

CURRICULUM VITAE LYNN MARGULIS

PRESENT POSITION

Distinguished University Professor
Department of Geosciences
University of Massachusetts
Amherst, MA 01003-9297

HONORS

National Academy of Sciences
Russian Academy of Natural Sciences (1997)
National Medal of Science, President William Clinton (1999)
Alexander von Humboldt Prize, Berlin (2002-2005)

EDUCATION

The College, University of Chicago (1954-1957); 12th grade certificate (1955);
AB, Liberal Arts (1957)

University of Colorado, Department of Biology (summer, 1957)

University of Wisconsin (1957-1960)
Master of Science (1960) **Aspects of RNA Stability in *Amoeba proteus***
Joint Degree in the Departments of Zoology and Genetics

University of California, Berkeley (1960-1963)
Doctor of Philosophy (January 1965) **An Unusual Pattern of Thymidine
Incorporation in *Euglena***
Department of Genetics

FELLOWSHIPS AND SCHOLARSHIPS

1955-1957 University of Chicago Scholarship
1957-1958 Teaching Assistant, General Zoology, University of Wisconsin
1958-1959 Research Assistant, University of Wisconsin, Department of Botany
1961-1963 NIH Traineeship, Department of Genetics, Berkeley
1976-1977 Sherman Fairchild Distinguished Scholar, California Institute of Technology
1979 Guggenheim Foundation Fellow (research on early life on Earth)
1991 Rockefeller Foundation (Bellagio Conference and Study Center, Bellagio, Italy)
1992 Faculty Fellowship Award, University of Massachusetts, Amherst
1997 Montgomery Fellow, Dartmouth College, Hanover, New Hampshire
2000 Collegium Helveticum Fellow, Switzerland
2002 Hanse-Wissenschaftskolleg Fellow, Delmenhorst, Germany

FIELD EXPERIENCE

1952 Work on a communal agricultural settlement, Moshav Moldeth, Israel.
1956 Anthropological field research on medical practices (the modern doctor and the *curandero*) in Tepoztlan, Morelos, Mexico. (With Dr. Oscar Lewis, registered as student in the University of Illinois for this research.).
1965 Bogotá, Medellín, Cali, Tunja (Colombia, South America). Director, Biology, Peace Corps Colombia Project (Brandeis University). Assessment of Peace Corps Program in Action.
1966 Bogotá, Medellín, Cali, Tunja (Colombia, South America). Director, Biology, Peace Corps Colombia Project (Brandeis University). Assessment of Peace Corps Program in Action.
1966 Mexico, DF, Mérida, Yucatán, Mexico. Dissemination of elementary science materials.
1967 Akosombo, Ghana, West Africa. Education Development Center. African Primary Science Project Workshop (now SEPA: Science Education Project for Africa).
1970 Brazil, IBCEC (Instituto Brasileiro de Educação, Ciência e Cultura) Consultant, Science Education.

1976 Short course on cell evolution, Barcelona, Spain.
1977 Laguna Figueroa, Baja California Norte, Mexico.
1979 Laguna Figueroa, Baja California Norte, Mexico (Guggenheim fellowship supported).
1980 Laguna Figueroa, Baja California Norte, Mexico.
1981 Laguna Figueroa, Baja California Norte, Mexico.
1982 International geological field trip, Caborca, Sonora, Mexico. Field work, Laguna Figueroa, Baja California Norte, Mexico.
1983 May-June. Earthwatch fieldwork, Laguna Figueroa, Baja California Norte, Mexico. October. Fieldwork, Laguna Figueroa, Baja California Norte, Mexico. Oct.-Nov. NACIC/NACSEX (North-American-Cuban Scientific Exchange): Field work, Salina Bido, Matanzas; Short course at the Pedagógico (Enrique José Varona) and Cuban Academy of Sciences, Havana.
1984 Field work, Laguna Figueroa, Baja California Norte, Mexico.
1985 Lakes Banyoles and Cisó, Girona, Spain.
1986 Laguna Figueroa, Baja California Norte, Mexico.
1988 Laguna Figueroa, Baja California Norte, Mexico.
1989 Laguna Figueroa, Baja California Norte, Mexico.
1990 Laguna Figueroa, Baja California Norte, Mexico.
1991 Laguna Figueroa, Baja California Norte, Mexico; Guerrero Negro, Baja California Sur, Mexico; Delta del Ebro, Spain.
1992 Laguna Figueroa, Baja California Norte, Mexico; Guerrero Negro, Baja California Sur, Mexico; Delta del Ebro, Spain.
1993 Delta del Ebro, Spain; Sippewissett Marsh, Cape Cod, Massachusetts.
1995 Teaching. El Albúfero, Valencia, Spain.
1997 Estero «el Pozo», Estero «la Tovar»: Nayarit, Mexico; Delta del Ebro, Spain.
1998 Banyoles, Lake Cisó, Girona, Spain.
1999 Santa Pola, Alicante, Spain; Es Tremp, Mallorca, Spain.
2001 Tiputini Biodiversity Station Amazonas and Quito area Ecuador.
2002 Mayaguez, Ponce, Puerto Rico.
2003 Crete Coast near Heraklion.

LANGUAGES

Spanish, French (speaking and reading), Italian (speaking, reading, translation of scientific materials into English at a slow rate), Portuguese (translation of scientific materials into English at a slow rate).

