; 1978-1980 Member, Committee on Minority Affairs, American Association of Immunologists; 1981-1984 President Elect, President and Past President, American Society of Zoologists; 1981-1988 1st President Elect, 2nd President and 2nd Past President, International Society Developmental and Comparative Immunology; 1972-1982 Member/Chairman, Membership Committee, American Society of Zoologists; 1972-1973 Member, Advisory Committee Office of Scientific Personnel, NRCouncil; 1973-1974; 1975-1978 Member, Commission on Human Resources, NRCouncil; 1974-1978 Member, Board of Scientific Counselors, National Institute of Dental Research; 1974-1977 Program Officer, American Society of Zoologists; 1973 Interviewer, National Fellowship Fund, (Outstanding Minority Students, Pre-clinical); 1981-1982 Member, Aging Review Committee, National Institutes of Aging, 1981-1982; 1985-1988 Member and Executive Vice President, Royce 270 Steering Committee (Major Support Group, Performing Arts UCLA); SubComm. (Events, Membership, Finance); 1984 Member, International Scientific Committee, Invertebrate Immunology Conference, Montpellier, France; 1984-1989 Member, Education Committee, American Society of Zoologists; 1984 Chair, Policy Committee (Past Presidents), American Society of Zoologists; 1984 Member, Policy Committee, American Society of Zoologists, (1996 now Society For Integrative and Comparative Biology; 1985-1987 Member, Committee on Public Affairs, American Society of Zoologists; 1983-1984 President, International Society Developmental Comparative Immunology (ISDCI); 1983 Chairman, Endowment Committee, ISDCI; 1986 Organizer, Egyptian Society of Immunologists, as National Affiliate of International Union of Immunological Societies (IUIS), 6th Council Meeting, Toronto, Canada; 1986 Member, Review Committees for Selection of Egyptian Biologists (Applicants to the BI-National Fulbright Commission, Cairo, Egypt for study and research in the United States; 1986 Member, International Advisory Program Committee, 6th International Congress of Immunology, Toronto, Canada, July 6-11; 1986 Member, Organizing Committee, Satellite Symposium, Immunology of Ectothermic Vertebrates, University of Rochester, July 12-14; 1986 Moderator, "Training of Graduate Students," Topic of Discussion: Future Directions, Satellite Symposium, Immunology of Ectothermic Vertebrates, University of Rochester, July 12-14; 1986-1989 Member, and Chairman, Discipline Screening Committee in Life Sciences C Council for International Exchange of Scholars; 1988-1990 Member, Literature Selection Technical Review Committee, Nat. Lib. of Medicine; 1989 Member, Travel Awards Committee for the IUIS Congress, Am. Assoc. of Immunologists; 1989-1992 Representative, from International Society of Developmental & Comparative Immunology to Council of Union of Immunological Societies; 1989-1992 Representative, from International Society of Developmental and Comparative Immunology to International Union of Biological Societies; 1990 Charter Member, International Society for Neuroimmunomodulation (ISNIM); 1997 Member Research Strategies Advisory Committee,

Edwin L. Cooper *Curriculum vitae*

Environmental Protection Agency; 1997 Member, California State University at Northridge- Review Team, Department of Biology; 1998 Organizer, Argentina The Latin American Association of Developmental and Comparative Immunology, affiliate, International Society of Developmental and Comparative Immunology: Argentina, Brazil and Chile; 1998 Organizer, Germany The German Association of Developmental and Comparative Immunology, Greifswald Germany, Affiliate, International Society of Developmental and Comparative Immunology and the German Society of Immunology; 1998-2000 Member UCLA Graduate Council- Reviewer: Department of Epidemiology, School of Public Health; Department of Molecular, Cell and Developmental Biology, College of Letters and Science; Chair, Committee Reviewer Dept. of Anthropology; 1998-2000 Member: "Interdisciplinary Initiative": Academic Senate: Academic Border Crossing; 1999 First Meeting, Jena, Germany, The German Association of Developmental and Comparative Immunology, Greifswald Germany, Affiliate, International Society of Developmental and Comparative Immunology and the German Society of Immunology); 2003 Member of Study Section Institute of Allergy and Infectious Diseases; 2003 Member 2003 Collaborative Centers for Integrative Medicine (CCIM) UCLA; 2003 Member International Congress of Zoology Committee (XIX Congress Beijing China, August 23-27, 2004); 2003 Consultant Volkswagen Foundation: Innate Immunity: Bridging the gap between ecology and Molecules"; 2003 Member Scientific Committee (XIX Congress Beijing China, August 23-27, 2004); 2003 Invited Plenary Speaker Comparative Immunology (XIX Congress Beijing China, August 23-27, 2004); 2003 Organizer Symposium: Comparative Immunology (XIX Congress Beijing China, August 23-27, 2004); 2003 Chair, Section 4A Molecular Biology and Oriental Medicine, 12<sup>th</sup> International Congress Oriental Medicine, November 2003 Taipei Taiwan.

**EDITORIAL BOARDS:** Founder, Chairman and Editor-in-Chief, *Developmental and Comparative Immunology*, Vols. 1-16, 1977-1993; Associate Editor, *Progress in Neuroimmunology*, 1990-present; *Annual Review of Fish Diseases*, 1989-present; *Animal Biology* 1990-present; Member, *American Zoologist*, 1976-1980; Member, Editorial Advisory Board, *Current Advances In Immunology*, Pergamon Press, Ltd., Oxford, England, 1983-90; Member, Editorial Board (Immunobiology), *Bioscience*, 1984-89; *Zoology*, 2000; *European Journal of Inflammation*, 2003; Founding Editor in Chief, *Evidence Based Complementary and Alternative Medicine* (Oxford University Press), 2003

**REVIEWER OR REFEREE: Granting Agencies (National and International):** National Science Foundation, 1970-present; National Research Council, Canada, 1978-present; National Institute of Aging. National Institutes of Health, 1988-present; Council for International of Scholars, 1989-present; Member, Marine Disease Diagnostic Task Group of the Ecological Processes and Effects Committee, Science Advisory Board, U.S. Environmental Protection Agency, 1990-present; Human Frontier Science Program; Grant Agency of the Czech Republic, 1998-1999; International Science Foundation; National Institutes of Health, USA, 1998-1999; Environmental Protection Agency, (Research Strategies Advisory Committee), 1998-1999; Latin American Center, UCLA, 2000 UCMEXUS, 2000; The Italian Ministry For University and Research, 2000; The Czech Republic; The US Environmental Protection Agency (Experimental Program to Stimulate Competitive research [EPSCoR]), 2000; Grants for Ph.D. Candidates, EPA, 2000; Alzheimer Foundation. Binational Research Program: Israel/USA, National Institute of Allergy and Infectious Diseases, 2002-2003

**REVIEWER OR REFEREE - Journals, Books 1977-present:** *Science*, *Journal of Immunology*, *Herpetologica*; *Cancer Research*; *Endocrinology*; *Journal of Morphology*; *Aquaculture*; *American Journal of Anatomy*; *Nature*; *Marine Science*, Chapter Reviews in: W.F. Windle, "Textbook of Histology," Chapter 12.; *The Thymus*, McGraw Hill, 5th Edition; A.S. Romer and T.S. Parsons, "The Vertebrate Body," 5th Edition, Chapter 14.; *Circulatory System*, W.B. Saunders Co., 1977; M.E. Clark, "Contemporary Biology. Concepts and Implications," Chapters: Two dealing with aspects of immunity, W.B. Saunders Co., 1973; Referee, *Journal of Morphology*; *Comparative Physiology and Biochemistry*; *Science*; *Journal of Histochemistry and Cytochemistry*; *Journal of Parasitology*; *Journal of Insect Biochemistry*; *Journal of Experimental Zoology*; *Proceedings of National Academy of Sciences Proceedings. Royal Society B*; *Bioessays*; *Immunology Today*; Founding Editor-In-Chief, 1977-present, *Developmental and Comparative Immunology*; *Bulletin of Environmental Contamination and Toxicology*; *Cellular Immunology*; *Developmental and Comparative Immunology*; *Immunology Letters*; *Journal of Invertebrate Pathology*; *Journal of Cell Science*.

**CONSULTING ACTIVITIES:**

**COMMUNITY ORGANIZATIONS 1998-2000:** Earthwatch (Volunteer Expedition group, worked in Amazon, "Behavior of Katydid", Archeological Dig in Roman ruins, Carthage, Tunisia); UCLA: Aesculapians: Medical School Support Group; Institute of Archeology; President's Circle, Los Angeles County Museum of Art (LACMA); Ancient Art Council, LACMA; Armand Hammer Museum and Cultural Center; KCET (LA Public Television); KCRW (National Public Radio); Elected to Board of Trustees for the Los Angeles County High School for the Arts Foundation,

**BIBLIOGRAPHY**

**MANUSCRIPTS**

1. Cooper EL, Hildemann WH, Pinkerton W. Serum antibody synthesis and skin homograft survival in larvae of the bullfrog *Rana catesbeiana*. *Immunogene. Lett* 1963; 3: 362-367.
2. Cooper EL. The effects of antibiotics and x-irradiation on the survival of scale homografts in *Fundulus heteroclitus*. *Transplantation* 1964; 2: 2-20.
3. Cooper EL, Pinkerton W, Hildemann WH. Serum antibody synthesis in larvae of the bullfrog *Rana catesbeiana*. *Biol Bull* 1964; 127: 232-238.
4. Cooper, E. L. Algunos aspectos de inmunidad en invertebrados, peces, y anfibios. *Acta. Med.* 1966; 2: 1-5.
5. Baculi BS, Cooper EL. Lymphomyeloid organs of Amphibia. II. Vasculature in larval and adult *Rana catesbeiana*. *J Morphol* 1967; 123: 463-480.
6. Cooper EL. Lymphomyeloid organs of Amphibia. I. Appearance during larval and adult stages of *Rana catesbeiana*. *J Morpho* 1967; 122: 381-398.
7. Cooper EL, Garcia-Herrera F. 1967. La organización de un laboratorio de investigación en embriología e inmunología comparada. *Acta Med.* 3: 59-67.
8. Hildemann, W. H. and Cooper, E. L. 1967. Transplantation genetics: unexpected histoincompatibility associated with skin grafts from F2 and F3 hybrid donors to F1 hybrid recipients. *Transplantation* 5: 707-720.
9. Baculi, B. S. and Cooper, E. L. 1968. Lymphomyeloid organs of Amphibia. IV. Normal histology in larval and adult *Rana catesbeiana*. *J. Morphol.* 126: 463-468.
10. Cooper, E. L. 1968. Transplantation immunity in Annelids. I. Rejection of xenografts exchanged between *Lumbricus terrestris* and *Eisenia foetida*. *Transplantation* 6: 322-337.
11. Cooper, E. L. 1968. Multinucleate giant cells, granulomata and "myoblastomas" in annelid worms. *J. Invertebr. Pathol.* 11: 123-131.
12. Cooper, E. L. 1968. Lymphomyeloid organs of Amphibia. III. Antibody synthesis and lymph glands in larval bullfrogs. *Anat. Rec.* 162: 453-458.
13. Cooper, E. L. and Aponte, A. 1968. Chronic allograft rejection in the iguana, *Ctenosaura pectinata*. *Proc. Soc. Exp. Biol. Med.* 128: 150-154.
14. Cooper, E. L. and Baculi, B. S. 1968. Degenerative changes in the annelid *Lumbricus terrestris*. *J. Gerontol.* 23: 375- 381.
15. Cooper, E. L. and Garcia-Herrera, F. 1968. Chronic skin allograft rejection in the Apodan *Typhlonectes compressicauda*. *Copeia* 2: 224-229.
16. Bernard, G., Cooper, E. L., and Mandell, M. L. 1969. Lamellar membrane encircled viruses in the erythrocytes of *Rana pipiens*. *J. Ultrastruct. Res.* 26: 8-16.
17. Cooper, E. L. 1969. Chronic allograft rejection in *Lumbricus terrestris*. *J. Exp. Zool.* 171: 69-73.
18. Baculi, B. S. and Cooper, E. L. 1970. Histopathology of skin allograft rejection in larval *Rana catesbeiana*. *J. Exp. Zool.* 173: 329-340.
19. Baculi, B. S., Cooper, E. L., and Brown, B. A. 1970. Lymphomyeloid organs of Amphibia. V. Comparative histology in diverse anuran species. *J. Morphol.* 131: 315-328.
20. Cooper, E. L. and Schaefer, D. W. 1970. Bone marrow restoration of transplantation immunity in the leopard frog *Rana pipiens*. *Proc. Soc. Exp. Biol. Med.* 135: 406-411.
21. Bailey, S., Miller, B. J. and Cooper, E. L. 1971. Transplantation immunity in annelids. II. Adoptive transfer of the xenograft reaction. *J. Immunol.* 21: 81-86.

22. Borysenko, M. and Cooper, E. L. 1972. Lymphoid tissue in the snapping turtle, *Chelydra serpentina*. *J. Morphol.* 138: 487-497.
23. Hostetter, R. K. and Cooper, E. L. 1972. Coelomocytes as effector cells in earthworm immunity. *Immunol. Commun.* 1: 155-183.
24. Baculi, B. S. and Cooper, E. L. 1973. Lymphoid changes during antibody synthesis in larval *Rana catesbeiana*. *J. Exp. Zool.* 183: 185-192.
25. Hostetter, R. K. and Cooper, E. L. 1973. Cellular anamnesis in earthworms. *Cell. Immunol.* 9: 384-392.
26. Moticka, E. J., Brown, B. A., and Cooper, E. L. 1973. Immunoglobulin synthesis in bullfrog larvae. *J. Immunol.* 110: 855-861.
27. Brown, B. A. and Cooper, E. L. 1976. Immunological dichotomy in the larval bullfrog spleen. *Immunology* 30: 299-305.
28. Linthicum, D. S., Stein, E. A., Marks, D. H., and Cooper, E. L. 1977. Electron microscopic observations of normal coelomocytes from the earthworm *Lumbricus terrestris*. *Cell and Tissue Res.* 185: 315-330.
29. Linthicum, D. S., Marks, D. H., Stein, E. A., and Cooper, E. L. 1977. Graft rejection in earthworms: an electron microscopic study. *Eur. J. Immunol.* 7: 871-876.
30. Marks, D. H. and Cooper, E. L. 1977. *Aeromonas hydrophila* in the coelomic cavity of the earthworms *Lumbricus terrestris* and *Eisenia foetida*. *J. Invertebr. Pathol.* 29: 382-383.
31. Stein, E., Avtalion, R. R., and Cooper, E. L. 1977. The coelomocytes of the earthworm *Lumbricus terrestris*: morphology and phagocytic properties. *J. Morphol.* 153: 467-477.
32. Marks, D. H., Stein, E. A., and Cooper, E. L. 1978. Chemotactic attraction of *Lumbricus terrestris* coelomocytes to foreign tissue. *Dev. Comp. Immunol.* 3: 277-286.
33. Stein, E. A. and Cooper, E. L. 1978. Cytochemical observations of coelomocytes from the earthworm, *Lumbricus terrestris*. *Histochem. J.* 10: 657-678.
34. Wright, R. K. and Cooper, E. L. 1978. Leopard frog (*Rana pipiens*) spleen lymphocyte responses to plant lectins: Kinetics and carbohydrate inhibition. *Dev. Comp. Immunol.* 2: 95-108.
35. Eipert, E. F., Klempau, A. E., Lallone, R. L., and Cooper, E. L. 1979. Bone marrow and antibody synthesis in *Rana*. *Cell. Immunol.* 46: 275-280.
36. Widmer, M. B. and Cooper, E. L. 1979. Ontogeny of cell-mediated cytotoxicity: Induction of CTL in early postnatal thymocytes. *J. Immunol.* 122: 291-295.
37. Wright, R. K. and Cooper, E. L. 1979. Specificity of carbohydrate inhibition on leopard frog (*Rana pipiens*) erythrocyte agglutinating activity by Concanavalin A and phytohemagglutinin. *Comp. Biochem. Physiol.* 63B: 13-18.
38. Wright, R. K. and Cooper, E. L. 1979. Activation of leopard frog (*Rana pipiens*) spleen lymphocytes by concanavalin A and phytohemagglutinin. *Cell. Immunol.* 48: 222-230.
39. Wright, R. K., Kalina, M., Klempau, A. E., and Cooper, E. L. 1979. Fine structure of leopard frog (*Rana pipiens*) lymphocytes after intravenous transformation by phytohemagglutinin. *Dev. Comp. Immunol.* 3: 453-463.
40. Brahmi, Z. and Cooper, E. L. 1980. Activation of mammalian lymphocytes by a partially purified fraction of scorpion hemolymph. *Dev. Comp. Immunol.* 4: 433-446.
41. Marks, D.H., Stein, E. A., and Cooper, E.L. 1981. Acid phosphatase changes associated with response to foreign tissue in the earthworm, *Lumbricus terrestris*. *Comp. Biochem. Physiol.* 80A: 681-685.
42. Stein, E. A. and Cooper, E. L. 1981. The role of opsonins in phagocytosis by coelomocytes of the earthworm, *Lumbricus terrestris*. *Dev. Comp. Immunol.* 5: 15-25.
43. Zapata, A., Cooper, E. L., and Laceta, J. 1981. Plasma cell clusters in the interstitial tissue of the testes of *Acanthodactylus erythrurus* (Reptilia, Lacertidae). *J. Comp. Pathol.* 91: 263-270.
44. Zapata, A., Villena, A., and Cooper, E. L. 1981. Ultrastructure of the jugular body of *Rana pipiens*. *Cell and Tissue Res.* 221: 193-202.
45. Stein, E. A., Wojdani, A., and Cooper, E. L. 1982. Agglutinins in the earthworm *Lumbricus terrestris*: naturally occurring and induced. *Dev. Comp. Immunol.* 6: 407-421.
46. Wojdani, A., Stein, E. A., Cooper, E. L., and Alfred, L. J. 1982. Agglutinins and proteins in the earthworm, *Lumbricus terrestris*, before and after injection of erythrocytes, carbohydrates and other materials. *Dev. Comp. Immunol.* 6: 613-624.
47. Zapata, A., Gomariz, R.P., Garrido, E., and Cooper, E.L. 1982. Lymphoid organs and blood cells of the caecilian *Ichthyophis kohtaoensis*. *Acta. Zool. Stock.* 63: 11-16.

48. Cooper, E. L., Zapata, A., Garcia-Barrutia, M., and Ramirez, J. A. 1983. Aging changes in lymphopoietic and myelopoietic organs in the annual cyprinodont fish, *Nothobranchius guentheri*. *Exp. Gerontol.* 18: 29-38.
49. Klempau, A. E. and Cooper, E. L. 1983. T-lymphocyte and B-lymphocyte dichotomy in anuran amphibians: I. T-lymphocyte proportions, distributions and ontogeny, as measured by E-rosetting, nylon wool adherence, postmetamorphic thymectomy, and non-specific esterase staining. *Dev. Comp. Immunol.* 7: 99-110.
50. Ramirez, J. A., Wright, R. K., and Cooper, E. L. 1983. Bone marrow reconstitution of immune responses following irradiation in the leopard frog *Rana pipiens*. *Dev. Comp. Immunol.* 7: 303-312.
51. Roch P., Cooper, E. L., and Eskinazi, D. P. 1983. Serological evidences for a membrane structure related to human  $\beta_2$ -microglobulin expressed by certain earthworm leukocytes. *Eur. J. Immunol.* 13: 1037-1042.
52. Stein, E. A. and Cooper, E. L. 1983. Carbohydrate and glycoprotein inhibitors of naturally-occurring and induced agglutinins from the earthworm, *Lumbricus terrestris*. *Comp. Biol. Chem.* 76B: 197-206.
53. Cooper, E. L. and Roch, P. 1984. Earthworm leukocyte interactions during early stages of graft rejection. *J. Exp. Zool.* 232: 67-72.
54. Klempau, A. E. and Cooper, E. L. 1984. T-lymphocyte and B-lymphocyte dichotomy in anuran amphibians. II. Further investigations on the E-rosetting lymphocyte by using monoclonal antibody azathioprine inhibition and mitogen-induced polyclonal expansion. *Dev. Comp. Immunol.* 8: 323- 338.
55. Klempau, A. E. and Cooper, E. L. 1984. T-lymphocyte and B-lymphocyte dichotomy in anuran amphibians. III. Assessment and identification of inducible killer T-lymphocytes (IKTL) spontaneous killer T-lymphocytes (SKTL) in *Rana pipiens*. *Dev. Comp. Immunol.* 8: 649-661.
56. Mansour, M. H. and Cooper, E. L. 1984. Purification and characterization of *Rana pipiens* brain Thy-1 glycoprotein. *J. Immunol.* 132: 2515-2523.
57. Mansour, M. H. and Cooper, E. L. 1984. Serological and partial characterization of a Thy-1 homolog in tunicates. *Eur. J. Immunol.* 14: 1031-1039.
58. Mullainadhan, P., Ravindranath, M. H., Wright, R. K., and Cooper, E. L. 1984. Crustacean defense strategies. I. Molecular weight dependent clearance of dyes in the mud crab *Scylla serrata* (Forsk.) (Portunidae: Brachyura). *Dev. Comp. Immunol.* 8: 41-50.
59. Wojdani, A., Stein, E. A., Alfred, L. J., and Cooper, E. L. 1984. Mitogenic effect of earthworm (*Lumbricus terrestris*) coelomic fluid on mouse and human lymphocytes. *Immunobiol.* 166: 157-167.
60. Wright, R. K. and Cooper, E. L. 1984. Protochordate immunity. II. Diverse hemolymph lectins in the solitary tunicate *Styela clava*. *Comp. Biochem. and Physiol.* 79B: 269-277.
61. Mansour, M. H., DeLange, R., and Cooper, E. L. 1985. Isolation, purification and amino acid composition of the tunicate hemocyte Thy-1 homolog. *J. Biol. Chem.* 260: 2681- 2686.
62. Ravindranath, M. H., Higa, H. H., Cooper, E. L., and Paulson, J. C. 1985. Purification and characterization of an O-acetylsialic acid-specific lectin from a marine crab *Cancer antennarius*. *J. Biol. Chem.* 260: 8850-8856.
63. Cooper, E.L. 1986. Leukocyte activity during earthworm inflammatory responses. *Int. J. Tiss. Reac.* 8: 175-184.
64. Cooper, E.L. and Roch, P. 1986. Second-set allograft responses in the earthworm *Lumbricus terrestris*: Kinetics and characteristics. *Transplantation* 41: 514-520.
65. El Amir, A., Saad, A.H., El Deeb, S., Wahby, A.F., Soliman, A.W. and Cooper, E. 1986. Serological evidence for a Thy-1 homolog in earthworms. *Proc. Zool. Soc. A.R. Egypt* 12: 287-302.
66. Ghoneum, M.H., Egami, H., Ijiri, K., and Cooper, E.L. 1986. Effect of corticosteroid on the thymus of the fish *Oryzias latipes*. *Dev. Comp. Immunol.* 10: 35-44.
67. Stein, E.A., Younai, S., and Cooper, E.L. 1986. Bacterial agglutinins of the earthworm *Lumbricus terrestris*. *Comp. Biochem. Physiol.* 84: 409-415.
68. Ghoneum, M.H. and Cooper, E.L. 1987. Inhibition of frog SK effector-target cells binding. *Dev. Comp. Immunol.* 11: 167- 178.
69. Ghoneum, M.H., Cooper, E.L., and Smith, C. 1987. Inhibition of SK cell activity in frogs by certain drugs and sugars. *Dev. Comp. Immunol.* 11: 363-373.
70. Ghoneum, M., Smith, C.T., and Cooper, E.L. 1987. Membrane markers and mitogenic responses of cytotoxic cells in anuran amphibians. *Cell. Molec. Biol.* 33: 807-817.

71. Sadek, I.A., Ghoneum, M., and Cooper, E.L. 1987. Retinoic acid and its effect on natural killer cells in toads. *J. Nutri. Growth Can.* 4: 191-197.
72. Sadek, I.A., Ghoneum, M., and Cooper, E.L. 1987. Effect of 20-methylchoanthrene on amphibian natural killer cells. *Dis. Aquat. Org.* 3: 155-158.
73. Bellah, M. EL, M., El Ridi, R., Abou-Ela, R., and Cooper, E.L. 1988. Age related occurrence of natural agglutinins in the erisilkworm *Philosamia ricini*. *Dev. Comp. Immunol.* 12: 707-717.
74. Cooper, E.L., Peters, G., Ahmed, I.I., Faisal, M., and Ghoneum, M. 1988. Aggression in *Tilapia* affects immunocompetent leucocytes. *Aggres. Behav.* 15: 13-22.
75. Faisal, M., Cooper, E.L., El-Mofty, M., and Sayed, M.A. 1988. Immunosuppression of *Clarias lazera* (Pisces) by a molluscicide. *Dev. Comp. Immunol.* 12: 85-97.
76. Ghoneum, M., Faisal, M., Peters, G., Ahmed I.I., and Cooper, E.L. 1988. Suppression of natural cytotoxic cell activity by social aggressiveness in *Tilapia*. *Dev. Comp. Immunol.* 12: 595-602.
77. Goven, A.J., Venables, B.J., Fitzpatrick, L.C., and Cooper, E.L. 1988. An invertebrate model for analyzing effects of environmental xenobiotics on immunity. *Clin. Ecol.* 4: 150-154.
78. Smith, C.T., Ghoneum, M., and Cooper, E.L. 1988. Ultrastructure of cytotoxic cells in frogs. *Acta Zool.* 69: 125-133.
79. Stein, E.A. and Cooper, E.L. 1988. *In vitro* agglutinin production by earthworm leukocytes. *Dev. Comp. Immunol.* 12: 531-547.
80. Boctor, F.N., Charmy, R.A., and Cooper, E.L. 1989. Seasonal differences in the rhythmicity of human male and female lymphocyte blastogenic responses. *Immunol. Invest.* 18: 775-784.
81. Canicatti, C. Miglietta, A. and Cooper, E.L. 1989. *In vitro* release of biological active molecules during the clotting reaction in *Holothuria polii*. *Comp. Biochem. Physiol.* 94A: 483-488.
82. Faisal, M., Ahmed, I.I., Peters, G., and Cooper, E.L. 1989. Natural cytotoxicity of *Tilapia* leucocytes. *Dis. Aquat. Org.* 7: 17-22.
83. Faisal, M., Ahmed, I.I., Chiappelli, F., Weiner, H., and Cooper, E.L. 1989. Role of endogenous opioids in modulating some immune functions in hybrid *Tilapia*. *J. Aquat. Anim. Health.* 1: 301-306.
84. Rodriguez-Grau, J., Venables, B. J., Fitzpatrick, L. C., Goven, A. J., and Cooper, E. L. 1989. Suppression of secretory rosette formation by PCBs in *Lumbricus terrestris*: an earthworm assay for humoral immunotoxicity of xenobiotics. *Env. Toxicol. Chem.* 8: 1201-1207.
85. Stein, E.A., Morovati, A., Rahimian, P., and Cooper, E.L. 1989. Lipid agglutinins from coelomic fluid of the earthworm *Lumbricus terrestris*. *Comp. Biochem. Physiol.* 94B: 703-707.
86. Cooper, E.L., Peters, G., Ahmed, I.I., Faisal, M., and Ghoneum, M. H. 1989. Aggression in *Tilapia* affects immunocompetent leucocytes. *Aggres. Behav.* 15: 13-22.
87. Faisal, M., Chiappelli, F., Ahmed, I.I., Cooper, E.L., and Weiner, H. 1990. Social confrontation stress in aggressive fish is associated with an endogenous opioid-mediated suppression of proliferative responses to mitogens and nonspecific cytotoxicity. *Brain, Behavior and Immunity* 3: 223-233.
88. Faisal, M., Chiappelli, Ahmed, I. I. Cooper, E. L., and Weiner, H. 1990. Neuroimmunologia evolutiva: lo stress da confrontazione sociale nei pesci aggressivi. *Neuroscienze* 1: 42-53.
89. Ghoneum. M., Cooper, E. L., and Sadek, I. 1990. Variability of natural killer cell activity in anuran amphibians. *Dev. Comp. Immunol.* 14: 359-365.
90. Ghoneum, M., Sadek, I. A., Gill, G., and Cooper, E. L. 1990. Ascorbic acid suppresses natural killer cell activity in *Bufo marinus*. *Dis. Aqua. Orgs.* 9: 1-4.
91. Raftos, D. A., Stillman, D. L., and Cooper, E. L. 1990. *In vitro* culture of tissue from the tunicate *Styela clava*. *In vitro* 26: 962-970.
92. Saad, A. H. and Cooper, E. 1990. Evidence for a Thy-1 like molecule expressed on earthworm leukocytes. *Zool. Sci.* 7: 217-222.
93. Stein, E. A., Younai, S., and Cooper, E. L. 1990. Separation and partial purification of agglutinins from coelomic fluid of the earthworm *Lumbricus terrestris*. *Comp. Biochem. Physiol.* 97B: 701-705.
94. Cooper, E. L. 1991. Evolutionary development of the neuroendocrine-immune system. *Adv. Neuroimmunol.* 1: 83-96.
95. Chen, S. C., Fitzpatrick, L. C., Goven, A. J., Venables, B. J., and Cooper, E. L. 1991. Nitroblue tetrazolium dye reduction by earthworm (*Lumbricus terrestris*) coelomocytes: an enzyme assay for nonspecific immunotoxicity of xenobiotics. *Env. Toxicol. Chem.* 10: 1037-1043.

96. Eyambe, G. S., Goven, A. J. Fitzpatrick, L. C., Venables, B. J., and Cooper, E. L. 1991. A non-invasive technique for sequential collection of earthworm (*Lumbricus terrestris*) leukocytes during subchronic immunotoxicity studies. *Lab Animals* 25: 70-76.
97. Negm, H.I., Mansour, M.H., and Cooper, E.L. 1991. Identification and structural characterization of Lyt-1 glycoproteins from tunicate hemocytes and mouse thymocytes. *Comp. Biochem. Physiol.* 99B: 741-749.
98. Negm, H.I., Mansour, M.H., and Cooper, E.L. 1991b. Serological characterization and partial purification of a Lyt-1 homolog in tunicate hemocytes. *Biol. Cell.* 72: 249-257.
99. Raftos, D. A. and Cooper, E. L. 1991. Proliferation of lymphocyte-like cells from the solitary tunicate, *Styela clava*, in response to allogeneic stimuli. *J. Exp. Zool.* 260: 391-400.
100. Raftos, D.A., Stillman, D. L., and Cooper, E. L. 1991. Interleukin-2 and phytohemagglutinin stimulate the proliferation of tunicate cells. *Immunol. Cell Biol.* 69: 225-234.
101. Raftos, D. A., Cooper, E. L., Habicht, G. S. and Beck, G. 1991. Invertebrate cytokines: Tunicate cell proliferation stimulated by an interleukin 1-like molecule. *Proc. Natl. Acad. Sci. USA* 88: 9518-9522.
102. Roch, P. and Cooper, E. L. 1991. Cellular but not humoral antibacterial activity of earthworms is inhibited by Aroclor 1254. *Ecotoxicology and Environmental Safety* 22: 283-290.
103. Cooper, E. L., Rinkevich, B., Uhlenbruck, G. and Valembois, P. 1992. Invertebrate Immunity: another viewpoint. *Scand. J. Immunol.* 35: 247-266.
104. Cooper, E.L. and Roch, P. 1992. The capacities of earthworms to heal wounds and to destroy allografts are modified by polychlorinated biphenyls (PCB). *J. Invert. Path.* 60: 59-63.
105. Kelly, K.L., Cooper, E.L. and Raftos, D.A. 1992. In vitro allogeneic cytotoxicity in the solitary urochordate *Styela clava*. *J. Exp. Zool.* 262: 202-208.
106. Kelly, K.L., Cooper, E.L. and Raftos, D.A. 1992. Purification and characterization of a humoral opsonin from the solitary urochordate *Styela clava*. *Comp. Biochem. Physiol.* 103B: 749-753.
107. Negm, H.I., Mansour, M.H., Cooper, E.L. 1992. Identification and structural characterization of a Lyt-2/3 homolog in tunicates. *Comp. Biochem. Physiol.* 101B: 55-67.
108. Raftos, D. A., Cooper, E. L., Stillman, D. L., Habicht, G. S. and Beck, G. 1992. Invertebrate cytokines II: Release of interleukin-1-like molecules from tunicate hemocytes stimulated with zymosan. *Lymphokine and Cytokine Research* 11: 235-240.
109. Zhang, H., Sawada, T., Cooper, E. L. and Tomonaga, S. 1992. Electron microscopic analysis of tunicate (*Halocynthia roretzi*) hemocytes. *Zool. Sci.* 9: 551-562.
110. Cooper, E.L., Wright, R.K., Klempau, A.E. and Smith, C.T. 1992. Hibernation alters the frog's immune system. *Cryobiology* 29: 616-631.
111. Wong, C. M. K., Chiappelli, F., Chang, M-P., Norman, D. C., Cooper, E. L., Branch, B. J. and Taylor, A. N. 1992. Prenatal exposure to alcohol enhances thymocyte mitogenic responses postnatally. *Int. J. Immunopharmacol.* 14: 303-309.
112. Faisal, M., Chiappelli, Ahmed, I. I. Cooper, E. L. Weiner, H. 1992. The role of endogenous opioids in modulation of immunosuppression in fish. *Schriftenreihe des Vereins für Wasser-Boden-und Luft hygiene* 89: 785-799.
113. Beck, G., O'Brien, R.F., Habicht, G.S., Stillman, D.L., Cooper, E.L. and Raftos, D.A. 1993. Invertebrate cytokines III: Invertebrate interleukin-1-like molecules stimulate phagocytosis by tunicate and echinoderm cells. *Cell. Immunol.* 146: 284-299.
114. Kelly, K.L., Cooper, E.L. and Raftos, D.A. 1993. Cytokine-like activities of a humoral opsonin from the solitary urochordate *Styela clava*. *Zool. Sci.* 10: 57-64.
115. Kelly, K.L., Cooper, E.L. and Raftos, D.A. 1993. A humoral opsonin from the solitary urochordate *Styela clava*. *Dev. Comp. Immunol.* 17: 29-39.
116. Sawada, T., Zhang, J. and Cooper, E.L. 1993. Classification and characterization of hemocytes in *Styela clava*. *Biol. Bull.* 184: 87-96.
117. Cooper, E.L., Leung, M.K., Stefano, G.B., Cadet, P. and Suzuki, M.M. 1993. An enkephalin-like molecule in earthworm coelomic fluid modifies leukocyte behavior. *Dev. Comp. Immunol.* 17: 201-209.
118. Pagliara, P., Canicatti, C. and Cooper, E. L. 1993. Structure and enzyme content of sea urchin cytolytic granules. *Comp. Biochem. Physiol.* 106B: 813-818.
119. Goven, A. J., Eyambe, G. S., Fitzpatrick, L. C., Venables, B. J. and Cooper, E. L. 1993. Cellular biomarkers for measuring toxicity of xenobiotics: Effects of polychlorinated biphenyls on earthworm *Lumbricus terrestris* coelomocytes. *Environ. Toxicol. Chem.* 12:863-870.

Edwin L. Cooper *Curriculum vitae*

120. Sawada, T., Zhang, J. and Cooper, E. L. 1994. Sustained viability and proliferation of hemocytes from cultured pharynx of *Styela clava*. *Marine Biology* 119: 597-603.
121. Ville, P., Roch, P., Cooper, E.L., Masson, P. and Narbonne, J.F. 1995. PCBs Increase molecular-related activities (lysozyme, antibacterial, hemolysis, proteases) but inhibit macrophage-related functions (phagocytosis, wound healing) in earthworms. *Journal of Invertebrate Pathology* 65: 217-224.
122. Suzuki, M.M. and Cooper, E.L. 1995. Killing of intrafamilial leukocytes by earthworm affected cells. *Immunology Letters* 44: 45-49.
123. Suzuki, M.M. and Cooper, E.L. 1995. Allogeneic killing by earthworm effector cells. *Natural Immunity* 14: 11-19.
124. Suzuki, M.M. and Cooper, E.L. 1995. Spontaneous cytotoxic earthworm leukocytes kill K562 tumor cells. *Zool. Sci.* 12: 443-451.
125. Suzuki, M.M., Cooper, E.L., Eyambe, A.J., Fitzpatrick, L.C. and Venables, B.J. 1995. Polychlorinated biphenyls (PCBs) depress allogeneic natural cytotoxicity by earthworm coelomocytes. *Environ. Toxicol. Chem* 14: 1697-1700.
126. Cooper, E. L., Cossarizza, A. Suzuki, M. M., Salvioli, S., Capri, M., Quaglino, D. and Franceschi, C. 1995. Autogeneic but not allogeneic earthworm effector coelomocytes kill the mammalian tumor target K562. *Cell. Immunol.* 166: 113-122.
127. Cossarizza, A., Cooper, E. L., Quaglino, D., Salvioli, S., Kalachnikova, G. and Franceschi, C., 1995. Mitochondrial mass and membrane potential in coelomocytes from the earthworm *Eisenia foetida*: Studies with fluorescent probes in single intact cells. *Biochem. Biophys. Res. Comm.* 214: 503-510.
128. Cooper, E. L., Arizza, V., Cammarata, M., Pellerito, L. and Parrinello, N. 1995. Tributyltin affects phagocytic activity of *Ciona intestinalis* hemocytes. *Comp. Biochem. Physiol.* 112C: 285-289.
129. Cossarizza, A., Cooper, E. L., Suzuki, M. M., Salvioli, S., Capri, M., Gri, G., Quaglino, D. and Franceschi, C., 1996. Earthworm leukocytes that are not phagocytic and cross-react with several human epitopes can kill human tumor cell lines. *Exptl. Cell Res.* 224: 174-182.
130. Quaglino, D., Cooper, E. L., Salvioli, S., Capri, M., Suzuki, M. M., Pasquali-Ronchetti, I., Franceschi, C. and Cossarizza, A. 1996. Earthworm coelomocytes *in vitro*: cellular features and "granuloma" formation during cytotoxic activity against the mammalian tumor cell target K562. *Eu. J. Cell Biol.* 70: 278-288.
131. Vazquez, L., Jaramillo, L., Lascurain, R., Cooper, E. L. Rosas, P. and Zenteno, E., 1996. Bacterial agglutination by the sialic acid specific serum lectin from *Macrobrachium rosenbergii*. *Comp. Biochem. Physiol.* 113B: 355-359.
132. Pancer, Z., Cooper, E. L. and Muller, W. E. G. 1996. A tunicate (*Botryllus schlosseri*) cDNA reveals similarity to vertebrate antigen receptors. *Immunogenetics* 45: 69-72.
133. Pancer, Z., Cooper, E. L. and Muller, W. E. G. 1996. A urochordate putative homolog of human EB1, the protein which binds APC. *Canc. Lett.* 109: 155-160.
134. Lee, I.H. Zhao, C., Cho, Y., Harwig, S.S.L., Cooper, E.L., Lehrer, R. I. 1997. Clavanins,  $\alpha$ -helical antimicrobial peptides from tunicate hemocytes. *FEBS Lett.* 400: 158-162.
135. Hubert, F., Cooper, E. L., and Roch, P. 1997. Structure and differential target sensitivity of the stimutable cytotoxic complex from hemolymph of the Mediterranean mussel *Mytilus galloprovincialis*. *Biochim and Biophys. Acta.* 1361: 29-41.
136. Vazquez, L., Maldonado, G., Agundis, C., Perez, A., Cooper, E. L. and Zenteno, E. 1997. Participation of a sialic acid-specific lectin from freshwater prawn *Macrobrachium rosenbergii* hemocytes in the recognition of non-self cells. *J. Exptl. Zool.* 279: 265-272.
137. Kauschke, E., Pagliara, P., Stabili, L. and Cooper, E. L. 1997. Characterization of proteolytic activity in coelomic fluid of *Lumbricus terrestris* L. (Annelida, Lumbricidae). *Comp. Biochem. Physiol.* 116B: 235-242.
138. Ville, P., Roch, P., Cooper, E. L., Narbonne, J-F. 1997. Immuno-modulator effects of carbaryl and 2,4D in the earthworm *Eisenia fetida andrei*. *Environ. Contam. Toxicol.* 32: 291-297.
139. Lange, S., Nüssler, F., Kauschke, E., Lutsch, G., Cooper, E. L. and Herrmann, A. 1997. Interaction of earthworm hemolysin with lipid membranes requires sphingolipids. *J. Biol. Chem.* 272: 20884-20892.
140. Arizza, V., Cooper, E. L. and Parrinello, N. 1997. Circulating hemocytes and pharyngeal explants of *Styela clava* release hemagglutinin *in vitro*. *J. Marine Biotechnol.* 5: 31-35.



141. Vazquez, L., Perez, A., Millan, D., Agundis, C., Martin, G., Cooper, E. L., Lascurain, R. and Zenteno, E. 1997. Morphology of hemocytes from the freshwater prawn *Macrobrachium rosenbergii*. *J. Morphol.* 234: 147-153.
142. Scapigliati, G., Fhausson, F., Cooper, E. L., Scalia, D. and Mazzini, M. 1997. Qualitative and quantitative analysis of serum immunoglobulins of four Antarctic fish species. *Polar Biol.* 18: 209-213.
143. Roch, P., Ville, P. and Cooper, E. L. 1998. Characterization of a 14 kDa plant-related serine protease inhibitor and regulation of cytotoxic activity in earthworm coelomic fluid. *Dev. Comp. Immunol.* 22: 1-12.
144. Eue, I., Kauschke, E., Mohrig, W. and Cooper, E. L. 1998. Isolation and characterization of earthworm hemolysins and agglutinins. *Dev. Comp. Immunol.* 22: 13-25.
145. Raftos, D.A., Stillman, D.L. and Cooper E.L. 1998. Chemotactic responses of tunicate (Urochordata, Ascidiacea) hemocytes *in vitro*. *J Invertebr Patho* 72: 44-49.
146. de Eguileor, M., Tettamanti, G., Grimaldi, A., Boselli, A., Scari, G., Valvassori, R., Cooper, E.L. and Lanzavecchia, G. 1999. Histopathological changes after induced injury in leeches. *J Invertebr Pathol* 74: 14-28.
147. Lange, S., Kauschke, E., Mohrig, W. and Cooper, E.L. 1999. Biochemical characteristics of *Eiseniapore*, a pore-forming protein in the coelomic fluid of earthworms. *Eur J Biochem.* 262:547-56.
148. Cikutovic, M.A., Fitzpatrick, L.C., Goven, A.J., Venables, B.J., Giggelman, M.A. and Cooper, E.L. 1999. Wound healing in earthworms *Lumbricus terrestris*: a cellular-based biomarker for assessing sublethal chemical toxicity. *Bull Environ Contam Toxicol* 62: 508-514.
149. de Eguileor, M., Grimaldi, A., Tettamanti, G., Valvassori, R., Cooper, E.L. and Lanzavecchia, G. 2000. Different types of response to foreign antigens by leech leukocytes. *Tissue Cell.* 32: 40-8.
150. de Eguileor, M., Grimaldi, A., Tettamanti, G., Valvassori, R., Cooper, E.L. and Lanzavecchia, G. 2000. Lipopolysaccharide-dependent induction of leech leukocytes that cross-react with vertebrate cellular differentiation markers. *Tissue Cell* 32: 437-445.
151. Kauschke, E., Komiyama, K., Moro, I., Eue, I., König, S. and Cooper, E.L. 2001. Evidence for perforin-like activity associated with earthworm leukocytes. *Zoology* 32: 13-24.
152. Kasahara, S., Fugo, H., Cooper, E.L. and Wago, H. 2001. Preliminary evidence of modulating Th1 cytokine after allergen challenge. *Int. J. Immunopath. Pharmacol.* 14: 63-69.
153. Kasahara, S., Aizawa, K., Okamiya, M., Kazuno, N., Mutoh, S., Fugo, H., Cooper, E.L. and Wago, H. 2001. UVB irradiation suppresses cytokine production and innate cellular immune functions in mice. *Cytokine* 14: 104-111.
154. Cabrera, P.V., Blanco, G., Ernst, G., Alvarez, E., Cooper, E. L. and Hajos, S. 2002. Coelomocyte locomotion in the sipunculan *Themiste petricola* induced by exogenous and endogenous chemoattractants: role of a CD44-like antigen-HA interaction. *J Invertebr Pathol.* 79: 111-119.
155. Engelmann, P., Pal, J., Berki, T., Cooper, E. L. and Nemeth, P. 2002. Earthworm leukocytes react with different mammalian antigen-specific monoclonal antibodies. *Zoology* 105: 257-265.
156. Vazzana, M., Cammarata, M., Cooper, E. L. and Parrinello, N. 2002. Confinement stress in sea bass (*Dicentrarchus labrax*) depresses peritoneal leukocyte cytotoxicity. *Aquaculture* 210: 231-243.
157. DeEguileor, M., Tettamanti, G., Grimaldi, A., Congiu, T., Ferrarese, R., Perletti, G., Valvassori, R., Cooper, E L. and Lanzavecchia, G. 2003. Leeches: immune response, angiogenesis and biomedical applications. *Curr. Pharm. Des.* 2: 133-147.
158. Koenig, S., Wagner, F., Kauschke, E., Peter-Katalinic, J., Cooper, E. L. and Eue, I. 2003. Mass spectrometric analyses of CL<sub>39</sub>, CL<sub>41</sub> and H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub> Confirm identity with fetidin and lysenin produced by earthworm leukocytes. *Dev. Comp. Immunol.* 27: 513-520.
159. Vojdani A., Vojdani E. and Cooper E.L. 2003. Antibodies to myelin basic protein, myelin oligodendrocytes, peptides,  $\alpha$ - $\beta$ -crystallin, lymphocyte activation and cytokine production in patients with multiple sclerosis. *J. Internal Med.* 254: 363-374.
160. Vojdani A., Pangborn J.B., Vojdani E. and Cooper E.L. 2003. Infections, toxic chemicals and dietary peptides binding to lymphocyte receptors and tissue enzymes are major instigators of autoimmunity in autism. *Int. J. Immunopathol. Pharmacol.* 16: 189-200.
161. Cooper, E.L. 2003. Neuroimmunology of autism: a multifaceted hypothesis. *Int. J. Immunopathol. Pharmacol* 16: 289-92.