EMPLOYMENT HISTORY

1963-1964 Research Associate, Department of Biology, Brandeis University, Waltham, MA.
1963-1965 Lecturer, Department of Biology, Brandeis University, Waltham, MA.
1963-1967 Consultant, staff member. The Elementary Science Study (ESS), Educational Services Incorporated (ESI).
1965-1966 Biology Coordinator, Peace Corps Colombia Project (Brandeis University). Teacher training and retraining in mathematics and science (summer).
1966-1967 Adjunct Assistant Professor, Department of Biology, Boston University.
1967-1971 Assistant Professor, Department of Biology, Boston University.
1971-1977 Associate Professor, Department of Biology, Boston University (tenure, 1973).
1977-1986 Professor of Biology, Boston University.
1978 Instructor, Chatauqua short course, Hartford, CT. NSF program (with Cyril Ponnampertuma).
1980 January-March. Visiting Professor, Department of Marine Biology, Scripps Institute of Oceanography, La Jolla, CA. University of California, San Diego. March-June. Visiting Professor of Paleobiology, California Institute of Technology, Pasadena, CA. Division of Geology and Planetary Science. July-August. NASA-Ames, Planetary Biology Microbial Ecology, summer research course (faculty), University of Santa Clara, Santa Clara, CA.
1981- present Co-administrator of Planetary Biology Internship (PBI), with John Stolz (1981-1984), David Bermudes (1984-1985) and Michael Enzien (1985-1989), Gregory Hinkle (1990-1991), Lorraine Olendzenski (1992-1994), Michael Dolan (1995).

1982 July-August. NASA-Ames, Planetary Biology Microbial Ecology, summer research course (co-director), University of Santa Clara, Santa Clara, CA.

1983 Instructor, Chatauqua short course, Amherst, Mass., NSF Program (with Betsey Dyer).

1984 July-August. NASA-Ames, Planetary Biology Microbial Ecology, summer research course (co-director), San José State University, San José, CA.

1985, 1986 June-September, January-April. Visiting Professor, Departament de Microbiologia, Universitat Autònoma de Barcelona (Bellaterra), Spain.

1986 May. Visiting Scholar, Marine Science Research Center, State University of New York, Stony Brook, Long Island, NY.

1986-1988 University Professor, Department of Biology, Boston University, Boston, MA.

1988 January. Visiting Professor, Departament de Microbiologia, Universitat Autònoma de Barcelona (Bellaterra), Spain. September. Visiting Professor, Boston University Marine Program. Woods Hole, MA. Symbiosis course.

1988-1993 Distinguished University Professor, Department of Botany, University of Massachusetts, Amherst, MA.

1993-1997 Distinguished University Professor, Department of Biology, University of Massachusetts, Amherst, MA.

1994 September. Visiting Professor, Boston University Marine Program. Woods Hole, MA. Symbiosis course.

1995 September-December. Visiting Professor, George Mason University, Fairfax, VA. Protist Evolution course.

1997 November-December. Visiting Professor, Boston University Marine Program. Woods Hole, MA. Symbiosis course.

1997 present Distinguished University Professor, Department of Geosciences, University of Massachusetts, Amherst, MA.

1999 November-December. Visiting Professor, Boston University Marine Program. Woods Hole, MA. Symbiosis course.

2004 Adjunct Professor, Department of Microbiology, University of Massachusetts-Amherst, MA.

SABBATICALS

1973 Autumn, University of Washington, Seattle, Departments of Microbiology and Zoology.

1983 Autumn, Boston University; Havana, Cuba (Cuban National Academy of Sciences).

1986 Spring, Boston University; Barcelona (invited by Spanish government).

1997 Autumn, University of Massachusetts.

AWARDS

Boston University Faculty Publication Merit Award for 1967 (Shell)(February 28, 1969)

George Lamb Award, Outstanding US Botanist, University of Nebraska, Lincoln (1971)

Diamond Award: Travel to Leningrad, for International Botanical Congress(Summer 1975)

Fellow of the Association, AAAS («To Lynn Margulis, for her contributionsto cell biology, in particular for her studies on the origin of eukaryotic cells»)(1975)

NASA Public Service Award (October 1981)

United Methodist Church Award for Teacher Scholar, Boston University (1982)

Elected member, National Academy of Sciences (Section 27 Ecological andevolutionary biology) (1983)

University of Chicago Citation for Professional Achievement (1985)

Boston University MacDonald Award for Excellence in Research (1986)

Boston University Nominee, Nationwide Salute: American Association of Higher Education and the Carnegie Foundation for the Advancement of Teaching, for extraordinary educational leadership to the campus and beyond (1986)

Miescher-Ishida Award, International Society for Endocytobiology (first winner) (1986)

Distinguished Service Award, National Association of Biology Teachers (1988)

Commandeur de l'Ordre des Palmes Académiques de France (1989)

Honoris Causa Doctor of Science, Southeastern Massachusetts University, North Dartmouth, MA (1989)

Honoris Causa Doctor of Science, Westfield State College, Westfield, MA (1989)

Honorary Member Plaque, International Society for Evolutionary Protistology (ISEP), Orsay, France (1990)