162. Vojdani A, Pangborn JB, Vojdani E, Cooper EL. Infections, Infections, toxic chemicals and dietary peptides binding to lymphocyte receptors and tissue enzymes are major instigators of autoimmunity in autism. *Int J Immunopathol Pharmacol* 2003; 16: 189-199.
163. Tettamanti G, Grimaldi A, Ferrarese R, Palazzi M, Perletti G, Valvassori R, Cooper EL, Lanzavecchia G, de Eguileor M. Leech responses to tissue transplantation. *Tissue & Cell* 2003; 35: 199 – 212.
164. Grether, G. F., Kasahara, S., Kolluru, G. R. and Cooper, E. L. 2004. Sex-specific effects of carotenoid intake on the immunological response to allografts in guppies (*Poecilia reticulata*). *Proc. R. Soc. Land. B.* 271: 45-49.
165. Wiesner, L., Hahn, M.E., Karchner, S.I., Cooper, E.L. and Kauschke E. 2004. Does an aryl hydrocarbon receptor (AHR)-like molecule exist in earthworms? Some implications for immunity. *Pedobiologia* 47: 646- 650.
166. Cooper, E.L. and Roch, P. 2004. Earthworm immunity: a model of immune competence. *Pedobiologia* 47: 676-688.
167. Komiyama, K., Okaue, M., Miki, Y., Ohkubo, M., Moro, I. and Cooper, E.L. 2004. Non-specific cellular function of *Eisenia fetida* regulated by polycyclic aromatic hydrocarbons. *Pedobiologia* 47: 717-723.
168. Field SG, Kurtz J, Cooper EL, Michiels NK. Evaluation of an innate immune reaction to parasites in earthworms. *J Invert Pathol* 2004; 86: 45-49.
169. Vojdani, A. and Cooper, E. L. 2004. Identification of diseases that may be targets for complementary and alternative medicine (CAM). *Adv. Exp. Med. Biol.* 546: 75-104.
170. Rosas, C., Cooper, E. L., Pascual, C., Brito, R., Gelabert, R., Moreno, T., Miranda, G. and Sánchez, A. 2004. Indicators of physiological and immunological status of *Litopenaeus setiferus* wild population (Crustacea, Penaeidae). *Marine Biology* 145: 401-413.
171. Vojdani A, Bazargan M, Vojdani E, Samadi J, Nourian AA, Eghbalieh N, Cooper EL. Heat shock protein and gliadin peptide promote development of peptidase antibodies in children with autism and patients with autoimmune disease. *Clin Diag Lab Immunol* 2004; 11: 515-524.
172. Vojdani, A., O'Bryan, T., Green, J.A., McCandless, J., Woeller, K.N., Vojdani, E., Nourian, A.A. and Cooper, E.L. Immune response to dietary proteins, gliadin and cerebellar peptides in children with autism. *Nutr Neurosci* 2004; 7: 151-161.
173. Engelmann, P., Molnár, L., Pálkás, L., Cooper, E. L. and Németh, P. 2004. Earthworm leukocyte populations specifically harbor lysosomal enzymes that may respond to bacterial challenge. *Cell and Tissue Research* 316: 391-401.
174. Engelmann, P., Kiss, J., Csöngéi, V., Cooper, E.L. and Németh, P. 2004. Earthworm leukocytes kill HeLa, HEp-2, PC-12 and PA317 cells in vitro *J Biochem Biophys Methods* 61: 215-227.
175. Silva JRMC, Sinhorini IL, Jensch-Jr BE, Porto-Neto LR, Hernandez-Blazquez FJ, Vellutini BC, Pressinotti LN, Pinto FAC, Cooper EL, Borges JCS. Kinetics of induced wound repair at 0°C in the Antarctic fish (*Cabeçuda*) *Notothenia coriiceps*. *Polar Biol* 2004; 27: 458-465.
176. Engelmann P, Palinkas L, Cooper EL, Nemeth P. Monoclonal antibodies identify four distinct annelid leukocyte markers. *Dev Comp Immunol* 2005; 29: 599-614.
177. Cossarizza A, Pinti M, Troiano L, Cooper EL. Flow cytometry as a tool for analysing invertebrate cells. *Invertebrate Survival Journal* 2005; 2: 32-40.
178. Cunha da Silva JRM, Cooper EL, Sinhorini IL, Borges JCS, Jensch-Junior BE, Porto-Neto LR, Hernandez-Blazquez FJ, Vellutini BC, Pressinotti LN, Costa-Pinto FA. Microscopical study of experimental wound healing in *Nothenia coriiceps* (*Cabecuda*) at 0°C. *Cell Tissue Res* 2005; 321: 401-310.
179. Ferraresi R, Troiano L, Roat E, Lugli E, Nemes E, Nasi M, Pinti M, Fernandez MI, Cooper EL, Cossarizza A. Essential requirement of reduced glutathione (GSH) for the anti-oxidant effect of the flavonoid quercetin. *Free Radic Res* 2005; 39: 1249-1258.
180. Lugli E, Troiani L, Ferraresi R, Roat E, Prada N, Nasi M, Pinti M, Cooper EL. Characterization of cells with different mitochondrial membrane potential during apoptosis. *Cytometry* 2005; 68: 28-35.
181. Cooper EL, Kvell K, Engelmann P, Nemeth P. Still waiting for the toll? *Immunol Lett* 2006; 104: 18-28.
182. Salzet M, Tasiemski A, Cooper E. Innate immunity in Lophotrochozoans: The Annelids. *Current Pharmaceutical Design* 2006; 12: 3043-3050.

183. Pascual, C., Sánchez, A., Sánchez, A., García, T., Moreno, T., Cooper, E. L. and Rosas, C. 2004. Reproductive condition of an adult male population of the white shrimp *Litopenaeus setiferus*. *J. Crust. Biol.* In press.

#### **CHAPTERS, REVIEWS, PROCEEDINGS OF MEETINGS AND MONOGRAPHS**

1. Hildemann, W. H. and Cooper, E. L. 1963. Immunogenesis of homograft reactions in fishes and amphibians. *Fed. Proc.* 22: 1145-1151.
2. Cooper, E. L. and Hildemann, W. H. 1965. The immune response of larval bullfrogs (*Rana catesbeiana*) to diverse antigens. *Ann. N.Y. Acad. Sci.* 126: 647-661.
3. Cooper, E. L. 1967. Some aspects of the histogenesis of the amphibian lymphomyeloid system and its role in immunity. In: *Ontogeny of Immunity*, eds. R. T. Smith, R. A. Good and P. A. Miescher, Gainesville, University of Florida Press, 87-102.
4. Cooper, E. L. 1969. Immunity and tolerance in amphibia. In: *Biology of Amphibian Tumors*, ed. M. Mizell, New York, Springer-Verlag, 130-136.
5. Cooper, E. L. 1969. Neoplasia and transplantation immunity in annelids. *J. Nat. Cancer Inst.* 31: 655-669.
6. Cooper, E. L., Brown, B. A. and Baculi, B. S. 1971. New observations on lymph gland (LM1) and thymus activity in larval bullfrogs *Rana catesbeiana*. In *Morphological and Fundamental Aspects of Immunity, Adv. Exptl Medicine and Biology*, Vol. 12, eds. K. Lindahl-Kiessling, G. Alm and M. G. Hanna Jr., 1-10, New York, Plenum Press.
7. Cooper, E. L. 1973. The thymus and lymphomyeloid system in poikilothermic vertebrates. In *Contemporary Topics in Immunobiology*, Vol. 2, eds. A.J.S. Davies and R. L. Carter, 13-38, New York, Plenum Press.
8. Cooper EL. 1973. Earthworm coelomocytes: role in understanding the evolution of cellular immunity. I. Formation of monolayers and cytotoxicity. In *Proc. III International Colloquium on Invertebrate Tissue Culture*, eds. J. Rehacek, D. Blaskovic and W.F. Hink, 381-404, Bratislava, Slovak Academy of Sciences.
9. Cooper, E. L. 1973. Evolution of cellular immunity. In *Symposium on Non-Specific Factors Influencing Host Resistance*, eds. W. Braun and J. Ungar, Basel, Switzerland, S. Karger, 11-23.
10. Brahmi, Z. and Cooper, E. L. 1974. Characteristics of the agglutinin in the scorpion *Androctonus australis*. In *Contemporary Topics in Immunobiology*, Vol. 4, ed. E. L. Cooper, 261-270, New York, Plenum Press.
11. Cooper, E. L. 1974. Foreword and Introduction. In *Invertebrate Immunology. Contemporary Topics in Immunobiology*, Vol. 4. ed. E.L. Cooper, 1-12, New York, Plenum Press.
12. Du Pasquier, L. and Cooper, E. L. 1974. Primitive vertebrate immunology. In *Progress in Immunology II*, Vol. 2, eds. L. Brent and J. Holborow, 297-301, North Holland, Amsterdam, Elsevier.
13. Hostetter, R. K. and Cooper, E. L. 1974. Earthworm coelomocyte immunity. In *Contemporary Topics in Immunobiology*, Vol. 4, ed. E. L. Cooper, 91-107, New York, Plenum Press.
14. Lemmi, C. A., Cooper, E. L. and Moore, T. C. 1974. An approach to studying evolution of cellular immunity. In *Contemporary Topics in Immunobiology*, Vol. 4, ed. E. L. Cooper, 109-119, New York, Plenum Press.
15. Cooper, E. L. 1974. Phylogeny of leucocytes: earthworm coelomocytes in vitro and in vivo. In *Lymphocyte Recognition and Effector Mechanisms. Proc. Eighth Leukocyte Culture Conf.*, eds. K. Lindahl-Kiessling and D. Osoba, 155-162, New York, Academic Press.
16. Cooper, E. L., Lemmi, C. A., and Moore, T. C. 1974. Agglutinins and cellular immunity in earthworms. *Ann. N.Y. Acad. Sci.* 234: 34-50.
17. Brown, B. A., Wright, R. K. and Cooper, E. L. 1975. Lymphoid organs and amphibian immunity. In *Immunologic Phylogeny. Advances in Experimental Medicine and Biology*, Vol. 64, eds. W. H. Hildemann and A. A. Benedict, 267-275, New York, Plenum Press.
18. Cooper, E. L. 1975. Cellular recognition of allografts and xenografts in invertebrates. In *Phylogeny of Immune Responses*, ed. J. J. Marchalonis, 36-79, Oxford, Blackwell.
19. Cooper, E. L. 1975. Characteristics of CMI and memory in annelids. In *Immunologic Phylogeny. Advances in Experimental Medicine and Biology*, Vol. 64, eds. W. H. Hildemann and A. A. Benedict, 127-136, New York, Plenum Press.

Edwin L. Cooper *Curriculum vitae*

20. Cooper, E. L., Brown, B. A. and Wright, R. K. 1975. New ideas on amphibian immunity: the lymph gland: a generator of both T and B cells. *Amer. Zool.* 15: 85-92.
21. Cooper, E. L. and Winger, L. A. 1975. Transplantation immunity in annelids. III. Effects of temperature on xenograft rejection in earthworms. *Amer. Zool.* 15: 7-11.
22. Riviere, H. B., Cooper, E. L., Reddy, A. L. and Hildemann, W. H. 1975. In search of the hagfish thymus. *Amer. Zool* 15: 39-49.
23. Wright, R. K. and Cooper, E. L. 1975. Immunological maturation in the tunicate *Ciona intestinalis*. *Amer. Zool.* 15: 21-27.
24. Wright, R. K., Reddy, A. L., and Cooper, E. L. 1975. Mitogens as probes for studying temperature effects on the development of immunocompetent cells in poikilothermic vertebrates. In *Immunologic Phylogeny. Advances in Experimental Medicine and Biology*, Vol. 64, eds. W. H. Hildemann and A. A. Benedict, 325-334, New York, Plenum Press.
25. Cooper, E. L. 1976. Evolution of blood cells. *Ann. Inst. Pasteur* 127: 817-825.
26. Cooper, E. L. 1976. Immunity and neoplasia in mollusks. *Isr. J. Med. Sci.* 12: 479-494.
27. Cooper, E. L. 1976. Immunity mechanisms. In: *Physiology of the Amphibia*, Vol. III, ed. B. Lofts, 163-272, New York, Academic Press.
28. Cooper, E. L. 1976. The earthworm coelomocyte: a mediator of cellular immunity. In *Phylogeny of Thymus and Bone Marrow-Bursa Cells*, eds. R. K. Wright and E. L. Cooper, 9-18, North-Holland, Amsterdam, Elsevier.
29. Cooper, E. L. and Wright, R. K. 1976. The anuran amphibian spleen. An evolutionary model for terrestrial vertebrates. In *Immuno-Aspects of the Spleen*, eds. J. R. Battisto and J. W. Streilein, 47-60, North-Holland, Amsterdam, Elsevier.
30. Wright, R. K. and Cooper, E. L. 1976. Preface and concluding remarks to: *Phylogeny of Thymus and Bone Marrow- Bursa Cells*, xvii-xix, 295-300, North-Holland, Amsterdam, Elsevier.
31. Cooper, E. L. 1977. Evolution of cell mediated immunity. In *Developmental Immunobiology*, eds. J. B. Solomon and J. D. Horton, 99-105, North-Holland, Amsterdam, Elsevier.
32. Cooper, E. L. 1977. Phylogenetic aspects of transplantation. In *Handbuch der Allgemeinen Pathologie VI/8. Transplantation*, 139-167, ed. J. W. Masshoff, Berlin, Springer-Verlag.
33. Wright, R. K. and Cooper, E. L. 1977. Lymphocyte activation. Effects of temperature on polyclonal expansion of anuran amphibian (*Rana pipiens*) lymphocytes. In *Developmental Immunobiology*, eds. J. B. Solomon and J. D. Horton, 249-258, North-Holland, Amsterdam, Elsevier.
34. Cooper, E. L. 1978. Comparative and developmental immunology. In *Handbook of Cancer Immunology*, Vol. I, ed. H. Waters, 37-62, New York, Garland STPM Press.
35. Cooper, E. L. 1978. How the immune system evolved. *J. Madurai Kamaraj Univ.* 7: 59-68.
36. Wright, R. K., Eipert, E. E. and Cooper, E. L. 1978. Regulating role of temperature on the development of ectothermic vertebrate lymphocyte populations. In *Animal Models of Comparative and Developmental Aspects of Disease*, eds. M. E. Gershwin and E. L. Cooper, 80-92, New York, Pergamon Press.
37. Cooper, E. L. 1978. Evolution of the immune system: Ontogeny in primitive animals. In *Proc. 4th European Immunology Meeting*, ed. M. Gergely, 113-126, Budapest.
38. Cooper, E. L. 1980. Cell-mediated memory in invertebrates. In *Phylogeny of Immunological Memory*, ed. M. J. Manning, 35-46, North-Holland, Amsterdam, Elsevier.
39. Cooper, E. L., Klempau, A. E., Ramirez, J.A. and Zapata, A. G. 1980. Source of stem cells in evolution. In *Development and Differentiation of Vertebrate Lymphocytes*, ed. J. D. Horton, 3-14, North-Holland, Amsterdam, Elsevier.
40. Wright, R. K. and Cooper, E. L. 1980. Development and lectin lymphocyte mitogenesis in the leopard frog *Rana pipiens*. In *Development and Differentiation of Vertebrate Lymphocytes*, ed. J. D. Horton, 141-152, North-Holland, Amsterdam, Elsevier.
41. Wright, R. K. and Cooper, E. L. 1980. Temperature and immunological memory in anuran amphibians. In *Phylogeny of Immunological Memory*, ed. M. J. Manning, 155-166, North-Holland, Amsterdam, Elsevier.
42. Cooper, E. L. 1981. Immunity in Invertebrates. *CRC Crit. Rev. Immunol.* 2: 1-32.
43. Cooper, E. L. 1981. Impact of anuran amphibians. In *Aspects of Developmental and Comparative Immunology*, ed. J. B. Solomon, 59-65, New York, Pergamon Press.

Edwin L. Cooper *Curriculum vitae*

44. Cooper, E. L. and Lemmi, C.A.E. 1981. Invertebrate humoral immunity. *Dev. Comp. Immunol. Supplement 1*: 3-21.
45. Cooper, E. L. and Stein, E. A. 1981. Leucocytes of Annelids: The Oligochaeta. In *Invertebrate Blood Cells*, eds. N. A. Ratcliffe and A. F. Rowley, 75-140, New York, Academic Press.
46. Cooper, E. L., Stein, E. A., Wojdani, A., Lemmi, C.A.E., and Tochinai, S. 1981. Induction of earthworm-anti-erythrocyte agglutinins. In *Aspects of Developmental and Comparative Immunology I*, ed. J. B. Solomon, 17-22, New York, Pergamon Press.
47. Lemmi, C.A.E. and Cooper, E. L. 1981. Induction of coelomocyte proliferation by xenografts in the earthworm, *Lumbricus terrestris*. *Dev. Comp. Immunol. Supplement 1*: 73-80.
48. Wright, R. K. and Cooper, E. L. 1981. Temperature effects on ectotherm immune responses. *Dev. Comp. Immunol. Supplement 1*: 117-122.
49. Zapata, A., Villena, A., Razquin, B. and Cooper, E. L. 1981. The jugular body in anuran amphibians: Role in immunity. *Dev. Comp. Immunol. Supplement 1*: 129-135.
50. Cooper, E. L. 1981. First Course Workshop, Comparative Immunology in Verona, Italy. *Dev. Comp. Immunol. 5*: 167-178.
51. Cooper, E. L., Stein, E. A., Tochinai, S., Wojdani, A. and Lemmi, C.A.E. 1981. Earthworms, immunology and aging. In *Workshop on the Role of Earthworms in the Stabilization of Organic Residues*, Proc. Vol., M. Appelhof (Compiler), 449-571, Beech Leaf Press of Kalamazoo Nature Center.
52. Cooper, E. L. 1982. Invertebrate defense systems: An overview. In *Ontogeny and Phylogeny of the Reticuloendothelial System*, eds. N. Cohen and M. M. Sigel, 1-35, New York, Plenum Press.
53. Cooper, E. L., Roch, P. G. and Wright, R. K. 1982. Phylogeny of mononuclear phagocytes. In *Self-Defense Mechanisms: Role of Macrophages*, eds. D. Mizuno, Z. A. Cohn, K. Takeya and N. Ishida, 3-14, Japan, University of Tokyo Press.
54. Cooper, E. L. and Tochinai, S. 1982. Myasthenia gravis and thymic myoid cells. In *Developmental Immunology: Clinical Problems and Aging*, eds. E. L. Cooper and M. A. B. Brazier, 209-214, New York, Academic Press.
55. Stein, E. A. and Cooper, E. L. 1982. Agglutinins as receptor molecules: a phylogenetic approach. In *Developmental Immunology: Clinical Problems and Aging*, eds. E. L. Cooper and M. A. B. Brazier, 85-98, New York, Academic Press.
56. Wojdani, A. and Cooper, E. L. 1982. The influence of ambient temperature on antibody production and aging. In *Developmental Immunology: Clinical Problems and Aging*, eds. E. L. Cooper and M. A. B. Brazier, 277-289, New York, Academic Press.
57. Wright, R. K. and Cooper, E. L. 1982. Origins of lymphocytes, cellular immunity and the major histocompatibility complex. In *Developmental Immunology: Clinical Problems and Aging*, eds. E. L. Cooper and M. A. B. Brazier, 13-26, New York, Academic Press.
58. Roch, P. G. and Cooper, E. L. 1983. A  $\beta_2$ -microglobulin-like molecule on earthworm (*L. terrestris*) leukocyte membranes. *Dev. Comp. Immunol. 7*: 633-636.
59. Stein, E. A. and Cooper, E. L. 1983. Inflammatory responses in annelids. *Am. Zool. 23*: 145-156.
60. Wright, R. K. and Cooper, E. L. 1983. Inflammatory reactions of the protochordata. *Am. Zool. 23*: 205-211.
61. Cooper, E. L. 1984. Cell mediated immunity and aging in annelids. In *Invertebrate Models in Aging Research*, eds. D. H. Mitchell and T. E. Johnson, 121-142, Boca Raton, CRC Press.
62. Cooper, E. L. 1984. Immune system: an overview. In *Stress, Immunity and Aging*, ed. E. L. Cooper, 13-26, New York, Marcel Dekker Inc.
63. Cooper, E. L. and Du Pasquier, L. 1984. Workshop 209. Immunity in lower vertebrates and invertebrates. 5th International Congress of Immunology, Kyoto, Japan. *Dev. Comp. Immunol. 8*: 237-244.
64. Cooper, E. L., Stein, E. A. and Wojdani, A. 1984. Recognition receptors in annelids. In *Recognition Proteins, Receptors and Probes: Invertebrates*, ed. E. Cohen, 43-54, New York, Alan R. Liss Inc.
65. Ravindranath, M. H. and Cooper, E. L. 1984. Crab lectins: Receptor specificity and biomedical implications. In *Recognition Proteins, Receptors and Probes: Invertebrates*, ed. E. Cohen, 83-96, New York, Alan Liss Inc.

Edwin L. Cooper *Curriculum vitae*

66. Stein, E. A., Wright, R. K. and Cooper, E. L. 1984. Agglutinins of annelids and tunicates. *Dev. Comp. Immuno. Supplement 3*: 165-171.
67. Wright, R. K. and Cooper, E. L. 1984. Tunicate leucocyte receptors and hemolymph lectins. In *Recognition Proteins, Receptors and Probes: Invertebrates*, ed. E. Cohen, 115-124, New York, Alan R. Liss Inc.
68. Cooper, E. L. and Brehelin, M. 1985. Invertebrate Immunology Conference. *Dev. Comp. Immunol.* 9: 159-182.
69. Cooper, E.L. 1985. Overview of humoral factors in invertebrates. *Dev. Comp. Immunol.* 9:577-583.
70. Cooper, E.L. Comparative immunology. 1985. Past Presidential Address. *Am. Zool.* 25: 649-664.
71. Cooper, E.L., Klempau, A.E. and Zapata, A.G. 1985. Reptilian Immunity. In *Biology of the Reptilia*, eds. C. Gans, F. Billett and P.F.A. Maderson, 600-678, New York, John Wiley and Sons.
72. Cooper, E.L. 1986. Evolution of histoincompatibility. In *Immunity in Invertebrates (Cells, Molecules and Defense Reactions)*, ed. M. Brehelin, 139-150, Berlin, Springer Verlag.
73. Langlet, C., Bierne, J. and Cooper, E.L. 1986. Abstrs. 3rd. Int. Congr. Dev. Comp. Immunol. In *Dev. Comp. Immunol.* 10: 93-156.
74. Cooper, E.L., Wright, R.K., Stein, E.A., Roch, P.J. and Mansour, M.H. 1987. Immunity in earthworms and tunicates with special reference to receptor origins. In *Invertebrate Models, Cell Receptors and Cell Communication*, ed. A.H. Greenberg, 79-103, New York, Karger.
75. Ghoneum, M., Gill, G., Stein, E., Salem, F. and Cooper, E. 1986. *In vitro* tumor cell phagocytosis of large granular lymphocytes and other leukocytes. In *Natural Immunity, Cancer and Biological Response Modification*, eds. E. Lotzova and R.B. Herberman, 104-1163, New York, Karger .
76. Mansour, M.H. and Cooper, E.L. 1987. Tunicate Thy-1 an invertebrate member of the Ig superfamily. In *Developmental and Comparative Immunology*, eds. E.L. Cooper, C. Langlet and J. Bierne, 33-42, New York, Alan R. Liss.
77. Mansour, M.H., Negm, H.I. and Cooper, E.L. 1987. Thy-1 evolution. *Dev. Comp. Immunol.* 11: 3-15.
78. Stein, E.A., Younai, S. and Cooper, E.L. 1987. Hemagglutinins and bacterial agglutinins of earthworms. In *Developmental and Comparative Immunology*, eds. E.L. Cooper, C. Langlet and J. Bierne, 79-89, New York, Alan R. Liss.
79. Cooper, E.L. and Mansour, M.H. 1989. Distribution of Thy-1 in invertebrates and ectothermic vertebrates. In *Cell Surface Antigen Thy-1. Immunology, Neurology, and Therapeutic Applications*, eds. A.E. Reif and M. Schlesinger, 197-219, New York, Marcel Dekker Inc.
80. Cooper, E.L. 1990. New animal models in immunobiology research. In *Defense Molecules*, eds. J.J. Marchalonis and C.L. Reinisch, 255-260, New York, Wiley-Liss.
81. Cooper, E.L. Phylogenie du systeme immunitaire. 1990. In *Immunologie Animale*, eds. P.P. Pastoret, A. Govaerts, and H. Bazin, 181-185, Paris, Medicine-Sciences, Flammarion.
82. Cooper, E.L., Grewal, I.S. and Magor, B.G. 1990. Comparative immunology of the integument. In *Skin Immune System (SIS)*. Ed. J.D. Bos, 9-24, Boca Raton, Florida, CRC Press Inc.
83. Faisal, M., Perkins, P.S. and Cooper, E.L. 1990. Infestation by the pennellid copepod *PhrEXOcephalus cincinnatus* modulates cell mediated immune responses in the Pacific arrowtooth flounder. In *Pathology in Marine Science*, eds. T. Cheng and F. O. Perkins, 471-478, New York, Academic Press.
84. Cooper, E.L. and Faisal, M. 1990. Phylogenetic approach to endocrine-immune system interactions. In *Unconventional vertebrates as models in endocrine research*. Eds. G.V. Callard and I.P. Callard, I. P. *J. Exptl. Zool. Suppl.* 4: 46-52.
85. Fitzpatrick, L.C., Goven, A.J. Venables, B.J., Rodriguez-Grau, J. and Cooper, E.L. 1990. Earthworm immunoassay for evaluating biological effects of exposure to hazardous materials. In *In situ evaluation of Biological Hazards of Environmental Pollutants*, eds. S. Sandh et al, 119-129, New York, Plenum Press.
86. Faisal, M., Perkins, P.S. and Cooper, E.L. 1990. Infestation by the pennellid copepod *PhrEXOcephalus cincinnatus* modulates cell mediated immune responses in the Pacific arrowtooth flounder. In *Pathology in Marine Science*, eds. T. Cheng and F. O. Perkins, 471-478, New York, Academic Press.
87. Cooper, E.L. and Faisal, M. 1990. Phylogenetic approach to endocrine-immune system interactions. In *Unconventional vertebrates as models in endocrine research*. eds. G.V. Callard and I.P. Callard, *J. Exptl. Zool., Suppl.*, 4: 46-52.