Honoris Causa Doctor of Science, Plymouth State College, Plymouth, NH (1991)
 Distinguished Faculty Lecturer, University of Massachusetts, Amherst, MA (1992)
 Chancellor's Medal for Distinguished Faculty, University of Massachusetts, Amherst, MA (1992)
 Distinguished Lecturer in the Life Sciences, Boyce Thompson Institute of Plant Research, Cornell University, Ithaca, NY (1994)
Honoris Causa Doctor of Science, Washington College, Chestertown, MD (1995)
 Annual Lecturer, 95th Opening Session, ASM General Meeting, Washington, DC (1995)
 Elected Fellow of the World Academy of Art and Science (1995)
Honoris Causa Doctor of Science, Tulane University, New Orleans, LA (1996)
Honoris Causa Doctor of Science, University of Montreal. Montreal, Quebec (1997)
 Nevada Award, Desert Research Institute, Las Vegas, NV (1998)
 Elected Fellow of the American Academy of Arts and Sciences (1998)
Honoris Causa Doctor of Science, Autonomous University of Madrid, Canto Blanco, Spain (1998)
 Distinguished Service Award, American Institute of Biological Sciences, Baltimore MD (1998)
Dr. rer. nat. Honoris Causa, University of Oldenburg, Oldenburg, Germany (1999)
 Sigma Xi William Proctor Prize for Scientific Achievement, Minneapolis, MN (1999)
Honoris Causa Doctor of Science, Union College, Schenectady, NY (2001)
 Distinguished Academic Outreach 2000-2001, University of Massachusetts Commonwealth Award, Interpretive Scientist. Massachusetts Cultural Council (2001)
Honoris Causa Doctor of Science, San Francisco University, Quito, Ecuador (2001)
Honoris Causa Doctor, University of Valencia, Spain (2001)
 Faculty Grant Award (course design grant) for video of the «Cosmos to Humanity» course (2003)
Honoris Causa Doctor of Science, Rutgers University, NJ (2004)
 Nomination to the NASA Honor Group Achievement Award NIAC Science Council Member (2003)
 Rockefeller Foundation (2004)
Honoris Causa Doctor of Science, Bates College, ME (2005)
 Alexander von Humboldt Prize, Berlin (2002-2005)
 President of Sigma Xi, The Scientific Research Society (2005-2006)
 Faculty Grant Award (course design grant) for video of the «Cosmos to Humanity» course (2003)
Honoris Causa Doctor of Science, Rutgers University, NJ (2004)
 Nomination to the NASA Honor Group Achievement Award NIAC Science Council Member (2003)
 Rockefeller Foundation (2004)
Honoris Causa Doctor of Science, Bates College, ME (2005)
Honoris Causa Doctor University of Vigo (2007)

PROFESSIONAL SOCIETIES

Catalan Society for Biology (Member of Honor, 1986)
 International Society for Evolutionary Protistology (ISEP, Co-founder; Honorary Life Member)
 International Society for the Study of the Origin of Life (ISSOL, Councilor 2002-2005)
 Marine Biological Laboratory, Woods Hole, MA (Corporation Member)
 Sigma Xi (University of Massachusetts Chapter)
 Phi Beta Kappa (University of Massachusetts)
 Phi Kappa Phi (University of Massachusetts)
 The Linnean Society (London)
 International Symbiosis Society (Councilor)
 Gaia: The Society for Research and Education in Earth System Science.
 University of East London (Honorary President)
 Boston University Graduate School (1966-1969; 1972-1973; 1987-1988)
 National Science Foundation (1968-1972; 1978-1979)
 SGER-NSF Grant (1990-1992)
 NASA Life Sciences (1970-1995)
 Richard Lounsbery Foundation Research Trust Funds (1985-88; 1997-98; 1999-2003)
 UMASS College of Natural Sciences and Mathematics (1988)
 NASA Space Sciences (1995-2001)

ARTICLES

- 1958 Plaut, W. and L. A. Sagan. Incorporation of thymidine in the cytoplasm of *Amoeba proteus*. **Journal of Biophysical and Biochemical Cytology** 4: 843-846.
- 1965 Sagan, L. An unusual pattern of tritiated thymidine incorporation in *Euglena*. **Journal of Protozoology** 12:105-109.
- Sagan, L., Y. Ben-Shaul, H. T. Epstein and J. A. Schiff. Studies of chloroplast development in *Euglena*. XI. Radioautographic localization of chloroplast DNA. **Plant Physiology** 40: 1257-1260.
- 1967 Sagan, L. On the origin of mitosing cells. **Journal of Theoretical Biology** 14: 225-274.
- 1968 Margulis, L. Evolutionary criteria in Thallophytes: A radical alternative. **Science** 161: 1020-1022.
- Margulis, L. and T. N. Margulis. A note on the equivalence of characters: Pheneticist vs. phylogeneticist. **Systematic Zoology** 17: 477-479.
- 1969 Banerjee, S. and L. Margulis. Reversible inhibition of cilia regeneration in *Stentor oeruleus* by isopropyl-n-phenyl carbamate. **Nature** 224: 180-181.
- Margulis, L. New phylogenies of the lower organisms: Possible relation to organic deposits in Precambrian sediment. **Journal of Geology** 77: 606-617.
- Margulis, L., S. Banerjee and T. White. Colchicine-inhibited cilia regeneration: Explanation for lack of effect in tris buffer medium. **Science** 164: 1177-1178.
- Margulis, L., J. A. Neviackas and S. Banerjee. Cilia regeneration in *Stentor*: Inhibition, delay and abnormalities induced by griseofulvin. **Journal of Protozoology** 16: 660-667.
- Neviackas, J. A. and L. Margulis. The effect of colchicine on regenerating membranellar cilia in *Stentor coeruleus*. **Journal of Protozoology** 16: 165-171.
- 1970 Makrides, E. B., S. Banerjee, L. Handler and L. Margulis. Podophyllotoxin, Colcemid and cold temperature interfere with cilia regeneration in *Stentor*. **Journal of Protozoology** 17: 548-551.
- Margulis, L. Recombination of non-chromosomal genes in *Chlamydomonas*: Assortment of mitochondria and chloroplasts? **Journal of Theoretical Biology** 26: 337-342.
- 1971 Banerjee, S. and L. Margulis. Inhibition of cilia regeneration by antineoplastic agents. **Cancer Chemotherapy Reports Part 1** 55: 531-537.
- Margulis, L. Cytoplasmic genes: Our Precambrian legacy. **Stadler Genetics Symposia** 1 & 2: 79-88.
- Margulis, L. Symbiosis and evolution. **Scientific American** 224: 48-57.
- Margulis, L. Whittaker's five kingdoms of organisms: Minor revisions suggested by consideration of the origin of mitosis. **Evolution** 25: 242-245.
- 1972 Banerjee, S., V. Kerr, M. Winston, J. K. Kelleher and L. Margulis. Melatonin: Inhibition of microtubule-based oral morphogenesis in *Stentor coeruleus*. **Journal of Protozoology** 19: 108-113.
- Margulis, L. Symbiose en evolutie. **Natuur en Techniek** 40: 394-407.
- Younger, K. B., S. Banerjee, J. K. Kelleher, M. Winston and L. Margulis. Evidence that the synchronized production of new basal bodies is not associated with DNA synthesis in *Stentor coeruleus*. **Journal of Cell Science** 11: 621-637.
- 1973 Banerjee, S. and L. Margulis. Mitotic arrest by melatonin. **Experimental Cell Research** 78: 314-318.
- Blumberg, S., S. Propst, S. Honjo, T. Otaka, J. Antanavage, S. Banerjee and L. Margulis. Induced reversible pigment alteration in *Stentor coeruleus*. **Transactions of the American Microscopical Society** 92: 557-569.
- Margulis, L. Colchicine-sensitive microtubules. **International Review of Cytology** 34: 333-361.
- 1974 Deshpande, K. L., S. Banerjee, J. K. Kelleher and L. Margulis. Cilia membrane abnormalities induced by streptomycin and other aminoglycoside antibiotics in *Stentor coeruleus*. **Cytobios** 11: 185-199.
- Lovelock, J. E. and L. Margulis. Atmospheric homeostasis by and for the biosphere: The Gaia hypothesis. **Tellus** 26: 2-10. Reprinted 1999 in **Global Aspects of the Environment** 1: 57-64.
- Lovelock, J. E. and L. Margulis. Homeostatic tendencies of the Earth's atmosphere. **Origins of Life** 5: 93-103.
- Margulis, L. On the evolutionary origin and possible mechanism of colchicine-sensitive mitotic movements. **BioSystems** 6: 16-36.