Edwin L. Cooper *Curriculum vitae*

88. Fitzpatrick, L.C., Goven, A.J. Venables, B.J., Rodriguez-Grau, J. and Cooper, E.L. 1990. Earthworm immunoassay for evaluating biological effects of exposure to hazardous materials. In *In situ evaluation of Biological Hazards of Environmental Pollutants*, eds. S. Sandh et al, 119-129, New York, Plenum Press.
89. Raftos, D.A. and Cooper, E.L. 1990. Diseases of Annelids. In *Diseases of Marine Annelids*. Vol III. Ed. O. Kinne, 229-243, Hamburg, Biologische Anstalt Helgoland.
90. Evans, D. L. and Cooper, E. L. 1990. Natural killer cells in ectothermic vertebrates: Cytotoxic cells from different species have similar biological activities. *Bioscience* 40: 745-750.
91. Cooper, E.L. 1992. Overview of immunoevolution. *Boll. Zool.* 59:119-128.
92. Cooper, E.L. 1992. Perspectives in neuroimmunomodulation: Lessons from the comparative approach. *Anim. Biol.* 1:169-180.
93. Cooper, E.L., Raftos, D.A. and Kelly, K.L. 1992. Immunobiology of tunicates: The search for precursors of the vertebrate immune system. *Boll. Zoo.* 59:175-181.
94. Cooper, E.L. 1992. Innate immunity. In *Encyclopedia of Immunology*, eds. I.M. Roitt and P.J. Delves, 867-870, Jovanovich, Harcourt Brace Inc.
95. Cooper E.L. 1993. Basic concepts and the functional organization of the immune system. In *Developmental Immunology*, eds. E.L. Cooper and E. Nisbet-Brown, 3-30, New York, Oxford University Press.
96. Mansour, M.H., and Cooper, E.L. 1993. Early development of the immunoglobulin gene superfamily. In *Developmental Immunology*, eds. E.L. Cooper and E. Nisbet-Brown, 85-107, New York, Oxford University Press.
97. Cooper E.L., Muller-Sieberg C.E. and Spangrude, G.J. 1993. Stem cells In *Developmental Immunology*, eds. E.L. Cooper and E. Nisbet-Brown, 177-197, New York, Oxford University Press.
98. Cooper, E.L. 1993. Comparative Immunology: The value of annelids In *Immunology of Annelids*, eds. V. Vetvicka, P. Sima, E.L. Cooper, M. Bilej and P. Roch, 1-12, Boca Raton, CRC Press.
99. Cooper E.L. and Roch P. 1993. Immunological profile of annelids: Transplantation Immunity In *Immunology of Annelids*, eds. V. Vetvicka, P. Sima, E.L. Cooper, M. Bilej, and P. Roch, 201-243, Boca Raton, CRC Press.
100. Cooper, E.L. 1994. Specificity and memory in invertebrates. In *Primordial Immunity*, eds. G. Beck, G.S. Habicht, E.L. Cooper, and J.J. Marchalonis, 245-259, New York, New York Academy of Sciences.
101. Cooper, E.L., Zhang, Z. Raftos, D.A., Habicht, G.S., Beck, G., Connors, V., Cossarizza A., Franceschi C., Ottaviani, E., Scapigliati, G. and Parrinello N. 1994. When did communication in the immune system begin? *Int. J. Immunopath. Pharmacol.* 3: 203-217.
102. Cooper E.L. 1994. Invertebrates can tell us something about senescence. *Aging Clin. Exp. Res.* 6: 5-23.
103. Cooper, E.L. and Raftos, D.A., 1995. The significance of cultivating cells and hemopoietic tissue from tunicates. In *Advances in Mucosal Immunology*, Vol. 371, eds. A, J. Mestecky, M.W. Russell, S. Jackson, S.M. Michalek, H. Tlaskalova-Hogenova and J. Sterzl, 321-325, New York, Plenum Press.
104. Cooper, E.L. 1995. Immunology: A look toward the sea and what we have learned from tunicates. *Aquaculture* 132: 1-15.
105. Cooper, E. L. and Parrinello, 1996. Invertebrates, ectotherms, immunotoxicology: extrapolation to human health. In *Modulators of immune responses: The evolutionary trail*. eds. J.S. Stolen, T.C. Fletcher, C.J. Bayne, C.J. Secombes, J.T. Zelikoff, L.E. Twerdok, and D.P. Anderson, 331-342, Fair Haven, New Jersey, SOS Publications.
106. Roch, P., Ville, P., Cooper, E. L. and Narbonne, J-F. 1996. Differential modulation of earthworm cellular and humoral immune-related functions by polychlorinated biphenyls (PCB). In *Modulators of immune responses: The evolutionary trail*. eds. J.S. Stolen, T.C. Fletcher, C.J. Bayne, C.J. Secombes, J.T. Zelikoff, L.E. Twerdok, and D.P. Anderson, 515-522, Fair Haven, New Jersey, SOS Publications.
107. Cooper, E.L., Suzuki, M. M., Cossarizza, A., and Franceschi, C. 1996. Cytotoxic reactions in invertebrates: the earthworm model. In *New Directions In Invertebrate Immunology*. eds. K. Söderhäll, S. Iwanaga, G.R. Vasta, 23-42, Fair Haven, New Jersey, SOS Publications.
108. Cooper, E. L. 1996. Earthworm Immunity. In *Invertebrate Immunology*, eds. B. Rinkevich and W.E.G. Müller, 10-45, Heidelberg, Springer Verlag.
109. Cooper, E.L. 1996. Diversity of Immune Systems. *Ital. J. Zool.* 63: 295-302.

110. Cooper, E.L. and Parrinello, N. 1996. Comparative immunologic models can enhance analyses of environmental immunotoxicity. *Ann. Rev. Fish Dis.* 6: 179-191.
111. Cooper, E. L. Mansour, M. H. and Negm, H. I. 1996. Marine invertebrate immunodefense response: molecular and cellular approaches in tunicates. *Ann. Rev. Fish Dis.* 6: 133-149.
112. Cooper, E. L. 1997. Comparative Immunology of the Integument. In *Skin Immune System*, ed. J. D. Bos, 18-39, Boca Raton, CRC Press.
113. Cooper, E. L., Cossarizza, A., Kauschke, E., and Franceschi, C. 1997 Cytotoxicity in earthworms. In *Proc. World Congress on In Vitro Biology.*, eds. K. Maramorosch and M. Loeb, 53-58.
114. Raftos, D. A., and Cooper, E. L. 1997 Tunicate Immunobiology: Factors that may influence cell proliferation and differentiation. In *Proc. World Congress on In Vitro Biology*, eds. K. Maramorosch and M. Loeb, 11-20.
115. Cooper, E. L. 1997 Ecotoxicology: Compromising immunodefense of aquatic and terrestrial species. In *Proceedings. Symposium on Ecotoxicology: Responses, Biomarkers and Risk Assessment*, ed. J. Zelikoff, Fairhaven NJ, SOS Publications, 109-126.
116. Cooper, E. L., Kauschke, E., Cossarizza, A. and Franceschi, C. 1999. Cell adhesion and the immune system: A case study using earthworms. *Microscopy Res Tech.* 44: 237-253.
117. Cooper, E.L. 1999. Immune Response: Phylogeny. In: *Encyclopedia of Life Sciences (Article 519)* Macmillan Reference Limited, Grove's Dictionaries Inc.
118. Kauschke, E., Eue, I., Lange, S., Mohrig, W. and Cooper, E.L. 2000. Immune proteins in earthworms. *Recent. Res. Devel. Comparative Biochem. Physiol.* 1: 105-122.
119. Cooper, E.L. and Bosch, T.C.G. 2000. Evolution of the Immune system. *Exp. Clin. Immunogenetics.* 17: 77-82.
120. Cooper EL. 2000. Immune Response: Evolution. In , editors. *Encyclopedia of Sciences.* Chichester: John Wiley & Sons, Ltd: 2001,
121. Cooper EL, Parrinello N. 2001 Immunodefense in Tunicates: cells and molecules. In *The Biology of Ascidians*, eds. H. Sawada, H. Yokosawa and C.C. Lambert CC, 383-394, New York, Springer.
122. Parrinello, N., Cammarata, M., Vazzana, M. and Arizza, V. 2001. Immunological Activity of Ascidian Hemocytes. In *The Biology of Ascidians*, eds. H. Sawada, H. Yokosawa and C.C. Lambert, 353-401, New York, Springer.
123. Cooper, E.L., Kauschke, E. and Cossarizza, A. 2001. Annelid humoral immunity: cell lysis in earthworms. In *Phylogenic Perspectives on the Vertebrate Immune System*, eds. G. Beck, M. Sugumaran and E.L. Cooper, 169-184, *Advances in Experimental Medicine and Biology* Vol. 484.
124. Cooper, E. L., Kauschke, E. and Cossarizza, A. 2002. Digging for innate immunity since Darwin and Metchnikoff. *Bioessays* 24: 319-333.
125. Cooper EL. The earthworm: a new model with biomedical applications. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 3-28.
126. Hamed, S. S., Kauschke, E. and Cooper, E.L. 2002. Cytochemical properties of earthworm coelomocytes enriched by percoll. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 29-37.
127. Engelmann, P., Cooper, E. L. and Nemeth, P. 2002. Comparative analysis of earthworm immune system using cell surface and intracellular markers. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 53-60.
128. Kauschke, E., Lange, S., Wagner, F., Mohrig, W. and Cooper, E.L. 2002. Earthworm humoral immune system: interaction of hemolysins with lipid membranes requires sphingolipids. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 65-72.
129. Komiyama, K., Kauschke, E. and Cooper, E. L. 2002. Evidence for a perforin-like cell-mediated cytotoxicity by earthworm coelomocytes. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 73-81.
130. Nasi M., Pinti, M., Troiano, L. Moretti, L. Cooper, E. L. and Cossarizza, A. 2002. The evolution of cell killing: when a target cell became "invited" to choose how to die. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications.* Amsterdam: IOS Press: 2002, 82-92.



131. de Eguileor, M, Tettamanti, G., Grimaldi, A. Ferrarese, R. Perletti, G., Valvassori, R., Cooper, E. L. Lanzavecchia, G. 2002. Leech immune responses: contributions and biomedical applications. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications*. Amsterdam: IOS Press: 2002, 93-102.
132. Bilej, M., Kauschke, E., Komiyama, K., Roch, P., Kohlerova, P., Silerova, M., Cooper, E. L., De Baetselier, P., Tuckova, L. and Beschin, A. 2002. An overview of cytolytic factors in *Eisenia foetida* coelomic fluid. In: Cooper EL, Beschin A, Bilej M, editors. *A new model for analyzing antimicrobial peptides with biomedical applications*. Amsterdam: IOS Press: 2002, 177-184.
133. Kasahara, S., Wago, H. and Cooper, E.L. 2002. Dissociation of innate and adaptive immunity by UVB irradiation. *Int. J. Immunopath. Pharmacol.* 15: 1-12.
134. Cooper, E. L. 2003. Comparative Immunology. *Current Pharmaceutical Design* 9: 119-31.
135. Cooper, E. L. 2003 Comparative immunology of the animal kingdom. In *The New Panorama of Animal Evolution, Proceedings XVIII International Congress of Zoology*, eds: A. Legakis, S. Sfenthourakis, R. Polymeni and M. Thessalou-Legaki, Pensoft, Sofia, 117-125.
136. de Eguileor, M., Grimaldi, A., Tettamanti, G., Valvassori, R. and Cooper, E. L. 2003. State of the art for the immune system in leeches. In *The New Panorama of Animal Evolution, Proceedings XVIII International Congress of Zoology*, eds. A. Legakis, S. Sfenthourakis, R. Polymeni and M. Thessalou-Legaki. Pensoft, Sofia, 139-145.
137. Salzet, M., Tasiemski, A., Lefebvre, Ch. And Cooper, E. L. 2003. Comparison of molecular neuroimmune processes between leeches and human. In *The New Panorama of Animal Evolution, Proceedings XVIII International Congress of Zoology*, eds: A. Legakis, S. Sfenthourakis, R. Polymeni and M. Thessalou-Legaki. Pensoft, Sofia, 147-157.
138. Parrinello, N., Cammarata, M., Arizza, V., Vazzana, M., and Cooper, E. L. 2003. How do cells of the invertebrate immune systems kill other cells? In: *The New Panorama of Animal Evolution, Proceedings XVIII International Congress of Zoology*, eds: A. Legakis, S. Sfenthourakis, R. Polymeni and M. Thessalou-Legaki. Pensoft, Sofia, 167-175.
139. Cooper EL. Comparative Immunology. *Integr Comp Biol* 2003; 43: 278 – 280.
140. Rosas, C., Cooper, E. L., Pascual, C., Brito, R., Gelabert, R., Moreno, T., Miranda, G. and Sánchez, A. 2004. La condición reproductiva del camarón blanco *Litopenaeus setiferus* (Crustacea; Penaeidae): Evidencias de deterioro ambiental en el Sur del Golfo de México. In: *Diagnóstico ambiental del Golfo de México*, Secretaria de Medio Ambiente y Recursos, Instituto Nacional de Ecología, Instituto de Ecología, eds. M. Caso, Irene Pisanty y Ezequiel Ezcurra, 789-822, Mexico, A.C., Harte Research Institute for Gulf of Mexico Studies, Vol. 2.
141. Cooper, E. L. 2004. What happened in Kanazawa? The birth of eCAM. In *Complementary and Alternative Approaches to Biomedicine*, eds. E.L. Cooper and N. Yamaguchi, xi-xxi, New York, Kluwer Publishers.
142. Vojdani A, Cooper EL. Identification of diseases that may be targets for complementary and alternative medicine (CAM). In: Cooper EL, Yamaguchi N, editors. *Adv Exp Med Biol - Complementary and Alternative Approaches to Biomedicine*. New York, Kluwer Publishers: 2004, 75-104.
143. Cooper, E. L., Ru, B. and Weng, N. Earthworms: sources of antimicrobial and anticancer molecules In eds. E.L. Cooper and N. Yamaguchi. *Adv Exp Med Biol - Complementary and Alternative Approaches to Biomedicine*. New York: Kluwer Publishers 2004; 359-390.
144. Kasahara S, Cooper EL. Nervous, endocrine, immune systems as a target for complementary and alternative medicine. In: Cooper EL, Yamaguchi N, editors. *Complementary and Alternative Approaches to Biomedicine*. New York: Kluwer Publishers: 2004, 405-426
145. Cooper EL. Effector mechanisms of natural immunity: an invertebrate perspective. In Chow D, Bertok L, editors. *Neuroimmune Biology - Vol. 5: Natural Immunity*. New York: Elsevier Science: 2004, 103-122.
146. Cooper E L. Hrzenjak, T. M. and Grdiša, T. 2004. Alternative sources of fibrinolytic, anticoagulative, antimicrobial and anticancer molecules. *Int. J. Immunopathol. and Pharmacol.* 17: 237-244.
147. Cooper EL, Torres AP, Castel AR. Comparative Immunology of the Integument. In: Bos, JD, editor. *Skin Immune System*. Boca Raton, Florida: CRC Press: 2004, 9-24.

Edwin L. Cooper *Curriculum vitae*

148. Blanco, G.A. and Cooper, E. L. 2004 Environmental Pollutants, Immune Systems, Geographic Information Systems (GIS). *J. Toxicol. and Environ. Health B. Crit. Rev.* 7: 465-80
149. Engelmann, P., Cooper, E. L. and Nemeth, P., 2005. Anticipating innate immunity without a Toll. *Mol. Immunol. Molecular Immunology* 42: 931-342.
150. Cooper EL, Pérez A, Castell A. Comparative Immunology of the Integument. In: Boss JD, editor. *Skin immune system: cutaneous immunology and clinical immunodermatology 3rd edition*. New York: CRC Press: 2004, 19-54.

#### **BOOKS AND/OR EDITED SYMPOSIUM VOLUMES**

1. Hildemann, W.H. and Cooper, E.L. (eds.) 1970. *Phylogeny of Transplantation Reactions. Transplant. Proc.*, 2:179-341.
2. Acton, R.T., Evans, E.E., Weinheimer, P.F., Cooper, E.L., Campbell, R.D., Prowse, R.H., Bizot, M., Stewart, J.E. and Fuller, G.M. et al. 1972. *Invertebrate Immune Defense Mechanisms*. New York: MSS Information Corp, 204 pp.
3. Cooper, E.L. (ed.) 1974. *Invertebrate Immunology. Contemporary Topics in Immunobiology* Vol. 4. New York: Plenum Press, 299 pp.
4. Cooper, E. L. (ed.) 1975. *Developmental Immunology. Am. Zool.*, 15: 35.
5. Cooper, E. L. 1976. *Comparative Immunology*, Englewood Cliffs, N.J.: Prentice- Hall, 338 pp. (Translated into Russian, 1980).
6. Wright, R.K. and Cooper, E.L. (eds.) 1976. *Phylogeny of Thymus and Bone Marrow-Bursa Cells*. Amsterdam, Elsevier/North Holland, 325 pp.
7. Gershwin, M. E. and Cooper, E. L. (eds.) 1978. *Animal Models of Comparative and Developmental Aspects of Immunity and Disease*. New York, Pergamon Press, 396 pp.
8. Azzolina, L.S., Tridente, G. and Cooper, E.L. (Eds.) 1981. *Dev. Comp. Immunol.* New York: Pergamon Press, 5 Suppl. 1:1-180 pp.
9. Cooper, E. L. 1982. *General Immunology*. New York: Pergamon Press, New York, 343 pp.
10. Cooper, E.L. and Brazier, M.A.B. (Eds.) 1982. *Developmental Immunology: Clinical Problems and Aging*. UCLA Forum in Medical Sciences, Vol. 25, Academic Press, New York, 321 pp.
11. Cooper, E. L. (Editor-in-Chief) and van Miuswinkel, W. B. (Guest Editor) 1982. *Immunology and Immunization of Fish. Dev. Comp. Immunol. Suppl. 2: 255pp.*
12. Cooper, E. L. (ed.) 1984. *Stress, Immunity and Aging*. Marcel Dekker, Inc., New York., 336 pp.
13. Cooper, E.L. and Wright, R.K. (eds.) 1984. *Aspects of Developmental and Comparative Immunology II. Proc. 2nd Int. Congr. Int. Soc. of Dev. Comp. Immunol., Suppl. 3*, New York, Pergamon Press, 280 pp.
14. Cooper, E.L., Langlet, C. and Bierne, J., (eds.) 1987. *Developmental and Comparative Immunology*, Alan R. Liss, N.Y., 180 pp.
15. Zapata, A. G. and Cooper, E.L. 1990. *The Immune System: Comparative Histophysiology*. Chichester , England: John Wiley & Sons, 334 pp.
16. Cooper, E. L. 1990. *General Immunology* (Japanese Translation). Japan: Nishimura Co. Ltd., 324 pp.
17. Cooper, E. L. (ed.) 1990. *Comparative Immunology. Bioscience* 40: 720-768.
18. Cooper, E.L. and Nisbet-Brown, E., 1993. *Developmental Immunology*. New York: Oxford University Press, 480 pp.
19. Vetvicka, V. Sima, P., Cooper, E.L., Bilej, M. Roch, P. 1993. *Immunology of Annelids*. Boca Raton, CRC Press, 300 pp.
20. Beck, G., Habicht, G.S., Cooper, E.L. and Marchalonis, J.J. (eds.). 1994. *Primordial Immunity, Foundations for the Vertebrate Immune System*. New York: New York Academy of Sciences, 376 pp.
21. Cooper, E. L. 1996 (ed) *Invertebrate immune responses: Cells and Molecular Products*. In: *Adv. Comp. Environ. Physiol.* 23: 1-216.
22. Cooper, E. L. (ed.). 1996. *Invertebrate immune responses: Cell Activities and the Environment*. In: *Adv. Comp. Environ. Physiol.* 24: 1-249.
23. Beck G, Sugumaran M, and Cooper, E.L. (eds). 2001. *Phylogenetic Perspectives on the Vertebrate Immune System*. *Advances in Experimental Medicine and Biology* vol. 484. New York: Kluwer Academic/Plenum Publishers 2001.
24. Cooper, E. L., Beschin, A. and Bilej, M. *A new model for analyzing antimicrobial peptides with biomedical applications*. Amsterdam, IOS Press 2002.

25. Cooper EL, Yamaguchi N, editors. *Complementary and alternative approaches to biomedicine*. Advances in experimental medicine and biology vol. 546. New York: Kluwer Academic/Plenum Publishers 2004.