Margulis, L. Origin and evolution of the eukaryotic cell: Introduction. [In Proceedings of the First International Congress of Systematic and Evolutionary Biology]. **Taxon** 23: 225-226 [entire symposium, pp. 225-270].

Margulis, L. and J. E. Lovelock. Biological modulation of the Earth's atmosphere. **Icarus** 21: 471-489.

Winston, M., E. Johnson, J. K. Kelleher, S. Banerjee and L. Margulis. Melatonin: Cellular effects on live stentors correlated with the inhibition of colchicine-binding to microtubule protein. **Cytobios** 9: 237-243.

1975 Banerjee, S., J. K. Kelleher and L. Margulis. The herbicide trifluralin is active against microtubule-based oral morphogenesis in *Stentor coeruleus*. **Cytobios** 12: 171-178.

Margulis, L. The microbes' contribution to evolution. **BioSystems** 7: 266-292.

1976 Margulis, L. A Review: Genetic and evolutionary consequences of symbiosis. **Experimental Parasitology** 39: 277-349.

Margulis, L. The theme (mitotic cell division) and the variations (protists): Implications for higher taxa. **Taxon** 25: 391-403.

Margulis, L., J. C. G. Walker and M. Rambler. Reassessment of roles of oxygen and ultraviolet light in Precambrian evolution. **Nature** 264: 620-624.

Ormerod, W., S. Francis and L. Margulis. Delay in the appearance of clamp connections in *Schizophyllum commune* by inhibitors of microtubule protein assembly. **Microbios** 17: 189-205.

1977 Cooper, G. and L. Margulis. Delay in migration of symbiotic algae in *Hydra viridis* by inhibitors of microtubule protein polymerization. **Cytobios** 19: 7-19.

Margulis, L., H. O. Halvorson, J. Lewis and A. G. W. Cameron. Limitations to growth of microorganisms on Uranus, Neptune and Titan. **Icarus** 30: 793-808.

Margulis, L., H. O. Halvorson, J. Lewis and A. G. W. Cameron. Some general principles of planetary quarantine leading to an assessment of the limitations to growth of microorganisms on Uranus and Neptune. **Life Sciences and Space Research** 15: 101-106.

Walters, C. C., L. Margulis and E. S. Barghoorn. On the experimental silicification of microorganisms. I. Microbial growth on organosilicon compounds. **Precambrian Research** 5: 241-248.

1978 Bold, H. C., A. Cronquist, C. Jeffrey, L. A. S. Johnson, L. Margulis, H. Merxmüller, P. H. Raven and A. L. Takhtajan. Proposal (10) to substitute the term "phylum" for "division" for groups treated as plants. **Taxon** 27: 121-122.

De Rosa, F., D. Haber, C. Williams and L. Margulis. Inhibitory effects of the herbicide trifluralin on the establishment of the clover root nodule symbiosis. **Cytobios** 21: 37-43.

Francis, S., E. S. Barghoorn and L. Margulis. On the experimental silicification of microorganisms. III. Implications of the preservation of the green prokaryotic alga *Prochloron* and other coccoids for interpretation of the microbial fossil record. **Precambrian Research** 7: 377-383.

Francis, S., L. Margulis and E. S. Barghoorn. On the experimental silicification of microorganisms. II. On the time of appearance of eukaryotic organisms in the fossil record. **Precambrian Research** 6: 65-100.