### **BRIEF COMMUNICATIONS**

1. Cooper, E. L. 1965. Abnormal limb development in *Rana catesbeiana*. *Proc. Soc. Exp. Biol. Med.* 118: 201-204.
2. Cooper, E. L. and Hildemann, W. H. 1965. Allograft reactions in bullfrog larvae in relation to thymectomy. *Transplantation* 3: 446-448.
3. Garcia-Herrera, F. and Cooper, E. L. 1968. Organos linfoides del anfibio Apoda *Typhlonectes compressicauda*. *Acta Med.* 4: 157-160.
4. Cooper, E. L. 1969. Specific tissue graft rejection in earthworms. *Science*, 166: 1414-1415.
5. Cooper, E. L., Acton, R. T., Weinheimer, P. and Evans, E. E. 1969. Lack of a bactericidal response in the earthworm *Lumbricus terrestris* after immunization with bacterial antigens. *J. Invertebr. Pathol.* 14: 402-406.
6. Cooper, E. L. and Rubilotta, L. M. 1969. Allograft rejection in *Eisenia foetida*. *Transplantation* 8: 220-223.
7. Hildemann, W. H. and Cooper, E. L. 1970. Foreword to: Phylogeny of transplantation reactions. *Transplant. Proc.*, 2:179.
8. Cooper, E. L. 1970. Introduction to: Phylogeny of transplantation reactions. *Transplant. Proc.*, 2: 180.
9. Cooper, E. L. 1971. Phylogeny of transplantation immunity. Graft rejection in earthworms. *Transplant. Proc.* 3: 214-216.
10. Riviere, H. B. and Cooper, E. L. 1973. Thyroxin-induced regression of tadpole lymph glands. *Proc. Soc. Exp. Biol. Med.* 143: 320-322.
11. Cooper, E. L. 1974. Transplantation immunity in annelids. IV. Influence of earthworm size on rejection. *J. Invertebr. Pathol.* 24: 260-261.
12. Cooper, E. L. 1975. Introduction to: Developmental Immunology. *Am. Zool.*, 15: 3-5.
13. Cooper, E. L. and Sigel, M. M. 1975. Evolution of transplantation immunity. *Transplant. Proc.*, 7: 875-876.
14. Wright, R. K. and Cooper, E. L. 1976. Preface and concluding remarks to: *Phylogeny of Thymus and Bone Marrow- Bursa Cells*. Elsevier/North-Holland, Amsterdam, pp. xvii-xix, 295-300.
15. Toupin, J., Marks, D. H., Cooper, E. L. and Lamoureux, G. 1977. Earthworm coelomocytes in vitro. *In Vitro* 13: 218- 222.
16. Cooper, E. L. 1977. Preface, Symposium on Invertebrate Immunity. In: *Comparative Pathobiology*, Vol. 3, L. A. Bulla and T. C. Cheng (Eds.), Plenum Press, New York, pp. ix-xii.
17. Cooper, E. L. 1978. Comparison by species. In: *Overview of Blood*, ed. C. Bishop, 75-78. Buffalo, BLDIS, Dual Printing Inc.
18. Cooper, E. L. and Hildemann, W. H. 1978. Workshop #5, Phylogeny, Progress in Immunology III. In: *Proc., 3rd Internat. Cong. Immunol*, Australian Academy of Science, pp. 738-740.
19. Gershwin, M.E. and Cooper, E. L. 1978. Comparative immunology: to whither or whether. In: *Animal Models of Comparative and Developmental Aspects of Immunity and Disease*, Pergamon Press, pp. ix-x.
20. Cooper, E. L. 1979. Properties of coelomocyte membranes. In: *Protides of Biological Fluids*, 27th Colloquium, H. Peeters (Ed.), Pergamon Press, New York, pp. 581-584.
21. Cooper, E. L., MacDonald, H. R. and Sordat, B. 1979. Separation of earthworm coelomocytes by velocity sedimentation. In: *Function and Structure of the Immune System*, W. Muller Ruchholtz and H. K. Muller-Hermelink (Eds.), Plenum Press, New York, pp. 101-106.
22. Ramirez, J. A. and Cooper, E. L. 1980. Detecting plaque forming cells in frog bone marrow. *Dev. Comp. Immunol.* 4: 173-175.
23. Cooper, E. L. 1981. Welcome address. In: *Aspects of Developmental and Comparative Immunology I*, J. B. Solomon (Ed.), Pergamon Press, New York VII-VIII.
24. Cooper, E. L. 1981. Workshop on Phylogeny, Invertebrate Section, Paris 1981. *Dev. Comp. Immunol.*, 5: 179-181.
25. Cooper, E. L. and Tridente, G. 1981. Summary. A comparative approach to immunopathology. *Dev. Comp. Immunol.*, 5 Suppl. 1: 171-175.

Edwin L. Cooper *Curriculum vitae*

26. Stein, E. A., Marks, D. H. and Cooper, E. L. 1982. Lack of acid phosphatase release during *in vitro* phagocytosis by coelomocytes of the earthworm, *Lumbricus terrestris*. *J. Invert. Pathol.* 39: 116-118.
27. Zapata, A., Villena, A. and Cooper, E. L. 1982. Direct contacts between nerve endings and lymphoid cells in the jugular body of *Rana pipiens*. *Experientia*, 38: 623-624.
28. Cooper, E. L. 1982. Introduction. In: *Developmental Immunology: Clinical Problems and Aging*, E. L. Cooper and M.A.B. Brazier (Eds.), Academic Press, New York, pp. 3-5.
29. Cooper, E. L. and Brazier, M. A. B. 1982. Preface. In: *Developmental Immunology: Clinical Problems and Aging*, E. L. Cooper and M.A.B. Brazier (Eds.), Academic Press, New York, xv-xvi.
30. Cooper, E. L. and Walford, R. L. 1982. New perspectives on aging and immunity: lower animals, ontogeny, phylogeny and immunoendocrinology. *Dev. Comp. Immunol.*, 6: 391-393.
31. Cooper, E. L. and Logdberg, L. 1984. Summary, plenary session, phylogeny of the major histocompatibility complex. *Dev. Comp. Immunol.*, Suppl. 3: 19-21.
32. Sadek, I.A., Ghoneum, M. and Cooper, E.L. 1987. Effect of 20-methylcholanthrene on amphibian natural killer cells. *Dis. Aquat. Org.* 3: 155-158.
33. Cooper, E. L. 1987. Greetings from the President. In: *Developmental and Comparative Immunology*, E. L. Cooper, C. Langlet and J. Bierne, (Eds.), Alan R. Liss, N.Y. p. xv.
34. Cooper, E. L. 1987. Introductions of the President- elect, Margaret Manning, In: *Developmental and Comparative Immunology*, Cooper, Langlet and Bierne, (Eds.), Alan R. Liss, N.Y., pp. xxi.
35. Cooper, E. L. 1987. New directions in evolutionary immunobiology. A NSF workshop organized by J.J. Marchalonis and G.W. Warr. *Dev. Comp. Immunol.* 11: 461-464.
36. Cooper, E.L. 1990. Immune diversity throughout the animal kingdom. *Bioscience* 40: 720-722.
37. Cooper, E. L. and Nisbet-Brown, E., 1993. Preface. In: *Developmental Immunology*, v-vi, New York, New York, Oxford University Press.
38. Parrinello, N. and Cooper, E. L. 1994. Cytotoxicity in tunicates. *Minelli Tribute*. *Animal Biol.* 321-324.
39. Cooper, E.L., Raftos, D.A., Zhang, Z. and Kelly, K.L. 1995. Purification and characterization of tunicate opsonins and cytokine-like proteins *Tech. in Fish Immunology*, SOS Publications 4: 43-54.
40. Cooper, E. L., Franchini, A., and Ottaviani, E., 1995. Earthworm coelomocytes possess immunoreactive cytokines and POMC-derived peptides. *Anim. Biol.* 4: 25-29
41. Cooper, E. L. 1996 The immunodefense system. In: Cooper, E. L. 1996 (ed) *Invertebrate immune responses: Cells and Molec. Products*. *Adv. Comp. Environ. Physiol.* 23: 1-5.
42. Cooper, E. L. 1996 Introduction. (ed) In: Cooper, E. L. 1996 *Invertebrate immune responses: Cells and Molecular Products*. *Adv. Comp. Environ. Physiol.* 24: 1-5.
43. Cooper EL, Pasquier D.L. and Wago H. 2001. Obituary: Susumu Ohno 1928-2000. *Dev. Comp. Immunol.* 25: 265-266.
44. Cooper, E. L., Kauschke, E. and Cossarizza, A. 2002. Reply to correspondence from Alain Beschin, Patrick De Baetselier and Martin Bilej. *Bioessays* 24: 975-976.
45. Cooper, E. L. 2003. Neuroimmunology of autism: A multifaceted hypothesis. *Int. J. Immunopathol. Pharmacol.* 16: 289-292.
46. Cooper, E. L. and Walford, R. L. 2004 New perspectives on aging and immunity: lower animals, ontogeny, phylogeny and immunoendocrinology. (Tribute to R. L. Walford, Special Edition of Elsevier: Finch, C. and Weindruch, R. Guest Editors). *Immune Ageing* 2005; 2: 7.
47. Cooper EL. The amazing science behind nature's 'Miracle From the Sea'. *Evid Based Complement Alternat Med* 2005; 2: 569-570.

#### **POPULAR ARTICLES**

1. Goss, R., Augustine, J. and Cooper, E. L. 1962. Importance of molecular synthesis vs. mitosis in immunological reactions. *Bull. M. Des. Isl. Biol. Lab.*, 4: 35-36.
2. Cooper, E. L., Beller, J. and Hayes, S. A. 1970. A successful medium for maintaining earthworms. *Lab. Anim.*, 4: 25-28.
3. Cooper, E. L. 1977. What is the origin and function of the immune system? *Trends Biochem. Sci.* 2: N130-N132.
4. Younai, S., Stein, E. A. and Cooper, E. L. 1985. Bacterial agglutination by earthworm lectins. *UCLA Undergraduate Science Journal*, 1: 41-56.
5. Cooper, E. L. 1979. Earthworms and immunology. *Trends Biochem. Sci.*, 4: 295-296.

Edwin L. Cooper *Curriculum vitae*

6. Cooper, E. L. 1979. L'evolution de l'immunité. *La Recherche*, 103: 824-833.
7. Cooper, E. L. 1981. Phylogeny of cytotoxicity. *Endeavor*, 4: 160-165.
8. Cooper, E. L. 1982. Development of the immune system in relation to the head, neck and oral cavity. *Orobios*, 3: 3-8.
9. Cooper, E. L. 1986. Immunology in Egypt: Exploring the body's self-defense system. *Cairo Today*, 7: 54-58.
10. Cooper, E.L. 1987. Immune systems and neuroendocrines. *Ill. Med. J.* 171: 223-230.
11. Cooper, E.L. 1988. 40 years of Pergamon Press and 10 of Developmental and Comparative Immunology. In: *Robert Maxwell and Pergamon Press: 40 Years Service to Science, Technology and Education*, E. Maxwell, Ed., Pergamon Press, N.Y., pp. 271-276.
12. Cooper, E. L. 1995 Icarus'94 in: *The Garden of Life*, C. Sullivan and J.L. Esterby (eds) p. 449. The National Library of Poetry, Watermark Press, Owings Mills, MD 21117.
13. Cooper, E. L. 1996 The immunology of earthworms and tunicates. *Lab Anim.* 25: 38-43.
14. "Los invertebrados, una clave para entendernos" (Work of ELCooper) Article written by Nora Bar for *La Nacion*, Section Ciencia, Sabado 28 de marzo de 1998, page 15.

### **BOOK REVIEWS AND LETTERS TO EDITORS**

1. Cooper, E. L. 1969. Review of: *In Vitro*, Vol. 3, *Differentiation and Defense Mechanisms in Lower Organisms*, M. M. Sigel (Ed.), Williams and Wilkins, Baltimore, 1968. In: *Science*, 164: 1390.
2. Cooper, E. L. 1974. Review of: *Current Topics in Microbiology and Immunology*, Vol. 61, W. Arber et al., (Eds.), Springer-Verlag, Berlin, 1973. In: *Q. Rev. Biol.*, 49: 260.
3. Cooper, E. L. 1976. Review of: *Invertebrate Immunity. Mechanisms of Invertebrate Vector-Parasite Relations*, K. Maramorosch and R. E. Shope (Eds.), Academic Press, New York, 1975. In: *Q. Rev. Biol.*, 51: 547-548.
4. Cooper, E. L. 1978. Review of: *Immunity in Evolution, Immunology's Roots*, J. J. Marchalonis, Harvard University Press, Boston, 1977. In: *Trends Biochem. Sci.*, 3: 188-189.
5. Cooper, E. L. 1980. Review of: Marchalonis, J. J. and Cohen, N. *Self/Non-Self Discrimination, Contemporary Topics in Immunobiology*, Vol. 9. In: *Q. Rev. Biol.*, 55: 315-316.
6. Cooper, E. L. 1982. (Information overload of one type...)... But not another. *Immunology Today*, 3: 87.
7. Cooper, E. L. 1982. E. P. Volpe, *The Amphibian Embryo in Transplantation*. In: *Q. Rev. Biol.*, 57: 189.
8. Cooper, E. L. 1983. *Antibody as a Tool. The Application of Immunochemistry*, J. J. Marchalonis and G. W. Warr (Eds.), John Wiley and Sons, Ltd., 568 pp. In: *Dev. Comp. Immunol.* 7: 397-398.
9. Cooper, E. L. 1983. Review of: *The Reticuloendothelial System. A Comprehensive Treatise*, Vol. 3, Phylogeny and Ontogeny, N. Cohen and M. M. Sigel (Eds.), Plenum Press, New York. 757 pp. In: *Dev. Comp. Immunol.*, 7: 587-589.
10. Cooper, E. L., Stein, E. A., Wright, R. K., Ravindranath, M. H., Wojdani, A., and Yeaton, R. W. 1984. Soluble lectins. *Science*, 225: 568.
11. Cooper, E.L. 1985. Review of *Immunology at a Glance*. J.H.L. Playfair (author), Blackwell Scientific Publications. *Trends in Biotechnology*, 3: 214.
12. Cooper, E.L. 1985. Review of *Immunology: An Introduction*. I. Tizard (author), CBS College Publishing, New York. *BioScience*, 35: 52.
13. Cooper, E.L. 1986. Review of *Fish Immunology*, M.J. Manning and M.F. Tatner (authors), Academic Press, N.Y., 374 pp., 1985. *Quart. Rev. Biol.* 61: 564-565.
14. Cooper, E.L. 1988. Review of Chapter 30, Immunity, in: *Biology, The Unity and Diversity of Life*, Fifth Edition, Starr and Taggart, Wadsworth Publishing Co., Belmont, CA, pp. 418-435.
15. Cooper, E.L. 1989. Review of *Inner Workings: Self-Preservation*, A. Feinstein, Rodale Press, Emmaus, and PA.
16. Cooper, E.L. 1993. Response to Smith, L.C. and Davidson, E.H. 1992. The echinoid immune system and the phylogenetic occurrence of immune mechanisms in deuterostomes. *Immunol. Today* 13:356-362. *Immunol. Today*. 14: 92.
17. Cooper, E.L. 1993. Review of *Biomarkers: Biochemical, Physiological and Histological Markers of Anthropogenic Stress*, Huggett, R.J., Kimerle, R.A., Mehrle, Jr., P.M. Bergman, H.L. (Des). Special publication of the Society of environmental Toxicology and Chemistry. Lewis Publishers, Boca Raton, 1992., p. 347 *Ann. Rev. Fish Dis.*

18. Cooper, E. L., and Nisbet-Brown, E. 1993. Preface. *Developmental Immunology*. Oxford University Press. New York, v-vi.

### **EDITORIALS AND INDICES**

1. Cooper, E. L. 1977. *Dev. Comp. Immunol.*, Vols. 1-16, (52 issues) Pergamon Press, New York. Founding Editor and Editor-in Chief.
2. Cooper, E. L. 1977-1992. Why developmental and comparative immunology? 1: 1-3.
3. Cooper, E. L. 1977. When did it begin? 1: 73-80;
4. Cooper, E. L. 1977. *Developmental and Comparative Immunology*. 1: 181-182.
5. Cooper, E. L. 1977. Yes-developmental and comparative immunology, the approach to immunological diversification. 1: 287.
6. Cooper, E. L. 1978. GOD, diversity and DCI. 2: 1-3.
7. Cooper, E. L. 1978. Developmental and comparative immunology. 2: 201-202.
8. Cooper, E. L. 1978. The uniqueness of DCI. 2: 391- 392.
9. Cooper, E. L. 1978. Author and Subject Index, 1: 1- 24.
10. Cooper, E. L. 1979. T and B lymphocytes: Recognition and Function. 8th Annual ICN-UCLA Symposia, 3: 746-747.
11. Cooper, E. L. 1979. XXVII Ann. Colloq. Protides of the Biological Fluids, 3: 747-748.
12. Cooper EL. 1979. Report on American Association of Immunologists, 63rd Annual Meeting, Dallas, 3: 748-749.
13. Cooper, E. L. 1984-1988. Software and DCI, 8: i.
14. Cooper, E.L. 1987. DCI - the first 10 years 11: 1-2.
15. Cooper, E.L. 1987. Funds for models in comparative immunology, 11: 277-278.
16. Cooper, E.L. 1987. Summer, 11: 477-478.
17. Cooper, E.L. 1987. Firsts, 11: 675-676.
18. Cooper, E.L. 1988. *Comparative Immunology*, 12: 421- 422.
19. Cooper, E.L. 1988. *Developmental and comparative immunology*, 12: 1-892, Pergamon Press, N.Y.
20. Cooper, E.L. 1988. 40 years of Pergamon Press and 10 of DCI *Developmental and Comparative Immunology*. 12: 443-451.
21. Cooper, E.L. 1989. Editorial, *Dev. Comp. Immunol*, 13: 1.
22. Cooper, E.L. 1989. *Developmental and comparative immunology*, 13: 1-100, Pergamon Press, N.Y.
23. Cooper, E.L. 1990, 1991. At the Beach: DCI. *Dev. Comp. Immunol*
24. Cooper, E.L. Founding Editor in Chief, 2004 *Evidence Based Complementary and Alternative Medicine*, Oxford University Press.
25. Cooper EL. *Complementary and Alternative Medicine (CAM) When Rigorous Can Be Science. Evid Based Complement Alternat Med* 2004; 1: 1-4.
26. Cooper EL. Commentary on CAM and NK Cells by Kazuyoshi Takeda and Ko Okumura. *Evid Based Complement Alternat Med* 2004; 1: 29-34.
27. Cooper EL. Meeting Report. 12<sup>th</sup> International Congress of Oriental Medicine, Taipei Taiwan November 2003. *Evid Based Complement Alternat Med* 2004; 1: 103-106.
28. Cooper EL. Meeting Report. 10<sup>th</sup> Annual Symposium on Complementary Health Care. *Evid Based Complement Alternat Med* 2004; 1: 107-108.
29. Cooper EL. Meeting Report. 10<sup>th</sup> Anniversary Celebration UCLA Center for East-West Medicine East Meets West for Comprehensive Pain Management: Ka-Kit Hui MD, Director December 6, 2003, 8:30 a.m.-5:00p.m., Tom Bradley International Hall at UCLA. *Evid Based Complement Alternat Med* 2004; 1: 109-110.
30. Cooper EL. Commentary on traditional and modern biomedical prospecting: Part II – the benefits by Wermer E.G. Müller, Heinz C. Schröder, Matthias Wiens, Sanja Perovic-Ottstadt, Renato Batel, Isabel M. Müller and Roch *et al. Evid Based Complement Alternat Med* 2004; 1: 207-210.
31. Cooper EL. Meeting Report. Second Annual Integrative Medicine Symposium. *Evid Based Complement Alternat Med* 2004; 1: 211-213.
32. Cooper EL. Drug discovery, CAM, and natural products. *Evid Based Complement Alternat Med* 2004; 1: 215-218.

Edwin L. Cooper *Curriculum vitae*

33. Cooper EL. Bioprospecting: a CAM frontier. *Evid Based Complement Alternat Med* 2005; 2: 1-4.
34. Cooper EL. CAM, eCAM, bioprospecting: The 21<sup>st</sup> century pyramid. *Evid Based Complement Alternat Med* 2005; 2: 125-128.
35. Cooper EL. eCAM benefits from diversity that derives from CAM. *Evid Based Complement Alternat Med* 2005; 2: 263-266.
36. Cooper EL, Hecht SB. Meeting Report. Latin American Center Symposium on Environment and Health: Exploring Natural Products. *Evid Based Complement Alternat Med* 2005; 2: 409-410.
37. Cooper EL. ECAM is waiting for eCAM. *Evid Based Complement Alternat Med* 2005; 2: 427-428.
38. Cooper EL. Complementary and alternative medicine: challenge to eCAM. *Evid Based Complement Alternat Med* 2006; 3: 1-2.
39. Cooper EL. Role of TOLL-like receptors in adjuvant-augmented immune therapies by T. Seya. *Evid Based Complement Alternat Med* 2006; 3: 133-138.
40. Cooper EL. Stem cells and CAM. *Evid Based Complement Alternat Med* 2006; 3: 167-169.
41. Cooper EL. Regional strength in CAM. *Evid Based Complement Alternat Med* 2006; 3: 291-292.
42. Cooper EL. eCAM: On to year 4. *Evid Based Complement Alternat Med* 2006; 3: 395-396.
43. Cooper EL. On the road to an impact factor for eCAM. *Evid Based Complement Alternat Med* 2007; 4: 1-2.
44. Cooper EL. La Medicina Alternativa y Complementaria, aplicada de forma rigurosa, puede ser ciencia. *Digitalis* 2007; 8: 1-4.

**ABSTRACTS AND SHORT COMMUNICATIONS (I=Introduced, S=Sponsored, NP=Not Published but Presented, P=Posters)**

1. Cooper, E. L. 1965. Rejection of body wall xenografts exchanged between *Lumbricus terrestris* and *Eisenia foetida*. *Am. Zool.*, 5: 169.
2. Cooper, E. L. 1965. A method of tissue grafting in the earthworm *Lumbricus terrestris*. *Am. Zool.*, 5: 233.
3. Cooper, E. L. 1965. Some aspects of the reticuloendothelial system in *Rana catesbeiana*. *Anat. Rec.*, 151: 448.
4. Mandell, M. L. and Cooper, E. L. 1965. The role of the adult thymus and bone marrow in radiation recovery in *Rana pipiens*. *Am. Zool.*, 5: 731-732.
5. Cooper, E. L. 1966. Organos linfoides y mieloides de los anfibios su posible función en la inmunidad. *Arch. Mex. Anat.*, 7: 20.
6. Cooper, E. L. 1966. Rechazo de tejidos en la lombriz de tierra. Una respuesta inmunologica? *Arch. Mex. Anat.*, 7: 21.
7. Cooper, E. L. 1966. The lymphomyeloid organs of *Rana catesbeiana*. *Anat. Rec.*, 154: 456.
8. Cooper, E. L. and Garcia-Herrera, F. 1966. Peripheral blood cells in the caecilian *Typhlonectes compressicauda*. Deposited in the American Museum of Natural History as *Nectrocaecilia cooperi*, *Am. Zool.*, 6: 241.
9. Cooper, E. L. and Rodriques, M. P. 1966. Algunos aspectos de la respuesta inmunologica en urodelos. *Arch. Mex. Anat.*, 7: 20-21.
10. Garcia-Herrera, F. 1966. Limb development following damage to primordia in *Rana catesbeiana*. *Am. Zool.*, 6: 359 (I).
11. Garcia, H. F. and Cooper, E. L. 1966. Obtención, manutención y posibilidades experimentales de la lamprea de agua dulce (*Entosphenos spadiceus*). *Arch. Mex. Anat.*, 7: 35.
12. Garcia, H. F. and Cooper, E. L. 1966. Obtención, manutención y posibilidades experimentales de la Iguana. *Arch. Mex. de Anat.*, 7: 34-36.
13. Mandell, M. L. and Cooper, E. L. 1966. Allograft survival and irradiation in *Rana pipiens*. *Am. Zool.*, 6: 387.
14. Schaefer, D. 1966. Effects of irradiation on the immune system and peripheral blood of adult *Rana pipiens*. *Anat. Rec.*, 154: 486 (I).
15. Aponte, A. and Cooper, E. L. 1967. Allograft immunity and the peripheral blood of the iguana, *Ctenosaura pectinata*. *Anat. Rec.*, 157: 207.
16. Baculi, B. S. 1967. Normal histology of the lymphomyeloid organs of *Rana catesbeiana*. *Anat. Rec.*, 157: 209 (I).