Margulis, L. and J. E. Lovelock. The biota as ancient and modern modulator of the Earth's atmosphere. **Pageoph** 116: 239-243.

Margulis, L., G. Thorington, B. Berger and J. Stolz. Endosymbiotic bacteria associated with the intracellular green algae of *Hydra viridis*. **Current Microbiology** 1: 227-232.

Margulis, L., L. To and D. Chase. Microtubules in prokaryotes. **Science** 200: 1118-1124.

Mazur, P., E. S. Barghoorn, H. O. Halvorson, T. H. Jukes, I. R. Kaplan and L. Margulis. Biological implications of the Viking mission to Mars. **Space Science Reviews** 22: 3-34.

To, L., L. Margulis and A. T. W. Cheung. *Pillotinas* and *hollandinas*: Distribution and behaviour of large spirochaetes symbiotic in termites. **Microbios** 22: 103-133.

To, L. P. and L. Margulis. Ancient locomotion: Prokaryotic motility systems. **International Review of Cytology** 54: 267-293.

Watson, A., J. E. Lovelock and L. Margulis. Methanogenesis, fires and the regulation of atmospheric oxygen. **BioSystems** 10: 293-298.

Whittaker, R. H. and L. Margulis. Protist classification and the kingdoms of organisms. **BioSystems** 10: 3-18.

1979 Berger, B., G. Thorington and L. Margulis. Two aeromonads: Growth of symbionts from *Hydra viridis*. **Current Microbiology** 3: 5-10.

Fracek, S. and L. Margulis. Colchicine, nocodazole and trifluralin: Different effects of microtubule polymerization inhibitors on the uptake and migration of endosymbiotic algae in *Hydra viridis*. **Cytobios** 25: 7-15.

Margulis, L., D. Chase and L. P. To. Possible evolutionary significance of spirochaetes. **Proceedings of the Royal Society of London, Series B** 204: 189-198.

Margulis, L., P. Mazur, E. S. Barghoorn, H. O. Halvorson, T. H. Jukes and I. R. Kaplan. The Viking mission: Implications for life on Mars. **Journal of Molecular Evolution** 14: 223-232.

Rambler, M. and L. Margulis. An ultraviolet light induced bacteriophage in *Beneckea gazogenes*. **Origins of Life** 9: 235-240.

Reimer, T. O., E. S. Barghoorn and L. Margulis. Primary productivity in an early Archean microbial ecosystem. **Precambrian Research** 9: 93-104.

Thorington, G., B. Berger and L. Margulis. Transmission of symbionts through the sexual cycle of *Hydra viridis*. I. Observations on living organisms. **Transactions of the American Microscopical Society** 98: 401-413.

1980 Lowenstam, H. A. and L. Margulis. Evolutionary prerequisites for early Phanerozoic calcareous skeletons. **BioSystems** 12: 27-41.

Margulis, L. Undulipodia, flagella and cilia. **BioSystems** 12: 105-108.

Margulis, L., E. S. Barghoorn, D. Ashendorf, S. Banerjee, D. Chase, S. Francis, S. Giovannoni and J. Stolz. The microbial community in the layered sediments at Laguna Figueroa, Baja California, Mexico: Does it have Precambrian analogues? **Precambrian Research** 11: 93-123.

Rambler, M. B. and L. Margulis. Bacterial resistance to ultraviolet irradiation under anaerobiosis: Implications for pre-Phanerozoic evolution. **Science** 210: 638-640.

To, L. P., L. Margulis, D. Chase and W. L. Nutting. The symbiotic microbial community of the Sonoran desert termite: *Pterotermes occidentis*. **BioSystems** 13: 109-137.

1981 Giovannoni, S. J. and L. Margulis. A red *Beneckea* from Laguna Figueroa, Baja California. **Microbios** 30: 47-63.

Giusto, J. P. and L. Margulis. Karyotypic fission theory and the evolution of old world monkeys and apes. **BioSystems** 13: 267-302.

Margulis, L., L. P. To and D. Chase. Microtubules, undulipodia and *Pillotina* spirochetes. **Annals of the New York Academy of Sciences** 361: 356-368.

Thorington, G. and L. Margulis. *Hydra viridis*: Transfer of metabolites between *Hydra* and symbiotic algae. **Biological Bulletin** 160: 175-188.

1983 Margulis, L. Towards the origin of metazoan-style multicellularity. **Protistologica** 19: 468.

Margulis, L., B. D. D. Grosovsky, J. F. Stolz, E. J. Gong-Collins, S. Lenk, D. Read and A. López-Cortés. Distinctive microbial structures and the pre-Phanerozoic fossil record. **Precambrian Research** 20: 443-477.

Read, L. K., L. Margulis, J. Stolz, R. Obar and T. K. Sawyer. A new strain of *Paratetramitus jugosus* from Laguna Figueroa, Baja California, Mexico. **Biological Bulletin** 165: 241-264.

Sagan, D. and L. Margulis. The Gaian perspective of ecology. **Ecologist** 13: 160-167.

1984 Margulis, L. and D. Sagan. Evolutionary origins of sex. **Oxford Surveys in Evolutionary Biology** 1: 16-47.

Margulis, L. and J. F. Stolz. Cell symbiosis theory: Status and implications for the fossil record. **Advances in Space Research** 4: 195-201.

Stolz, J. F. and L. Margulis. The stratified microbial community at Laguna Figueroa, Baja California, Mexico: A possible model for pre-Phanerozoic laminated microbial communities preserved in cherts. **Origins of Life** 14: 671-679.