Edwin L. Cooper *Curriculum vitae*

17. Cooper, E. L. 1968. Transplantation immunity in earthworms. *Am. Zool.*, 8: 379.
18. Cooper, E. L. and Baculi, B. S. 1968. Cell responses during xenograft rejection in annelids. *Anat. Rec.*, 160: 335.
19. Cooper, E. L. 1969. Skin transplant rejection in apodan amphibians and lacertalian reptiles. *Am. Zool.*, 9: 333.
20. Cooper, E. L., Acton, R. T., Weinheimer, P. and Evans, E. E. 1969. Lack of bactericidal response in the earthworm *Lumbricus terrestris* after immunization with bacterial antigens. Society for Invertebrate Pathology, Burlington, VT (NP).
21. Cooper, E. L. and Baculi, B. S. 1969. Comparative lymphomyeloid organ structure in various anuran species. *Pan Am. Cong. Anat.*, Mexico City (NP).
22. Cooper, E. L. and Mandell, M. L. 1969. Bone marrow- thymus interactions in amphibian allograft immunity. *Anat. Rec.*, 163: 172.
23. Winger, L. A. and Cooper, E. L. 1969. Effect of temperature on the first-set xenograft rejection in the earthworm *Eisenia foetida*. *Am. Zool.*, 9: 352.
24. Baculi, B. S. and Cooper, E. L. 1970. Lymphomyeloid organs of amphibia. IV. Normal histology in larval and adult *Rana catesbeiana*. *IXth Int. Cong. Anat.*, Leningrad, U.S.S.R. (NP).
25. Brahmi, Z. and Cooper, E. L. 1972. A natural agglutinin in the scorpion, *Androctonus australis*. *Am. Zool.*, 12: 527.
26. Brown, B. A. 1972. Transplantation immunity and PFC in bullfrog larvae devoid of bone marrow. *4th Int. Cong. Transplant. Soc.*, San Francisco, p. 32 (I).
27. Brown, B. A., Moticka, E. J. and Cooper, E. L. 1972. T and B equivalents in larval bullfrogs. *Am. Zool.*, 12: 310.
28. Hostetter, R. K. 1972. Earthworm coelomic cell function in xenograft rejection. *Anat. Rec.*, 172: 333 (I).
29. Hostetter, R. K. and Cooper, E. L. 1972. Coelomocytes as effector cells in earthworm immunity. *Fed. Proc.*, 31: 4086.
30. Olson, D. J. and Cooper, E. L. 1972. Fate of orally administered carbon particles in the leopard frog. *Mentalis*, 2: 52.
31. Riviere, H. B. and Cooper, E. L. 1972. Can the lymph gland function as bone marrow in bullfrog larvae? *Am. Zool.*, 12: 103.
32. Riviere, H. B. and Cooper, E. L. 1972. Evolution of bone marrow analogues. International Transfusion Congress, Washington, D.C. (NP).
33. Riviere, H. B. and Cooper, E. L. 1972. In vitro effects of thyroxine on tadpole lymphomyeloid tissue. *Anat. Rec.*, 172: 464.
34. Brown, B. A. 1973. Role of the bullfrog larval spleen in allograft rejection. *Anat. Rec.*, 175: 278.
35. Cooper, E. L. and Baculi, B. S. 1973. Responses of bullfrog tadpole lymphoid organs after immunization. *Anat. Rec.*, 175: 297.
36. Cooper, E. L., Birnberg, F., Galef, F. and Haglund, K. 1973. Initiation of graft rejection in bullfrog tadpoles by adult allogeneic spleen. *Fed. Proc.*, 32: 1033.
37. Lemmi, C. A., Cooper, E. L. and Moore, T. C. 1973. Histamine and kinin metabolism in earthworms: techniques for their study. *Int. Res. Comm. Sys.*, 29-1-1.
38. Lemmi, C. A., Cooper, E. L. and Moore, T. C. 1973. Immune challenge: Effect of histamine and kinin metabolism in earthworms. *Int. Res. Comm. Sys.*, 29-1-2.
39. Cooper, E. L., Brown, B. A. and Wright, R. K. 1974. Role of the spleen after transplantation. *5th Int. Cong. Transplant. Soc.*, Jerusalem, Israel (NP).
40. Wright, R. K. and Cooper, E. L. 1974. Coelomocytes of the polychaete annelid *Glycera dibranchiata*. *Anat. Rec.*, 178: 529.
41. Wright, R. K. and Cooper, E. L. 1974. Contrasting thymus effects in bullfrog larvae. *Fed. Proc.*, 33: 768.
42. Wright, R. K. and Cooper, E. L. 1974. Mitogenic stimulation of spleen cells from the leopard frog, *Rana pipiens*. *Am. Zool.*, 14: 1303.
43. Brown, B. A. and Cooper, E. L. 1975. Survival of bullfrog larvae following irradiation and implantation of spleens. *Anat. Rec.*, 181: 318.
44. Lemmi, C. A. E. 1975. Specific induction of coelomocyte proliferation in earthworms. *Anat. Rec.*, 181: 409 (I).



45. Cooper, E. L., Avtalion, R. R. and Wright, R. K. 1976. Leukocytes in the cold adapted frog *Ascaphus trueii*. *Anat. Rec.*, 184: 580-581.
46. Marks, D. H. 1976. Biochemical changes accompanying graft rejection and wound healing in the earthworm *Lumbricus terrestris*. *Fed. Proc.*, 35: 277 (I-J.N.Miller) (P).
47. Marks, D. H. 1976. Effect of graft rejection and wound healing on coelomocyte enzymatic activity in the earthworm, *Lumbricus terrestris*. *Am. Zool.*, 16: 251 (I).
48. Stein, E. and Avtalion, R. R. 1976. Morphological characteristics of coelomocytes of the earthworm *Lumbricus terrestris*. *Fed. Proc.*, 35: 277 (I-T. Jahn) (P).
49. Wright, R. K. and Cooper, E. L. 1976. Effect of temperature on lymphocyte activation in concanavalin A stimulated cultures of *Rana pipiens*. *Am. Zool.*, 16: 252.
50. Wright, R. K. and Cooper, E. L. 1976. Phylogenetic conservation of lymphocyte activation. *Fed. Proc.*, 35: 277 (P).
51. Eipert, E. F., Wright, R. K. and Cooper, E. L. 1977. Comparison of spleen and bone-marrow mitogen responses in *Rana catesbeiana*. *Am. Zool.*, 17: 892.
52. Stein E., Avtalion, R. R. and Cooper, E. L. 1977. The coelomocytes of the earthworm *Lumbricus terrestris*. *Anat. Rec.*, 187: 780-781.
53. Cooper, E. L. 1978. Cellular recognition of allografts and xenografts in invertebrates. Symposium on Phylogeny and Ontogeny Immune System, Dutch Fed. of Medical and Biological Societies, Rotterdam (NP).
54. Cooper, E. L. 1978. Evolution of the immune system: ontogeny in primitive animals. *Abs. 4th Eur. Immunol. Mtg.*, Budapest (NP).
55. Cooper, E. L., MacDonald, H. R. and Sordat, B. 1978. Separation of earthworm coelomocytes by velocity sedimentation. VIth Int. Conf. on Lymphatic Tissues and Germinal Centers in Immune Reactions, Kiel, West Germany (NP) (P).
56. Widmer, M. B., Cooper, E. L. and Engers, H. D. 1978. Ontogeny of cell-mediated cytotoxicity. *Abs. 4th Eur. Immunol. Mtg.*, Budapest (NP).
57. Wright, R. K. and Cooper, E. L. 1978. Structural configuration of carbohydrates and their ability to inhibit concanavalin A agglutination of leopard frog erythrocytes. *Am. Zool.*, 18: 642.
58. Cooper, E. L. 1979. History of developmental and comparative immunology. *Am. Zool.*, 19: 933.
59. Cooper, E. L. 1979. T and B Lymphocytes: Recognition and function. *J. Supramolec. Struct.*, Suppl. 3, 9: 263 (NP).
60. Ramirez, J. A., Klempau, A. E. and Cooper, E. L. 1979. Reconstitution by bone marrow in *Rana pipiens*. *Am. Zool.*, 19: 1015.
61. Stein, E. A. and Cooper, E. L. 1979. Coelomocytes of *Lumbricus terrestris*. *Am. Zool.*, 19: 877.
62. Villena, A. J., Zapata, A. G. and Zamora, R. S.-M. 1979. Haemopoietic inductive microenvironment (HIM) in haematopoeisis in *Pleurodeles waltlii* (Urodela). *Am. Zool.*, 19: 856 (I).
63. Wojdani, A. 1979. Influence of environmental temperature on the fate of soluble and bacterial antigen in carp. *Am. Zool.*, 19:932 (I).
64. Wright, R. K. and Cooper, E. L. 1979. Aging and mitogen responses in the leopard frog, *Rana pipiens*. *Am. Zool.*, 19: 857.
65. Wright, R. K. and Cooper, E. L. 1979. Evolution and mitogen induced lymphocyte activation. *J. Supramolec. Struct.*, Suppl. 3, 9: 282.
66. Zapata, A. G., Klempau, A. E., Ramirez, J. A., Smith, C. and Cooper, E. L. 1979. Irradiation effects on anuran lymphoid tissues: the bone marrow and spleen of *Rana pipiens*. *IV Int. Symp. Morph. Sci.*, L.J.A. Didio (Ed.), Toledo, Ohio.
67. Zapata, A., Ramirez, J. A. and Cooper, E. L. 1979. Changes in aging lymphopoietic and myelopoietic organs of the annual cyprinodont fish, *Nothobranchius guentheri*. *Anat. Rec.*, 193: 762 (NP).
68. Lemmi, C. A. E. and Cooper, E. L. 1980. Thin layer chromatography of coelomic fluid from *Lumbricus terrestris*. *Am. Zool.*, 19: 854.
69. Stein, E. A. and Cooper, E. L. 1980. Influence of coelomic fluid factors on phagocytosis of yeast by earthworm coelomocytes. *Fed. Proc.*, 39: 450.
70. Stein, E. A., Wojdani, A. and Cooper, E. L. 1980. Naturally occurring and induced hemagglutinins in the coelomic fluid of the earthworm, *Lumbricus terrestris*. *Am. Zool.*, 20: 864.
71. Tochinai, S., 1980. Ontogeny of lymphocytes. *Am. Zool.*, 19: 856 (I).

Edwin L. Cooper *Curriculum vitae*

72. Tochinai, S., Nagata, S., Kawahara, H. and Katagiri, Ch. 1980. Restoration of immune capacity in thymectomized *Xenopus*: role of T- and B-lymphocytes. *Fed. Proc.*, 39: 1203 (I).
73. Wodjani, A., Serero, M. and Avtalion, R. R. 1980. Effect of temperature and antigen upon immunological suppression in fish. *Fed. Proc.*, 39: 669 (I).
74. Wright, R. K. and Cooper, E. L. 1980. Inhibition of lectin-induced frog lymphocyte mitogenesis by monosaccharides. *Fed. Proc.*, 39: 915.
75. Cooper, E. L., Stein, E. A. Wojdani, A. and Tochinai, S. 1981. Induction of earthworm antierythrocyte agglutinins. *Proc. 1st Cong. Dev. Comp. Immunol.*, (NP).
76. Klempau, A. E. and E. L. Cooper 1981. E-Rosettes in amphibia: organ distribution, ontogeny and significance. *Am. Zool.*, 21: 993.
77. Lemmi, C. A. and Cooper, E. L. 1981. Density changes in non-adherent coelomocytes induced by xenografting in *Lumbricus terrestris*. *Proc. 1st Cong. Dev. Comp. Immunol.*, p. 45.
78. Lemmi, C. A. and Cooper, E. L. 1981. Graft specific immunoreceptors on *Lumbricus terrestris* coelomocytes. *Proc. 4th Int. Conf. Immunol.*, 3: 4.
79. Lemmi, C. A. E., Wojdani, A., Stein, E. and Cooper, E. L. 1981. Immunochemical analysis of earthworm coelomic fluid and coelomocyte antigens. 1st Course Workshop, Verona, Italy (NP).
80. Stein, E. A., Wojdani, A. and Cooper, E. L. 1981. Partial characterization of agglutinins from the earthworm, *Lumbricus terrestris*. *Am. Zool.*, 21: 974.
81. Wright, R. K. and Cooper, E. L. 1981. Agglutinin producing hemocytes in the ascidian *Styela clava*. *Am. Zool.*, 21: 974.
82. Cooper, E. L. 1982. Did Darwinism help comparative immunology? *Am. Zool.*, 22: 890.
83. Roch, Ph. G., Stein, E. A., Wojdani, A. and Cooper, E. L. 1982. *Lumbricus* agglutinins: distribution in the coelomic fluid. *Fed. Proc.*, 41: 561.
84. Wojdani, A., Stein, E. A., Cooper, E. L. and Alfred, L. J. 1982. Mitogenic response of mammalian lymphocytes to coelomic fluid from the earthworm *Lumbricus terrestris*. *Am. Zool.*, 22: 868.
85. Wright, R. K. and Cooper, E. L. 1982. Hibernation, lymphoid organs and immune responses in the leopard frog. *The Physiologist*, 25: 244.
86. Wright, R. K. and Cooper, E. L. 1982. Natural heteroagglutinins in the hemolymph of the tunicate *Styela clava*. *Am. Zool.*, 22: 926.
87. Cooper, E. L., Stein, E. A., Wright, R. K. and Klempau, A. E. 1983. Phylogenetic distributions of a Thy-1-like determinant. *Am. Zool.*, 23: 901.
88. Langlet, C. and Cooper, E. L. 1983. Evidence for histoincompatibility, aging and neoplasia in ribbon worms and earthworms. *Am. Zool.*, 23: 900.
89. Roch, P. G. and Cooper, E. L. 1983. A  $\beta_2$ -microglobulin-like molecule on earthworm leukocyte membranes. *Am. Zool.*, 22: 868.
90. Smith, C. T. and Cooper, E. L. 1983. Identification of cytotoxic cells in *Rana*. *Fed. Proc.*, 42: 937.
91. Cooper, E. L. and Mansour, M. H. 1984. Characterization of a Thy-1 homolog in tunicates. *Am. Zool.*, 24: 55A.
92. Cooper, E. L., Naylor, P. H., Wright, R. K., Stein, E. A., Smith, C. T. and Goldstein, A. L. 1984. Thymosin<sub>1</sub> and thymosin<sub>4</sub> cross-reactive peptides in invertebrates and primitive vertebrates. *Fed. Proc.*, 43: 1670.
93. Cooper, E. L., Stein, E. A., Wojdani, A. and Wright, R. K. 1984. Comparative immunology earthworm and tunicate leukocytes. *1st World Conference on Inflammation, Antirheumatics, Analgesics and Immunomodulators*, p. 9.
94. Cooper, E.L., Stein, E.A. and Wright, R.K. 1984. Comparative and developmental immunology and the importance of animal models, *23rd Czech. Acad. Sci.*, p. 13.
95. Klempau, A. E. and Cooper, E. L. 1984. Analyses of the E-rosetting T-lymphocyte in *Rana pipiens*. *Dev. Comp. Immunol.*, Suppl. 3: 122.
96. Mansour, M. H. and Cooper, E. L. 1984. Preliminary characterization of Thy-1 antigenic determinants from *Rana pipiens* brain. *Dev. Comp. Immunol.*, Suppl. 3: 122.
97. Mansour, M. H. and Cooper, E. L. 1984. Purification of the tunicate hemocyte Thy-1 homolog. *Am. Zool.*, 24: 55A.

98. Ravindranath, M. H., Higa, H. H., Cooper, E. L., and Paulson, J. C. 1984. Differences in specificity among lectins purified from *Cancer antennarius*, *Limulus polyphemus* and *Limax flavus* toward sialic acid derivatives. *Am. Zool.*, 24: 55A.
99. Roch, P., Cooper, E. L. and Eskinazi, D. P. 1984. Presence of a  $\beta_2$ -microglobulin-like structure expressed on the membrane of some leukocytes from several earthworms. *Dev. Comp. Immunol.*, Suppl. 3: 269.
100. Smith, C., Wright, R. K. and Cooper, E. L. 1984. Hibernation-induced changes in the lymphoid organs of the leopard frog, *Rana pipiens*. *Dev. Comp. Immunol.*, Suppl. 3: 251.
101. Stein, E. A. and Cooper, E. L. 1984. In vitro hemagglutinin production by coelomocytes of the earthworm *Lumbricus terrestris*. *Dev. Comp. Immunol.*, Suppl. 3: 188.
102. Wojdani, A., Stein, A. E., Alfred, L. J. and Cooper, E. L. 1984. Mouse and human lymphocyte responses to earthworm coelomic fluid. *Dev. Comp. Immunol.*, Suppl. 3: 195.
103. Wright, R. K. and Cooper, E. L. 1984. Leucocyte receptors and hemolymph lectins in the tunicate *Styela clava*. *Dev. Comp. Immunol.*, Suppl. 3: 195.
104. Cooper, E. L. and Roch, P. 1985. Coordination between humoral and cellular factors in annelids. *Dev. Comp. Immunol.*, 9: 177.
105. Ghoneum, M. L., Alfred, J., Salem, F., and Cooper, E. L. 1985. Susceptibility of NK cells to cytotoxicity by tumor cells. *Fed. Proc.*, 44: 588.
106. Ghoneum, M., Gill, G., Stein, E., Salem, F., Cooper, E.L. 1985. Phagocytosis of LGL and other leukocytes by tumor cells. *Nat. Immun.*, 4: 249-250.
107. Negm, H. I. and Cooper, E. L. 1985. Evolutionary conservation of Lyt-1 alloantigen. *Fed. Proc.*, 44: 790.
108. Smith, C. T., and Cooper, E. L. 1985. Characteristics of putative NK and CTL in frogs. *Fed. Proc.*, 44: 19-21.
109. Stein, E. A., Younai, S., and Cooper, E. L. 1985. Bacterial agglutination by earthworm coelomic fluid. *Fed. Proc.*, 44: 1095.
110. Tomonaga, S., Mansour, M. H., and Cooper, E. L. 1985. An unusual tissue distribution of Thy-1 during evolution. *Fed. Proc.*, 44: 790.
111. Ayaad, T.H., El Deeb, S., Abdel-Megeed, A., El Moursy, A.A. and Cooper, E.L. 1986. Immunologic properties of hemolymph in the cotton leafworm. *6th Int. Congr. Immunol.* p. 66.
112. Boctor, F.N., Cooper, E.L., Charmy, R.A., Ekladios, E.M., Garges, L.M. 1986. Evidence for (circannual) immune activity in humans. *6th Int. Congr. Immunol.* p. 478.
113. El Amir, A., Saad, A-H., El Deeb, S., Fikry, A., Cooper, E.L. 1986. Evidence for a Thy-1 homolog on earthworm coelomocytes. *6th Int. Congr. Immunol.* p. 70.
114. Ghoneum El Moataz, M., El Ridi, R., Cooper, E.L. 1986. Erythrocyte and bacterial agglutinating activity in the hemolymph of the silkworm *Philosamia ricini*. *6th Int. Congr. Immunol.* p.66.
115. M., Gill, G., Stein, E.A., Ansari, A., Wojdani, A., Cooper, E.L. 1986. Phagocytosis of yeast and bacteria by tumor cells *in vitro*. *6th Int. Congr. Immunol.* p. 522.
116. Mansour, M.H., Cooper, E.L. 1986. Thy-1 and the origin of the immunoglobulin (Ig) superfamily. *6th Int. Congr. Immunol.* p. 71.
117. Negm, H.I., Cooper, E.L. 1986. Lyt an evolutionary model. *6th Int. Congr. Immunol.* p. 71.
118. Stein, E.A. and Cooper, E.L. 1986. Origin of immune receptors. *6th Int. Congr. Immunol.*, p. 67.
119. Cooper, E.L. 1988. 40 years of Pergamon Press and 10 of DCI. Developmental and comparative immunology. *Dev. Comp. Immunol.*, 12: 443-451. (see previous category).
120. Cooper, E. L. 1991. Communication within the invertebrate immune system. *Proc. Jap. Assoc. Dev. Comp. Immunol.* 3:19.
121. Sawada, T., Zhang, J. Cooper, E.L. 1992. *In vitro* culture of hemopoietic tissue of *Styela clava*. *Proc. Jap. Assoc. Dev. Comp. Immunol.* 4:18. (in Japanese).
122. Zhang H. Sawada, T. Cooper, E.L., Matsui, S. Fujii, R. and Tomonaga, S. 1992. Phagocytic cells in protochordates. *Proc. Jap. Assoc. Dev. Comp. Immunol.* 4:18. (in Japanese).
123. Sawada, T. Zhang J., Tokuda, N. Fujikura, Y. and Cooper, E.L. 1993. A specific hemocyte type involved in hemocyte aggregation of solitary tunicates. *Proc. Jap. Assoc. Dev. Comp. Immunol.* 5:21. (in Japanese).