1985 Brown, S., L. Margulis, S. Ibarra and D. Siqueiros. Desiccation resistance and contamination as mechanisms of Gaia. **BioSystems** 17: 337-360.

Margulis, L. Evolución de la célula: La célula eucariótica como comunidad microbiana. **Arbor (Madrid)** 120 (472): 13-38.

Margulis, L. and D. Bermudes. Symbiosis as a mechanism of evolution: Status of cell symbiosis theory. **Symbiosis** 1: 101-123.

Margulis, L. and R. Obar. *Heliobacterium* and the origin of chrysochloroplasts. **BioSystems** 17: 317-325.

Margulis, L. and D. Sagan. Order amidst animalcules: The Protoctista kingdom and its undulipodiated cells. **BioSystems** 18: 141-147.

1986 Fleischaker, G. R. and L. Margulis. Autopoiesis and the origin of bacteria. **Advances in Space Research** 6 (11): 53-55.

Guerrero, R., C. Pedrós-Alió, I. Esteve, J. Mas, D. Chase and L. Margulis. Predatory prokaryotes: Predation and primary consumption evolved in bacteria. **Proceedings of the National Academy of Sciences, USA** 83: 2138-2142.

Margulis, L., D. Chase and R. Guerrero. Microbial communities. **BioScience** 36: 160-170.

Margulis, L. and R. Guerrero. Not “origins of life” but “evolution in microbes”. **Treballs de la Societat Catalana de Biologia** 39: 105-112.

Margulis, L., L. López Baluja, S. M. Awramik and D. Sagan. Community living long before man: Fossil and living microbial mats and early life. **Science of the Total Environment** 56: 379-397.

1987 Bermudes, D., S. P. Fracek, Jr., R. A. Laursen, L. Margulis, R. Obar and G. Tzertzinis. Tubulinlike protein from *Spirochaeta bajacaliforniensis*. **Annals of the New York Academy of Sciences** 503: 515-527.

Bermudes, D. and L. Margulis. Symbiont acquisition as neoseme: Origin of species and higher taxa. **Symbiosis** 4: 185-197. Bermudes, D., L. Margulis and G. Tzertzinis. Prokaryotic origin of undulipodia: Application of the Panda Principle to the centriole enigma. **Annals of the New York Academy of Sciences** 503: 187-197.

Sagan, D. and L. Margulis. Bacterial bedfellows. **Natural History** 3: 26-33. (Reprinted as chapter 11 in **Cooperation: Beyond the age of competition**). A. Combs, ed. Gordon and Breach, New York, 1992.

Stolz, J. F., L. Margulis and R. Guardans. La comunidad microbiana estratificada de la Laguna Figueroa, Baja California, México: Un posible modelo de comunidades laminadas y microfósiles prefanerozoicos preservados en pedernales. **Studia Geologica Salmanticensia** 24: 7-24.

1988 Bermudes, D., D. Chase and L. Margulis. Morphology as a basis for taxonomy of large spirochetes symbiotic in wood-eating cockroaches and termites: *Pillotina* gen. nov., nom. rev.; *Pillotina calotermittidis* sp. nov., nom. rev.; *Diplocalyx* gen. nov., nom. rev.; *Diplocalyx calotermittidis* sp. nov., nom. rev.; *Hollandina* gen. nov., nom. rev.; *Hollandina pterotermittidis* sp. nov., nom. rev.; and *Clevelandina reticulitermittidis* gen. nov., sp. nov. **International Journal of Systematic Bacteriology** 38: 291-302.

Enzien, M. and L. Margulis. *Niebla ceruchis* from Laguna Figueroa: Dimorphic spore morphology and secondary compounds localized in pycnidia and apothecia. **Microbios** 55: 75-83.

Esteve, I., J. Mir, N. Gaju, H. I. McKhann and L. Margulis. Green endosymbiont of *Coleps* from Lake Cisó identified as *Chlorella vulgaris*. **Symbiosis** 6: 197-210.

Lazcano, A., R. Guerrero, L. Margulis and J. Oró. The evolutionary transition from RNA to DNA in early cells. **Journal of Molecular Evolution** 27: 283-290.

Margulis, L. Serial endosymbiotic theory (SET): Undulipodia, mitosis and their microtubule systems preceded mitochondria. **Endocytobiosis and Cell Research** 5: 133-162.

Margulis, L. and R. Guerrero. Nao “origens da vida” mas “evoluçao em microbios”. **O Ensino** 22-28: 243-250.

Margulis, L., G. Hinkle, H. McKhann, B. Moynihan and S. W. Brown. *Mychonastes desiccatus* Brown sp. nova (Chlorococcales, Chlorophyta) – An intertidal alga forming achlorophyllous desiccation-resistant cysts. **Archiv für Hydrobiologie Supplement** 78, **Algological Studies** 49: 425-446.

Margulis, L., D. Sagan. Doña bacteria y sus dos maridos. **Ciencias** 2: 12-16.

1989 Enzien, M., H. I. McKhann and L. Margulis. Ecology and life history of an amoebomastigote, *Paratetramitus jugosus*, from a microbial mat: New evidence for multiple fission. **Biological Bulletin** 177: 110-129.

1990 Hinkle, G. and L. Margulis. Global ecology and the Gaia hypothesis. **Physiology and Ecology Japan** 27 (Special issue: “Ecology for Tomorrow”): 53-62.

Margulis, L. Kingdom Animalia: The zoological malaise from a microbial perspective. **American Zoologist** 30: 861-875. Margulis, L. Words as battlecries – Symbiogenesis and the new field of endocytobiology. **BioScience** 40: 673-677.