124. Cooper, E. L. 1994. Evolution of immune reactions in marine organisms. Proc. 3rd International Marine Biotechnology Conference, p. 56, Tromso. Norway August, 1994.
125. Cooper, E. L., Suzuki, M., Cossarizza, A., Salvioli, S., Capri, M., Quaglino, D., Pasquali, Ronchetti, I., Franceschi, C. 1994. Earthworm leukocytes (CD11a<sup>+</sup>, CD45RA<sup>+</sup>,  $\beta_2$ -m<sup>+</sup>, Thy-1<sup>+</sup>) can kill human K562 tumor cell targets. *Dev. Comp. Immunol.* 18, Suppl., 1, pS121.
126. Cooper, E. L., Zhang, Z., Raftos, D. A., Habicht, G. S., Beck, G. 1994. Development of tunicate cytokines. *Dev. Comp. Immunol.* 18, Suppl., 1, pS66.
127. Sawada, T., Raftos, D. A., Cooper, E. L. 1996. Sustained viability and proliferation of hemocytes from the cultured pharynx of *Styela clava*. *In Vitro.* 32: 6A.
128. Cooper, E. L., Cossarizza, A., Suzuki, M. M., Salvioli, S., Quaglino, D., Franceschi, C. 1996. Killing of human tumor cell lines by non-phagocytic earthworm leukocytes cross-reacted with several human epitopes. *In Vitro.* 32: 7A.
129. Cooper, E. L., 1996 A Memorial Tribute President K Awaya Annual Meeting of the Japanese Association of Developmental and Comparative Immunology. Saitama, Japan.
130. Cooper EL, Kauschke E, Wiesner L, Hahn M, Pollenz R. 2000 Earthworms as environmental indicators: an immunological/molecular biological approach. *Dev. Comp. Immunol.* 24 (suppl): 45.
131. Wiesner, L., Cooper, E. L. Kauschke, E. 2000 Effects of heat stress upon humoral immune responses in *Dreissena polymorpha* PALLAS. *Dev. Comp. Immunol.* 24 (suppl): 49.
132. Cooper EL, Komiyama K, Kauschke E, Moro I. 2000 Evidence for perforin in earthworm coelomocytes. *Dev. Comp. Immunol.* 24 (Suppl): 95.
133. Cooper EL, Cossarizza A, Kauschke E. 2000. Earthworms possess molecules that mediate lysis. *Dev. Comp. Immunol.* 24 (Suppl): 96.
134. Kauschke E, Wagner F, König S, Eue I, Mohrig W, Cooper EL. 2000 Innate immune factors in earthworms. *Dev. Comp. Immunol.* 24 (Suppl): 96. (P)
135. Cooper EL, Kauschke E, Vuong A. 2000 Behavior of earthworm coelomocytes under stimulated semi gravity conditions. *Dev. Comp. Immunol.* 24 (Suppl): 98.
136. Cossarizza A, Moretti L, Cooper EL. (2000). Flow cytometric analysis of invertebrate immune immune responses: cell functions and cytotoxic responses in earthworms. (NP)
137. Cooper, E. L. 2003 History of International Society of Developmental and Comparative Immunology— Just a glimpse since 1983. 9<sup>th</sup> ISDCI (International Society Developmental and Comparative Immunology) Congress, St. Andrews Scotland
138. Komiyama, K., Okaue, M., miki, Y., Moro, I., and Cooper E. L. 2003 Changes in gene and protein expression of *Eisenia foetida* biotransformation enzyme after exposure to carcinogens. 9<sup>th</sup> ISDCI (International Society Developmental and Comparative Immunology) Congress, St. Andrews Scotland
139. Cooper, E. L. Evidence Based Complementary and Alternative Medicine at Opening Ceremony. 2003. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003
140. Yamaguchi, N. Sugita, T., Izumi, H., Sugiyama, K., Shimizu, S., and Cooper, E. L. 2003 Effects of Chinese herbal medicine on infectious disease-aspects on host immune factors. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003
141. Tung, I. Willis, P. C., Prince, M L. Cooper, E. L. Yamaguchi, N., Sugiyama, K., Ito, M., Horiuchi, I. 2003 Micro fragmented chlorella is more effective for immune competent cell and antioxidant activity. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003
142. Engelmann, P., Berki T., Czompoly T., Pal J., Cooper E.L., Nemeth, P. 2003 Earthworm coelomocytes studied with monoclonal antibodies. In: Proc. Earthworm Congress, Cardiff, Wales Morgan A. J. (In Press) Poster.
143. Komiyama K., Okaue M., Miki Y., Ohkubo M., Cooper E.L. 2003 Non-specific cellular function of *Eisenia fetida* regulated by polycyclic aromatic hydrocarbons. In: Proc. Earthworm Congress, Cardiff, Wales Morgan A. J. (In Press) Poster
144. Cooper EL, Kauschke E, Wiesner L, Hahn M, Pollenz R. 2000 Earthworms as environmental indicators: an immunological/molecular biological approach. *Dev. Comp. Immunol.* 24 (suppl): 45.
145. Cooper EL, Komiyama K, Kauschke E, Moro I. 2000 Evidence for perforin in earthworm coelomocytes. *Dev. Comp. Immunol.* 24 (suppl): 95.

Edwin L. Cooper *Curriculum vitae*

146. Cooper EL, Cossarizza A, Kauschke E. 2000. Earthworms possess molecules that mediate lysis. *Dev. Comp. Immunol.* 24 (suppl): 96.
147. Kauschke E, Wagner F, König S, Eue I, Mohrig W, Cooper EL. 2000 Innate immune factors in earthworms. *Dev. Comp. Immunol.* 24 (suppl): 96. (P)
148. Cooper EL, Kauschke E, Vuong A. 2000 Behavior of earthworm coelomocytes under stimulated semi gravity conditions. *Dev. Comp. Immunol.* 24 (suppl): 98.
149. Cooper EL, Pasquier DL, Wago H. 2001 Obituary: Susumu Ohno 1928-2000. *Dev. Comp. Immunol.* 25: 265-266.
150. Cooper, E. L. 2003 History of International Society of Developmental and Comparative Immunology— Just a glimpse since 1983. 9<sup>th</sup> ISDCI (International Society Developmental and Comparative Immunology) Congress, St. Andrews Scotland
151. Komiyama, K., Okaue, M., miki, Y., Moro, I., and Cooper E. L. 2003 Changes in gene and protein expression of *Eisenia foetida* biotransformation enzyme after exposure to carcinogens. 9<sup>th</sup> ISDCI (International Society Developmental and Comparative Immunology) Congress, St. Andrews Scotland
152. Cooper, E. L. Evidence Based Complementary and Alternative Medicine at Opening Ceremony. 2003. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003
153. Yamaguchi N, Sugita T, Izumi H, Sugiyama K, Shimizu S, Cooper, E. L. 2003 Effects of Chinese herbal medicine on infectious disease-aspects on host immune factors. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003.
154. Tung I, Willis PC, Prince ML, Cooper EL, Yamaguchi N, Sugiyama K, Ito M, Horiuchi I. 2003 Micro fragmented chlorella is more effective for immune competent cell and antioxidant activity. 12<sup>th</sup> International Congress Oriental Medicine, Taipei, Taiwan November 2003.
155. Cooper EL. 10<sup>th</sup> ISDCI History 2006. 10<sup>th</sup> International Congress of ISDCI, Charleston, South Carolina, USA, July 1 – 6, 2006.
156. Cooper EL, Kvell K, Engelmann P, Nemeth P. Is There Signaling During Earthworm Immunity? The 8<sup>th</sup> International Symposium on Earthworm Ecology, Krakow, Poland, September 4-9, 2006.
157. Balamurugan M, Prakash M, Partasarathi K, Cooper EL, Ranganathan LS. Effect of Earthworm Paste (*Lampito mauritii*, Kinberg) on the Anti-inflammatory, Anti-oxidative, Haematological and Serum Biochemical Indices of Rat (*Rattus norvegicus*). The 8<sup>th</sup> International Symposium on Earthworm Ecology, Krakow, Poland, September 4-9, 2006.
158. Cooper EL, Zhang, X, Zhang Y. Antibacterial Peptide Earthworms. The 8<sup>th</sup> International Symposium on Earthworm Ecology, Krakow, Poland, September 4-9, 2006.
159. Wang X, Wang X, Zhang Y, Qu X, Yang S, Cooper EL. An antimicrobial peptide of the earthworm *Pheretima tschiliensis*: cDNA cloning, expression and immunolocalization. The 8<sup>th</sup> International Symposium on Earthworm Ecology, Krakow, Poland, September 4-9, 2006.

## INVITED LECTURES

### 1963-1968

**ASSITANT PROFESSOR:** American Society for Microbiology, Los Angeles, July 1963; Midwinter Conference of Immunologists, Pasadena, CA, January 1964; 5th Annual Basic Science Symposium, New York, February 1964 American Society of Zoologists, Boulder, Colo., August 1964; XIth International Congress of Cell Biology, Brown University, Providence, R.I., August 1964 New York Academy of Sciences, New York, September 1964 Midwinter Conference of Immunologists, San Francisco, January 1965; Mt. Desert Island Biological Laboratory Annual Meeting, Salisbury Cove, ME, August 1965 California Museum of Science and Industry Fifth Annual Junior Science Symposium; Los Angeles, Biology Panel Member, November 1965; California College of Medicine, Los Angeles, December 1965; American Association of Anatomists, University of California, San Francisco, April 1966; Primer Congreso Panamericano de Anatomia, Mexico City, July 1966; Midwinter Conference of Immunologists, Honolulu, January 1967; American Association of Anatomists, University of Kansas Medical Center, Kansas City, April 1967; 48th Annual Meeting, Pacific Division, American Association for the Advancement of Science, UCLA, June 1967; 1st International Congress of the Transplantation Society, Paris, June 1967; Chelsea College, London, England, June 1967; University of Bordeaux, France, July 1967; American Society of Microbiology, American Association for the Advancement of Science, UCLA, 1967; American Association of Anatomists, Tulane University, New Orleans, April 1968; Baylor University College of Medicine, Houston, May 1968; Baccalaureate-Commencement Address, Jack Yates Sr. High School, Houston,

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May 1968 Convocation on Immunology, SUNY, Buffalo, June 1968; University of Rochester, N.Y., June 1968  
Brown University, Providence, RI, June 1968; Gordon Research Conference on Lysosomes, Proctor Academy,  
Andover, NH, June 1968; Instituto Politecnico Nacional, Mexico City, July 1968; AIBS, Ohio State University,  
Columbus, September 1968; Transplantation Society, 2nd International Congress, NY, September 1968;  
Microbiology Seminar, UCLA, October 1968; Dr. E.E. Evans, University of Alabama, Birmingham, October 1968;  
American Association for the Advancement of Science, Dallas, TX, December 1968

### **1969-1972**

**ASSOCIATE PROFESSOR:** UCLA-Harbor Medical Center, Torrance, CA, January 1969; Bacteriology and  
Immunology Conference, Berkeley, CA, February 1969; University of Wisconsin, Madison, March 1969;  
American Association of Anatomists, 82nd Annual Session, Boston, MA, April 1969; Society for Invertebrate  
Pathology, Burlington, VT, August 1969; 20th Annual AIBS, University of Vermont. Title: Skin transplant  
rejection in apodan amphibians and lacertalian reptiles, August 1969; Midwestern Conference of Immunologists,  
Argonne, IL, October 1969; Southern California Society of Invertebrate Pathology, Fullerton, CA, November  
1969 University of California, San Francisco, February 1970; American Cancer Society, 12th Science Writers'  
Seminar, San Antonio, TX, March 1970; Washington University, St. Louis, MO, March 1970; Purdue University,  
Lafayette, IN, March 1970; IXth International Congress of Anatomists, Leningrad, USSR, August 1970;  
University of Helsinki, Finland, August 1970; IIIrd International Conference on Lymphatic Tissues and Germinal  
Centers in Immune Reactions, University of Uppsala, Sweden, September 1970; IIIrd International Congress of  
the Transplantation Society, The Hague, September 1970; Immunology Club, Division of Immunology, Wenner-  
Gren Institute (Prof. Peter Perlman), University of Stockholm, September 1970; Department of Histology (Prof.  
Karl-Erik Fichtelius), University of Uppsala, Sweden, December 1970; Department of Zoophysiology (Prof.  
Ragnar Fänge), University of Gothenberg, Sweden, December 1970; Basel Institute of Immunology, guest of Dr.  
Louis Du Pasquier, Basel, March 1971 Scandinavian Society of Immunology, Sandfjord, Norway, June 1971 TNO,  
Radiobiological Institute of the Organization for Health Research (Prof. Dr. D. W. van Bekkum), The Netherlands,  
June 1971; Stanford University School of Medicine, Stanford, CA, December 1971; Department of Surgery (Dr.  
T.C. Moore), Harbor General Hospital, Torrance, CA, January 1972; Department of Biology (Dr. David Futch),  
San Diego State College, San Diego, CA, February 1972; Department of Zoology (Dr. Denis Baskin), Pomona  
College, Claremont, CA, February 1972; Max-Planck Institut für Experimentelle Medizin (Drs. W. Ostertag and  
M. Zain-ul-Abidin), Göttingen, Germany, June 1972; Medizinische Klinik der Universität (Dr. Gunther Thoenes),  
Munich, Germany, 1972 Department of Chemistry (Dr. Earl Frieden), 1972; Department of Biology (Dr. Peter  
Bennett) University of Florida, Tallahassee, November 1971 Department of Virology (Dr. M.M. Siegel),  
University of Miami, November 1972; Department of Immunology and Medical Microbiology (Dr. L. William  
Clem); University of Florida, Gainesville, November 1972; Eastern Fish Disease Laboratory, (Dr. Gilbert Pauley),  
U.S. Department of Interior, Kearneysville, WVA, November 1972.

### **PROFESSOR (STEPS I-VIII 1973-1996)**

#### **1973-1977**

Spelman College, Atlanta, GA, February 1973; National Cancer Institute (Dr. J.J. Rapp, Biology Chief), May 1973;  
Department of Anatomy (Dr. R.C. Henrikson), Columbia University, New York, May 1973; Harbor General  
Hospital (with Dr. G. Beall), Torrance, CA, May 1973; Environmental Protection Agency Conference (Dr. John  
Couch), Pensacola, FL, May 1973; Member, AAAS Council Meeting, Science in the Americas, National  
Polytechnic Institute, University of Mexico, Mexico City, June-July 1973; Benedict College, Columbia, SC (Dr.  
Mary Finlay, MBS Program Director), November 1974; California State University, Northridge, CA (Dr. Steven  
Oppenheimer, Chairman, Colloquium Committee), March 1975; California State University, Los Angeles, CA (Dr.  
Lloyd Ferguson, Prof. of Chemistry), March 1975; University of California, Davis, Department of Internal  
Medicine, Section of Rheumatology-Clinical Immunology, (Dr. M. Eric Gershwin), April 1977; WHO Course on  
Immunology of Infectious Diseases, Swiss Institute for Cancer Research, Epalinges S/Lausanne, Switzerland,  
1977; Immunologic Fondamentale, Cours 3 cycle, Institut Suisse Recherches Experimentales sur le Cancer,  
Switzerland, 1977; Dr. H.N. Keller, Professor H. Cottier, Professor M.W. Hess, Pathologisches Institut der  
Universität, Freiburgstrasse 30, Ch-3010 Bern, Switzerland, 1977; Dr. I. Hadji-Azimi, Station de Zoologie  
Experimentale, Universite de Geneve, 154, Rte de Malagnon, Ch-1224, Chene Bougeries, Geneve, Switzerland,  
1977; Deux Lecons en Francais Phylogenie, Prof. J. Dausset, College de France, Laboratoire de Medicine  
Experimentale, Paris, 1977; Dr. J.J. Metzger, Station de Recherches de Virologie et d'Immunologie, I.N.R.A.,

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78850, Thiverval-Grignon, France, 1977; Dr. Agustin Zapata, Department of Anatomy, University of Complutense, Madrid, Spain, 1977; Curso Basico de Ultraestructura Celular e Introduccion a la Microscopia Electronica (Prof. A. Carrato Ibanez), Universidad Complutense, Instituto Santiago Ramon y Cajal, Madrid, Spain, 1977; Dr. Ingrid Outschoorn, Universidad Automoma de Madrid, Facultad de Medicina, Departamento e Medicina Social y Preventiva, Arzobispo Morcillo S/N, Madrid 34, Spain, 1977; Dr. Nasri Badir, Zoology Department, Faculty of Science, Cairo University, Giza, Egypt, 1977; Dr. Zacherie Brahmi, Ministere de l'Enseignement Superior et de la Recherche Scientifique, Rectorat de l'Universite d'Alger pour Conferences aux Residents de Biologie Clinique (Module Immunologie), 1977; Dr. L.S. Azzolina, Cattedra di Immunopatologia, Universita di Padova, Sede di Verona, Ospedale Borgo Roma, 37100 Verona, Italy, 1977.

### 1978-1982

**Professor:** Dr. Dino Collavo, Divisione di Oncologia Sperimentale, Istituto di Anatomia Patologica, Universita di Padova, Padova, Italy, 1978; Dr. Claudio Franchesi, Gruppo di Cooperazione in Immunologia, V. Convegno Scientifico, S. Gimignano, Palazzo Comunale, Sala di Dante, Italy, 1978; Dr. Guido Forni, Istituto di Microbiologia, Universita Degli Studi di Torino, Via Santena 9-10126, Italy, 1978; Prof. Nicola Fabris, INRCA, Dipartimento di Ricerche Gerontologiche e Geriatriche, 60100 Ancona, Via Birarelli 8, Italy, 1978; Prof. Carlo Enrico Grossi, Universita di Genova, Normale, Via de Toni 14, Italy, 1978; Prof. Dr. Wulf Droge, Institut für Immunologie und Genetik, Deutsches Krebsforschungszentrum, D-6900 Heidelberg 1, Postfach 101949, West Germany, 1978; Prof. Klaus Rajewsky, Institut für Genetik der Universität zu Köln, Weyertal 121, D-5000 Köln 41, West Germany, 1978; Drs. G. Hartman, F. Lynen and E.L. Winnacker, Chemisches Laboratorium, der Universität München, Institut für Biochemie, 8 München 2, Karlstrasse 23, West Germany; Workshop, "Receptors on Earthworm Coelomocytes; Professor Dr. Med. G. Uhlenbruck, Abt. Immunobiologie Medizinische, Universitätsklinik Köln, 5 Köln, 41, Kerpener Strasse 15, West Germany; Dr. Bror Morein, Institut für Immunologie und Genetik, Deutsches Krebsforschungszentrum, D-6900 Heidelberg, Postfach 101949, West Germany; Dr. Hubert Kolb, Diabetes-Forschungsinstitut an der Universität Düsseldorf, 4 Düsseldorf 1, Auf'm Hennekamp 65, West Germany; Dr. Wolter Leene, Laboratory of Histology, University of Amsterdam Jan Swammerdam Institute, Le Const. Huygensstrasse 20, Amsterdam, The Netherlands; Dr. W. B. van Muiswinkel, Department of Experimental Animal Morphology and Cell Biology, Agricultural University, ZODIAC, Marijkeweg 40, 6709 PG Wageningen, The Netherlands, Workshop, "C3 Receptors"; Professor R. E. Baillieu, Dr. Ben J. M. Zegers, Department of Immunology, Wilhelmina Kinderzieken-huis, Utrecht Universiteitskinderskiniek, Nieuwegracht 137, Utrecht, The Netherlands, Workshop, "Thymectomy Newborn Mice."; Dr. R. Benner, Department of Cell Biology and Genetics, Erasmus Universiteit Rotterdam, Postbus 1738, Rotterdam, The Netherlands; Workshop, "Molluscan Hemocytes."; Dr. T. Sminia, Vrije Universiteit, Biologisch Laboratorium, De Boelelaan 1087, Amsterdam Buitenveldeit; Dr. Kunio Tanaka, Department of Pharmacology; Dr. N. Kashiwagi, Transplantation Laboratory; School of Medicine, Kitasato University, 1, Asamizodai, Sagamihara-Shi, Kanagawa-Ken, Japan; Dr. Shigeru Muramatsu, Department of Zoology, Faculty of Science, Kitashirawawa-Oiwakecho, Sakyo-Ku, Kyoto 606, Japan; Dr. Masao Hanaoka, Department of Pathology, Virus Research Institute, Kyoto University, Shogoin-Kawahara-Cho, Sakyo-Ku, Kyoto 606, Japan; Dr. Kazuhiko Awaya, Professor of Anatomy, School of Medicine, Yamaguchi University, 1144 Ogushi Nishi-Ku, Ube-shi, Yamaguchi-ken 755, Japan; Dr. Toshihiko Matsusato, Fish Pathologist, The Nansei Regional Fisheries, Research Laboratory, Maruishi Ohno-cho, Saeki-gun, Hiroshim-ken 739-04, Japan; Professor Hiroshi Watanabe, Director, Shimoda Marine Research Center, The University of Tsukuba, Shimoda, Shizuoka 415, Japan; Dr. Satonori Kurashige, Department of Microbiology; Dr. Nobuo Yamaguchi, Department of Microbiology, School of Medicine, Gunma University, Showa-Machi, Maebashi, Japan; Professor Shinjuro Murakawa, Department of Biology, Faculty of Science, Niigata University, Niigata 950-21, Japan; Dr. Chiaki Katagiri, Zoological Institute, Faculty of Science; Professor T. Ohara, Director, Immunopathology Institute, Faculty of Medicine, Hokkaido University, Sapporo, Japan; Madurai University, Madurai 625021 Tamil-Nadu, India; University of Madras, University Buildings, Chepauke, Triplicane P.O., Madras 600005, India; Dr. (Mrs.) Sudha Gangal, Head, Immunology Group, Biology Division; Cancer Research Institute, Tata Memorial Center, Bombay 400012, India, June 1977; University of Southern California, Los Angeles, CA, 1979; Pediatric Allergy Clinic, UCLA, 1979; National Institute on Aging, NIH, Bethesda, MD, 1979; Lectures (USA): Beverly Hills High School, Medical Club, Amherst College (Candidate for the Distinguished Cross Chair in Biology), University of New Mexico, NIH Minority Recruitment Conference. Texas Southern University Honors Day, Texas Southern University, Science Symposium in honor of former president, S. M. Nabrit, Ph.D., 1980 Interviewed on national and local television, Verona, Italy, 1981; Televised interview (with

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Vice-Chancellor H. Horowitz) by Antenne 2. French Television Network on the subject of sabbatical leaves. E. L. Cooper chosen by Dean's office. Interview delivered in French, September, 1981 Charles Drew Postgraduate Medical School, Los Angeles, 1982; Annual Meeting Southern California Academy of Sciences, California State University, Dominguez Hills, 1982

### 1983-1990

**Professor:** Oregon State University, Portland State University, Oregon University Health Science Center, 1983; Kyushu University, Fukuoka, Japan, August 1983; Biological Society of Reims, France, March, 1985; Free University, West Berlin, West Germany, March, 1985; Marine Biology Institute, University of Texas at Galveston, 1988, 1989; Invertebrate Immunobiology Symposium, Lecce, Italy, June 1989; International Conference on Phylogeny of Immunity, Universite Pierre et Marie Curie-Centre National Research Scientifique, Roscoff, France, July 1989; First International Congress, Japanese Association of Developmental and Comparative Immunology, Tokyo Japan, December 1989; First International Congress on Neuroimmunodulation, Florence, Italy, May 1990; First International Workshop on Developmental and Comparative Neuroimmunology, Modena, Italy, May 1990

### 1991-1996

**Professor:** Department of Microbiology and Immunology, University of Arizona, Tucson, 1991; Yashiro Komatsu, DVM, Ph.D., General Manager, Scientific Liaison, Tsumura and Co., Tokyo, August 31, 1991; Nobuo Yamaguchi, M.D., Kanazawa Medical University, Ishikawa-Ken, Japan, September 1991; Professor Zhe Huang and Dr. Hongwei Zhang, Department of Biology, Shandong University, Jinan, China, September 1991; Professor Zhe Huang and Dr. Hongwei Zhang, Department of Biology, Shandong University, Jinan, China, September 1991; Fifth ISDCI Congress, Portland, Oregon, August 1991; UCLA Programs in Medical Classics, Los Angeles, California, "Elie Metchnikoff and the Birth of Modern Immunology", October 1991; The University of Texas, M.D. Anderson Cancer Center, Houston, Texas, Professor Eva Lotzova, "Evolution of Cytotoxicity", October 26, 1992; Genova, Italy, November 1992; Universita Degli Studi di Genova, Italy; Universita Degli Studi di Lecce, Italy, November 1992; Universita di Palermo, Italy, 1992; Stazione Zoologica `Anton Dohrn', Napoli, Italy, 1992; Universita degli studi di Chieti, Cattedra di Immunologia, Istituto di Medicine Sperimentale, Facolta di Medicine, "Some Aspects of Immuno-evolution" 13 Dicembre 1993, Professor Pio Conti; Universita degli Studi di Verona, Istituto di Immunologia e Malattie Infettive: "Earthworms and the Origins of Immune Competence" 19 Gennaio, 1994, Professor Giuseppe Tridente. Universita della Tuscia, Viterbo, Dipartimento di Scienze Ambientali, "Immuno-evolution", 24 Gennaio, 1994; Dr. Giuseppe Scapigliati. Universita degli Studi di Camerino, Dipartimento di biologia, Molecolare Cellulare Animale, "Some Aspects of Immuno-evolution", 22 Marzo 1994, Professor Pierangelo Luporini. Universita Degli Studi di Modena, Dipartimento di Biologia Animale, "Immuno-evolution", 22 Marzo, 1994; Professors L. Bolognani and Enzo Ottaviani. Universita degli Studi di Modena, Dipartimento di Scienze Biomediche, Sezione di Patologia Generale "Earthworm Immunity", Professor Claudio Franceschi, 24 Marzo, 1994; Universita Degli Studi di Padova, Istituto di Oncologia, Professor Dino Collavo, combined with Istituto di Biologia Animale, Professor Armando Sabbadin: "Origin of the Immune System", 25 Marzo, 1994; Universita Degli Studi di Palermo, Scuola di Specializzazione in Patologia Clinica, Istituto di Patologia Generale "Evolution of the Immune System", Professor Melchiorre Brai, 31 Maggio, 1994; Universita degli Studi di Roma, "La Sapienza" Cattedre di Allergologia e Immunologia Clinica, "Some Ideas on the Evolution of the Immune System", Professor Fernando Aiuti, 1994; Dental Research Institute: "Some thoughts on the evolution of cytokines", UCLA, February 1995; Houston, Texas, Working Group for NASA awardees and potential awardees; presented a paper on the utility of using the earthworm immune system as a model during space travel, February: 1996; Invited Speaker: "Tunicate Immunobiology: Factors That May Influence Cell Proliferation and Differentiation," IX International Conference on Invertebrate Cell Culture of the Society For In Vitro Biology, June 21-26, 1996; Invited Speaker: "Cytotoxicity In Earthworms" IX International Conference on Invertebrate Cell Culture of the Society For In Vitro Biology, June 21-26, 1996, San Francisco, California; San Francisco: Two invited papers and one poster at the World *In vitro* Congress. One paper on earthworms was shared with the group in Modena and Dr. Ellen Kauschke, on sabbatical leave with my group from the University of Griefswald, Germany. The other paper, shared with a former post-doc, now back in Australia, on the tunicates. The poster was shared with one former undergraduate and Dr. Kauschke and concerns the effects of microgravity on earthworm immune cells. This paper forms the basis for a pending grant application (NASA), July 1996; San Francisco, California. Invited Speaker: 8<sup>th</sup> Scientific Meeting of the Japanese Association for Developmental and Comparative Immunology, Saitama, Japan, August 1996; Japan: I lectured in Tokyo with the Immunology Group,