Margulis, L., M. Enzien and H. I. McKhann. Revival of Dobell’s “chromidia” hypothesis: Chromatin bodies in the amoebomastigote *Paratetramitus jugosus*. **Biological Bulletin** 178: 300-304.

Margulis, L., G. Hinkle, J. Stolz, F. Craft, I. Esteve and R. Guerrero. *Mobilifilum chasei*: Morphology and ecology of a spirochete from an intertidal stratified microbial mat community. **Archives of Microbiology** 153: 422-427.

Margulis, L. and M. McMenamin. Kinetosome-centriolar DNA: Significance for endosymbiosis theory. **Treballs de la Societat Catalana de Biologia** 41: 5-16.

Margulis, L., L. Olendzenski and B. A. Afzelius. Endosporeforming filamentous bacteria symbiotic in termites: Ultrastructure and growth in culture of *Arthromitus*. **Symbiosis** 8: 95-116. (*Arthromitus chasei* deposited with American Type Culture Collection No. 49589 **Symbiosis** 8: 285).

1991 Barth, A. L., J. A. Stricker and L. Margulis. Search for eukaryotic motility proteins in spirochetes: Immunological detection of a tektin-like protein in *Spirochaeta halophila*. **BioSystems** 24: 313-319.

Margulis, L. and R. Guerrero. Kingdoms in turmoil. **New Scientist** 129 (1761): 46-50.

Margulis, L., L. Nault and J. M. Sieburth. *Cristispira* from oyster styles: Complex morphology of large symbiotic spirochetes. **Symbiosis** 11:1-17.

1992 Margulis, L. Biodiversity: Molecular biological domains, symbiosis and kingdom origins. **BioSystems** 27: 39-51.

1993 Margulis, L. Centrioles and kinetosomes in animal multicellularity. **Invertebrate Reproduction and Development** 23: 165-169
[Proceedings of the Sixth International Congress on Invertebrate Reproduction, Trinity College, Dublin, June 28-July 3, 1992].

Margulis, L., J. B. Ashen and M. Solé and R. Guerrero. Composite, large spirochetes from microbial mats: Spirochete structure review. **Proceedings of the National Academy of Sciences** 90: 6966-6970.

Margulis, L. and O. West. Gaia and the Colonization of Mars. **GSA Today** 3: 277-280.

Guerrero, R., J. B. Ashen, M. Solé and L. Margulis. *Spirosymplokos deltaeiberi* nov. gen., nov. sp.: Variable-diameter composite spirochete from microbial mats. **Archives of Microbiology** 160:461-470.

Margulis, L. Introduction – From Gaia to microcosm. **BioSystems** 31: 83.

Margulis, L. Introduction to “Symbioticism in the light of recent cytological investigations”, by Ivan E. Wallin. **BioSystems** 31: 181-183.

Margulis, L. Origins of species: Inheritance of acquired genomes. **BioSystems** 31: 121-125.

Munson, D., R. Obar, G. Tzertzinis and L. Margulis. The “tubulinlike” S1 protein of *Spirochaeta* is a member of the HSP-65 stress protein family. **BioSystems** 31: 161-167.

1994 Kirby, H., annotated by L. Margulis. Harold Kirby’s symbionts of termites: Karyomastigont reproduction and calonymphid taxonomy. **Symbiosis** 16: 7-63.

Bermudes, D., G. Hinkle and L. Margulis. Do prokaryotic cells contain microtubules? **Microbiological Reviews** 58: 387-400.

1995 Margulis, L. and R. Guerrero. Life as a planetary phenomenon: The colonization of Mars. **Microbiología SEM** 11 pp. 173-184.

Duval, B. and L. Margulis. The microbial community of *Ophrydium versatile* colonies: Endosymbionts, residents and tenants. **Symbiosis** 18: 181-210.

Esteve, I., N. Mas-Castellà Gaju, R. Guerrero and L. Margulis. Bacterial survival mechanisms in microbial mats. **Microbiología SEM** 11: 397-399.

1996 Margulis, L., L. Olendzenski, M. Dolan and F. MacIntyre. Diversity of eukaryotic microorganisms: computer-based resources, The Handbook of Protozoists and its Glossary. **Microbiología SEM** 12: 29-42.

Margulis, L. Archaeal-eubacterial mergers in the origin of Eukarya: Phylogenetic classification of life. **Proceedings of the National Academy of Sciences** 93: 1071-1076.

Teal, T.H., M. J. Chapman, T. Guillemette and L. Margulis. Freelifing spirochetes from Cape Cod microbial mats detected by electron microscopy. **Microbiología SEM** 12: 571-584.

1997 Dolan, M. and L. Margulis. *Staurojoenina* and other symbionts in *Neotermes* from San Salvador Island, Bahamas. **Symbiosis** 22: 229-239.

1998 Chapman, M. J. and L. Margulis. Morphogenesis by symbiogenesis. **International Microbiology** 1: 319-326.

Margulis, L., J. Z. Jorgensen, S. Dolan, R. Kolchinsky, F. A. Rainey and S-C. Lo. The *Arthromitus* stage of *Bacillus cereus*: Intestinal symbionts of animals. **Proceedings of the National Academy of Sciences** 95: 1236-1241.

Margulis, L. and M. J. Chapman. Endosymbioses: Cyclical and permanent in evolution. **Trends in Microbiology** 6: 342-346.

Margulis, L., A. Navarrete and M. Solé. Cosmopolitan distribution of the large composite microbial mat spirochete, *Spirosymplokos deltaeiberi*. **International Microbiology** 1: 27-34.