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School of Dentistry, Nihon University, and at the same time negotiated for the preparation of a cDNA library which was sent to the group. The purpose is to establish a long-term project concerning the search for a putative perforin molecule that may be involved with the killing of tumor target cells by earthworm effector cells. Although there was no formal award, my active participation in the ---annual meeting of the Japanese Association of Developmental and Comparative Immunology (JADCI) was in itself an honor. As a recipient of an award, Fellow, Japanese Society For The Promotion of Science in 1987, (and several other invitations to participate in meetings); I was invited to attend which represented my 20th anniversary of the first visit to Japan in 1977. I presented the Plenary Lecture entitled: "Cytotoxicity in invertebrates". I was also asked to give the memorial commemorating the death of the former President of Yamaguchi University, where most of my work in Japan has been done. In addition two professors have spent sabbaticals in my laboratory, one now Dean of Allied Health Sciences, the other more recent, is an Assistant Professor of Anatomy, August 1996; University of North Texas: I presented a lecture and conferred with long time colleagues on the preparation of a grant proposal dealing with the mechanisms of killing of target cells by earthworm effector cells, October 1996; University of California, Davis: I lectured and laid plans for the exchange of graduate students in the program of Toxicology with particular emphasis on the immune and nervous system. This resulted in the preparation of a grant proposal submitted on January 30, 1997 to the System Wide UC Toxicology and Research Program, December 1996

### 1997

**PROFESSOR, ABOVE SCALE:** Presented Founder's After Dinner Lecture (Plenary) at the VII Congress of the International Society of Developmental and Comparative Immunology, convened at the College of William and Mary, Virginia, July, 21-2, 1996; Organizer, International symposium on Annelid Immunity for the Congress; Invited to give lecture on "Models for assessing damage to the immune system by xenobiotics" and "Earthworm Immunity: New Results", for the newly created Ph.D. Program in Animal Biology, University of Palermo, Italy, September, 1997; Plenary Lecture, Annual Zoological Congress, Cattolica Italy: "History of Comparative Immunology in Italy"; This was for the founding of the Italian Association of Developmental and Comparative Immunology. Invited Lecturer, New Ph.D. Program, Department of Animal Biology, University of Palermo, Comparative Immunologic Models Can Enhance Analyses of Environmental Immunotoxicity; Invited Lecturer, New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy, Earthworm Immunology: New Directions, September, 1997; Invited Lecturer: 20<sup>th</sup> Anniversary Lecture for the Founding of the International Society of Developmental and Comparative Immunology, College of William and Mary, Virginia, July, 1997; Organizer and Lecturer: Symposium on Annelid Immunity, VII Congress of the International Society of Developmental and Comparative Immunology, Williamsburg, Virginia, July 21-25, 1997; Invited Plenary Speaker: "History of The International Society of Developmental and Comparative Immunology," Williamsburg, Virginia, July 21-25, 1997; 20<sup>th</sup> Anniversary Founder's Day Lecture. Invited Plenary Inaugural Speaker: "History of Italian Developmental and Comparative Immunology," Cattolica, Italy, To Celebrate Founding of the Italian Association of Developmental and Comparative Immunology, September 1997; Invited For Two Lectures: New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy, "Comparative Immunologic Models Can Enhance Analyses of Environmental Immunotoxicity"; "Earthworm Immunology: New Directions", September, 1997; Germany: Recipient of prestigious Visiting Professor Lectureship, German American Academic Exchange Program, University of Greifswald, June-July, 1998: "*History of the International Society of Developmental and Comparative Immunology*"; Presented two lectures: Comparative Immunology and Environmental Problems to Ph.D. Students in Animal Biology, University of Palermo, Italy., April 10-11, 1999; Presented the *Lectura Magistralis*, International Workshop on Cytometry, sponsored by the Italian Society of Immunology, University of Modena and Reggio Emilia, July 1999; Organizer: Professor Dr. Thomas CG Bosch (Kiel). Invited Lecture: "Innate Immunity", July 23-25, 1999; Chair: First Session: "Seeking Wisdom In Innate Immunity" at Evolution of the Immune System, Annual Meeting of the Arbeitskreis, "Vergleichenden Immunologie" (Deutsche Gesellschaft fur Immunologie) and the MINERVA Center, "Invertebrate Immunology and Developmental Biology" Zoological Institute, University of Jena, Germany, July 23-25, 1999; Invited Lecturer: Nihon University Dental School, Tokyo Japan, June 2000; Invited Lecturer: International Symposium on the Biology of Ascidiars, Hokkaido University, Sapporo Japan, June 26-30, 2000; Invited Lecturer: 8<sup>th</sup> International Congress, International Society of Developmental and Comparative Immunology, Cairns, Australia, July 2-6, 2000; Presentations: Evidence for perforin in earthworm coelomocytes; Earthworms possess molecules that mediate lysis; Earthworms as environmental indicators: an immunological/molecular biological approach; Effect of UVB irradiation on cellular immunity in mice; Effects of heat stress upon humoral

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immune responses in *Dreissena polymorpha*; Elected: Member, International Organizing Committee XIX International Congress of Zoology, Beijing, 2003; Invertebrates and lower vertebrates in laboratories of immunologists Invited Plenary Speaker Thursday/Friday, JUNE 5-6, 2003: 11th International Symposium "Molecular and Physiological Aspects of Regulatory Processes of the Organism"; "Innate immune systems" with Research group of Prof. Barbara Plytycz, Ph.D., Department of Evolutionary Immunobiology, Institute of Zoology, Jagiellonian University, R. Ingardena 6, 30-060 Krakow, Poland "Environment and immunity" Research group of Prof. Barbara Plytycz, Ph.D., Department of Evolutionary Immunobiology, Institute of Zoology, Jagiellonian University, R. Ingardena 6, 30-060 Krakow, Poland "New approaches to necrosis and apoptosis in earthworms" with research group of Professor Jurek Dobrucki, PhD, DSc Laboratory of Confocal Microscopy and Image Analysis, Department of Biophysics, Faculty of Biotechnology, Jagiellonian University, Gronostajowa; Origins of innate Immunity September 1-12 University of Sao Paulo Brazil With Prof. Dr. José Roberto Machado Cunha da Silva, Laboratório de Histofisiologia Evolutiva, Departamento de Histologia e Embriologia, Instituto de Ciências Biomédicas, Universidade de São Paulo, September 1-12, 2003; The Beginnings of Evidence Based Complementary and Alternative Medicine. Kanazawa University Medical School, Kanazawa Japan, November 2003.

**WORKSHOPS, SYMPOSIA ORGANIZED AND INVITED LECTURES:** 1973 Invited Lecturer Invertebrate Immunity, International Congress, Society of Invertebrate Pathologists, Oxford University; 1973 Invited Lecturer Phylogeny of Immunity, 8th Leukocyte Culture Conference, Uppsala, Sweden; 1974 Chairman, Workshop: Evolution of Transplantation Immunity, 5th International Congress of the Transplantation Society, Jerusalem, Israel; 1974 Chairman: Invertebrate Transplantation, American Association for the Advancement of Science, San Francisco; 1974 Co-Chairman, Workshop: Primitive Vertebrate Immunology, 2nd International Congress of Immunology, Brighton, UK; 1974 Invited Lecturer Phylogeny of T Cells, Mid-Winter Conference of Immunologists, Asilomar, California; 1975 Program Officer, Amer.Society of Zoologists, Organized Annual Meeting, Corvallis, OR; 1976 Program Officer, Amer. Soc. of Zool. Organized Annual Meeting, New Orleans, LA, AIBS); 1977 Chairman: Session on Echinoderms and Protochordates, Developmental Immunobiology Symposium, Aberdeen, Scotland; 1977 Program Officer, American Society of Zoologists, Organized Annual Meeting, Toronto, Ontario, Canada; 1979 Chairman: First Session, Symposium on Immunology Memory, Division of Comparative Immunology, American Society of Zoologists, Tampa, FL; 1979 Co-Chairman: Plenary Session, XXVIII Colloquium on Protides of the Biological Fluids, Brussels, Belgium; 1980 Chairman First Congress, International Society Developmental and Comparative Immunology, Aberdeen, Scotland; 1980 Chairman: First Course/Workshop, International Society Developmental and Comparative Immunology, Verona, Italy; 1980 Chairman: Phylogeny Workshop, Fourth International Immunology Congress, Paris; 1981 Organizer: 2nd Course Workshop ISDCI, Mexico City (funding, IUBS); 1981 Organizer: with M. A. B. Brazier, UCLA Forum in Medical Sciences, Number 25: Developmental Immunology: Clinical Problems and Aging; 1982 Organizer: Symposium on Stress, Immunity and Aging, School of Medicine, UCLA; 1983 Chairman: Plenary, Session I, The Major Histocompatibility Complex. 2nd ISDCI Congress, UCLA; 1983 Chairman: Workshop on Immunity in Lower Vertebrates and Invertebrates, 5th International Immunology Congress, Kyoto, Japan; 1983 Organizer Member, International Organizing Committee, 2nd Congress ISDCI UCLA; 1984 Member: International Organizing Committee, ISDCI, Invertebrate Immunology Conference, Montpellier, France; 1985 Co-organizer: 3rd ISDCI Congress, Reims, France; 1985 Organizer: Plenary Session III, Regulation, Lymphokines, Factors, Lectins, Restriction and Interactions, 3rd ISDCI Congress, Reims, France; 1985 Organizer: Plenary Emerging Disciplines: Immunoparasitology, Immunopharmacology, Immunoendocrinology and Aging, 3rd ISDCI Cong. Reims, France; 1985-1992 Organizer and Chair, Subcommittee, (Biomedicine and The Performing Arts) Royce Center Circle, Principal Support Group, The Performing Arts, UCLA: Lectures by Susumu Ohno, Ph.D., Sc.D., "Nucleotide Sequence Set to Music"; Victor Goodhill, M.D., "Beethoven's Deafness"; Benjamin Simkin, M.D., "Mozart and Scatology"; 1991 Invited Participant: Organizer, Workshop on "Immune System in Deuterostomes (Tunicates), Fifth ISDCI Congress, Portland, OR; 1991 Invited Speaker: 3rd Scientific Meeting, The Japanese Association for Developmental and Comparative Immunology, Tokyo; 1991 Invited Speaker: International Union of Biological Sciences 3rd International Congress of Comparative Physiology and Biochemistry, Symposium, Invertebrate Defense Mechanisms, Tokyo; 1991 Organizer Oral Review of Symposium "Invertebrate Defense Mechanisms," Tokyo; 1994 Chairman: Symposium on Invertebrate Immunity, 6th International Congress Developmental and Comparative Immunology, Wageningen, The Netherlands; 1994 Invited Speaker, NSF Forum: "Research on Defense Mechanisms in a Diversity of Organisms",

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Arlington, VA; 1994 Invited Speaker: Symposium on Evolution of Immunity, International Marine Biotechnology Congress, Tromso, Norway; 1994 Invited Speaker: Symposium on Invertebrate Immunity, 6th International Congress Developmental and Comparative Immunology, Wageningen, The Netherlands; 1994 Organizer: Symposium on Evolution of Immunity, International Marine Biotechnology Congress, Tromso, Norway; 1995 Invited Speaker: Symposium on Modulators of Immune Responses: The Evolutionary Trail, Breckenridge, Colorado; 1995 Organizer Invited Plenary Speaker at Symposium: "Diversity of Immune Systems" at the 56<sup>th</sup> Congress of the Unione Zoologica Italiana, Reggio Calabria; 1996 Invited Speaker Workshop on Ecotoxicology Maui, Hawaii, Organization For Economic Cooperation and Development, Paris, France: "Compromising Immunodefense of Aquatic and Terrestrial Species"; 1996 Invited Speaker: 8<sup>th</sup> Scientific Meeting of the Japanese Association for Developmental and Comparative Immunology, Saitama, Japan; 1996 Invited Speaker: Cytotoxicity In Earthworms" IX International Conference on Invertebrate Cell Culture of the Society For In Vitro Biology, San Francisco California; 1996 Invited Speaker: Tunicate Immunobiology: Factors that may influence cell proliferation and differentiation" IX International Conference on Invertebrate Cell Culture of the Society For In Vitro Biology, San Francisco California; 1997 Invited Lecture: New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy: "Comparative Immunologic Models Can Enhance Analyses of Environmental Immunotoxicity"; 1997 Invited Lecture: New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy: "Earthworm Immunology: New Directions"; 1997 Invited Lecturer, New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy, "Comparative Immunologic Models Can Enhance Analyses of Environmental Immunotoxicity"; 1997 Invited Lecturer, New Ph.D. Program, Department of Animal Biology, University of Palermo, Italy, "Earthworm Immunology: New Directions"; 1997 Invited Lecturer: 20<sup>th</sup> Anniversary Lecture, Founding International Society of Developmental and Comparative Immunology, College of William and Mary, Virginia; 1997 Invited Plenary Inaugural Speaker: "History of Italian Developmental and Comparative Immunology", Cattolica, Italy; To Celebrate Founding of the Italian Association of Developmental and Comparative Immunology; 1997 Invited Plenary Inaugural Speaker: "History of Italian Developmental and Comparative Immunology," Cattolica, Italy. Celebrate Founding of the Italian Association of Developmental and Comparative Immunology; 1997 Organizer: Symposium on Annelid Immunity, VII Congress of The International Society of Developmental and Comparative Immunology, Williamsburg, Virginia; 1999 Chair: First Session: "Seeking Wisdom In Innate Immunity" at Evolution of the Immune System, Annual Meeting of the Arbeitskreis "Vergleichenden Immunologie" (Deutsche Gesellschaft fur Immunologie) and the MINERVA Center "Invertebrate Immunology and Developmental Biology" Zoological Institute, University of Jena, Germany, Organizer: Professor Dr. Thomas CG Bosch (Kiel); 2000 Convener: Symposium "Comparative Immunology of the Animal Kingdom" (The XVIIIth (New) International Congress of Zoology, Le XVIIIème (Nouveau) Congrès International de Zoologie, Athens Greece, "The New Panorama of Animal Evolution); 2000 Invited Lecturer: 8<sup>th</sup> International Congress, International Society of Developmental and Comparative Immunology, Cairns, Australia; 2000 Invited Lecturer: International Symposium on the Biology of Ascidiaceans, Hokkaido University, Sapporo Japan; 2000 Invited Lecturer: Nihon University Dental School, Tokyo Japan; 2000 Member: International Organizing Committee: The XVIIIth (New) International Congress of Zoology, Le XVIIIème (Nouveau) Congrès International de Zoologie, Athens Greece, "The New Panorama of Animal Evolution; 2001 Chair, Invertebrate Immunity Models, European Comparative Immunologists Congress, Lille, France; 2001 Chair, Invertebrate Immunology Workshop, University of Kiel, Germany. (Component of Alexander von Humboldt Prize); 2001 Organizer NATO Advanced Research Workshop, Prague, The Czech Republic, New Antimicrobial Molecules and Biomedical Applications; 2001 Plenary Lecture Invertebrate Immunology Workshop, University of Kiel, Germany, (Component of Alexander von Humboldt Prize); 2001 Plenary Lecture, Comparative Immunology, European Comparative Immunologists Congress, Lille, France; 2001 Plenary Lecture, Neuroimmune System in Invertebrates British Society of Experimental Biology, University of Kent, Canterbury, England; 2001 Visiting Professor, Evolution of the Immune System, Department of Histology and Embryology, University of Vienna, Austria; 2001 Visiting Professor, University of Lille, Pasteur Institute, Lille, Immunity in Earthworms, France; 2002 Organizer Cellular Functions In Immune Responses: Earthworm Congress University of Cardiff, Wales; 2002 Plenary Lecture: The Earthworm Immune System: Earthworm Congress University of Cardiff, Wales; 2002 University of Palermo, Italy, Origins of Innate Immunity; Neuroimmune Systems; 2003 Organizer International Symposium Alternative and Complementary Medicine, Kanazawa Japan; 2003 The Beginnings of Evidence Based Complementary and Alternative Medicine. Kanazawa University Medical School, Kanazawa Japan, November 2003; 2003 Invertebrates and lower vertebrates in laboratories of immunologists Invited Plenary Speaker, Thursday/Friday, JUNE 5-6, 2003: 11th International Symposium "Molecular and Physiological Aspects

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of Regulatory Processes of the Organism”; 2003 “Innate immune systems” with Research group of Prof. Barbara Plytycz, Ph.D., Department of Evolutionary Immunobiology, Institute of Zoology, Jagiellonian University, R. Ingardena 6, 30-060 Krakow, Poland; 2003 “Environment and immunity” Research group of Prof. Barbara Plytycz, Ph.D., Department of Evolutionary Immunobiology, Institute of Zoology, Jagiellonian University, R. Ingardena 6, 30-060 Krakow, Poland; 2003 “New approaches to necrosis and apoptosis in earthworms” with research group of Professor Jurek Dobrucki, PhD, DSc Laboratory of Confocal Microscopy and Image Analysis, Department of Biophysics, Faculty of Biotechnology, Jagiellonian University, Gronostajowa; 2003 Origins of innate Immunity September 1-12 University of Sao Paulo Brazil With Prof. Dr. José Roberto Machado Cunha da Silva, Laboratório de Histofisiologia Evolutiva, Departamento de Histologia e Embriologia, Instituto de Ciências Biomédicas, Universidade de São Paulo; Innate Immunity University of Modena, Italy, 2002 – 2003; Neuroimmune Systems University of Modena, Italy, 2002 – 2003; Jagiellonian University, Krakow Poland Group of Evolutionary Immunobiology, 2002 – 2003; Jagiellonian University, National Meeting on Biological Regulation, 2002 – 2003; Dongguk University, Korea Complementary and Alternative Medicine, 2003 – 2004; Plenary XIX Congress of Zoology, Beijing, Peoples Republic of China, 2003 – 2004; Jagiellonian University, Krakow Poland Group of Evolutionary Immunobiology, 2003 – 2004; Jagiellonian University, National Meeting on Biological Regulation, 2003 – 2004; Research group of Professor Jurek Dobrucki, PhD, DSc Laboratory of Confocal Microscopy and Image Analysis, Dept of Biophysics, Faculty of Biotechnology, Jagiellonian Univ., Gronostajowa, Poland, 2003 – 2004; Origins of innate Immunity September 1-12 University of Sao Paulo Brazil With Prof. Dr. José Roberto Machado Cunha da Silva, Laboratório de Histofisiologia Evolutiva, Departamento de Histologia e Embriologia, Instituto de Ciências Biomédicas, Universidade de São Paulo; Environment and Immunity Cooper, E. L. Origins of innate Immunity September 1-12 University of Sao Paulo Brazil With Prof. Dr. José Roberto Machado Cunha da Silva, Laboratório de Histofisiologia Evolutiva, Departamento de Histologia e Embriologia, Instituto de Ciências Biomédicas, Universidade de São Paulo; The Beginnings of Evidence Based Complementary and Alternative Medicine. Kanazawa University Medical School, Kanazawa Japan, November 2003; Section 4A Molecular Biology and Oriental Medicine, 12<sup>th</sup> International Congress Oriental Medicine, Taipei Taiwan, November 2003; Department of Anatomy University of Greifswald, Germany, Humboldt Award, July 04; Department of Immunology and Biotechnology, University of Pecs Hungary, July, August 04; Plenary XIX Congress of Zoology, Beijing, Peoples Republic of China (August 2004); Japanese Society Complementary Medicine (JCAM) (August 2004); The 3<sup>rd</sup> Asia Pacific Conference on Evidence Based Medicine Hong Kong (Nov-Dec 2004); American College for Advancement of Medicine (ACAM) 62<sup>nd</sup> International Conference on Complementary Alternative Medicine (Emerging Trends In Immunology), (Nov 2004); 6<sup>th</sup> Asia Pacific Marine Biotechnology Congress, Zhoushan China (Nov-Dec 2004); All India Research Institute Department of Immunology New Delhi (Nov-Dec 2004); 31<sup>st</sup> Indian Immunology Congress Anna University Chennai (Madras India) (Nov-Dec 2004); Department of Invertebrate Pathobiology Madras University Chennai (Madras India) (Nov-Dec 2004); 1<sup>st</sup> International Congress Systemic Medicine, Caracas Venezuela (Jan 2005); 7<sup>th</sup> National Congress Italian Society of Comparative and Developmental Immunology, Trapani Italy (Feb 2005); Department of Immunology University of Bologna Italy (Feb 2005); International Conference on Chinese Medicine, Macau, China (March 2005); Biological and Physical Sciences, Master’s College Santa Clarita California (April 2005); *Lettura Magistrali*, Pinus Society, Ravenna Italy, May (2005); Department of Anatomy, Germany, Humboldt Scholar, University of Greifswald July 2005; Department of Immunology and Biotechnology, Hungary, University of Pecs, August 2005; The Association of Korean Oriental Medicine, 13<sup>th</sup> International Congress of Oriental Medicine Daegu South Korea, October 2005; Dr. Dao Shing Ni, Founder, Yo San University (TCM), Los Angeles CA. January 2006; National Research Center, Dokki Cairo, Egypt, March 2006; Department of Biology, American University, Cairo Egypt, March 2006; Department of Immunology, Cairo University, Cairo Egypt, March 2006; Department of Marine Immunobiology, University of Palermo, Italy, May 2006; Institute for Advanced Studies, University of Bologna, Italy, May 2006; Acupuncture Congress, Bologna Italy, May 2006; Medical Society of Bologna, May 2006; Society of Homeopathy, Verona Italy 2006