Teal, T. H., T. Guillemette, M. J. Chapman and L. Margulis. *Acronema sippewissettensis* gen. nov. sp. nov., microbial mat bicosoecid (Bicosoecales=Bicosoecida) ATCC 50534. **European Journal of Protistology** 34: 402-414.

- 1999 Margulis, L., M. Dolan and R. Guerrero. The molecular tangled bank: Not seeing the phylogenies for the trees. **Biological Bulletin** 196: 413-414.
- D'Ambrosio, U., M. Dolan, A. M. Wier and L. Margulis. Devescovinid trichomonad with axostyle-based rotary motor ("Rubberneckia"): Taxonomic assignment as *Caduceia versatilis*, sp. nov. **European Journal of Protistology** 35: 327-337.
- Guerrero, R., A. Haselton, M. Solé, A. M. Wier and L. Margulis. *Titanospirillum velox*: A huge, speedy, sulfur-storing spirillum from Ebro Delta microbial mats. **Proceedings of the National Academy of Sciences** 96: 11584-11588.
- Feinberg, L., J. Jorgensen, A. Haselton, A. Pitt, R. Rudner and L. Margulis. *Arthromitus* (*Bacillus cereus*) symbionts in the cockroach *Blaberus giganteus*: Dietary influences on bacterial development and population density. **Symbiosis** 27: 109-123.
- 2000 Wier, A. and L. Margulis. The wonderful lives of Joseph Leidy (1823-1891). **International Microbiology** 3: 55-58.
- Dolan, M. F., U. D'Ambrosio, A. M. Wier and L. Margulis. Surface kinetosomes and disconnected nuclei of a calonymphid: Ultrastructure and evolutionary significance of *Snyderella tabogae*. **Acta Protozool.** 39: 135-141.
- Chapman, M. J., M. F. Dolan and L. Margulis. Centrioles and kinetosomes: Form, function and evolution. **The Quarterly Review of Biology** 75: 409-429.
- Margulis, L., M. F. Dolan and R. Guerrero. The chimeric eukaryote: Origin of the nucleus from the karyomastigont in an amitochondriate protists. In Colloquium on Variation and Evolution in Plants and Microorganisms: Towards a New Synthesis: 50 Years after Stebbins. **Proceedings of the National Academy of Sciences** 97: 6954-6959.
- Wier, A., J. Ashen and L. Margulis. *Canaleparolina darwiniensis*: gen. nov., sp. nov. and other pillotinaeous spirochetes from insects. **International Microbiology** 3: 213-223.
- Dolan, M. F., A. M. Wier and L. Margulis. Budding and asymmetric reproduction of a trichomonad with as many as 1000 nuclei in karyomastigonts: *Metacoronympha* from *Incisitermes*. **Acta Protozool.** 39: 275-280.
- 2002 Wier, A., M. F. Dolan, D. Grimaldi, R. Guerrero, J. Wagensberg, and L. Margulis. Spirochete and protist symbionts of a termite (*Mastotermes electrodominicus*) in Miocene amber. **Proceedings of the National Academy of Sciences** 99: 1410-1413.
- Dolan, M., H. Melnitsky, L. Margulis and R. Kolnicki. Motility proteins and the origin of the nucleus. **Anatomical Record** 268: 290-301.
- Benson, J. and L. Margulis. The *Gunnera manicata*-*Nostoc* Symbiosis: Is the Red Stipulate Tissue Symbiogenic? **Biology and Environment: Proceedings of the Royal Irish Academy** 102B: 45-48.
- 2003 Margulis, L. Simbiosi I Tèrmits: Un món a vessar de misteris. **Mètode-Universitat de València** August, pp. 29-35, 37.
- Margulis, L. The complex Individual, Symbiosis in Cell Evolution: Mitosis, microtubules and melanosome transfer in their evolutionary context. PanAmerican Society for Pigment Cell Research 11th Meeting. 16: 415.
- 2004 Wier, A. M., M. F. Dolan and L. Margulis. Cortical symbionts and hydrogenosomes of the amitochondriate protist *Staurojoenina assimilis*. **Symbiosis** 36: 153-168.
- Melnitsky, H. and L. Margulis. Centrosomal Proteins in Termite Symbionts: Gamma-tubulin and scleroderma antibodies bind rotation zone of *Caduceia versatilis*. **Symbiosis**. 37: 323-333.
- Dolan, M. F., A. M. Wier, H. Melnitsky, J. Whiteside and L. Margulis. Cysts and symbionts of *Staurojoenina assimilis* Kirby from *Neotermes* **European Journal of Protistology** 40: 257-264.
- 2005 Margulis, L., M. Dolan and J. Whiteside. "Imperfections and oddities" in the origin of the nucleus. E. Verba and N. Eldredge, eds. (Special issue in memory of Stephen J. Gould: Macroevoluton: Diversity and disparity). **Paleobiology** vol. 31(2): 175-191.
- Margulis, L. Anthrax and The Curious Philadelphian: From Leidy's jointed thread to the natural history of *Bacillus*. **Natural History**, New York.

BOOKS

- 1970 Margulis, L. **Origin of Eukaryotic Cells: Evidence and research implications for a theory of the origin and evolution of microbial, plant and animal cells on the Precambrian Earth**. Yale University Press, New Haven, CT, XXII + 349 pp.
- Margulis, L., ed. **Origins of Life: Proceedings of the first conference**. [Proceedings of the 1st Interdisciplinary Communications Program Conference on the Origins of Life, May 21-24, 1967, Princeton, NJ]. Gordon and Breach, New York, NY, XIII + 376 pp.

- 1971 Margulis, L., ed. **Proceedings of the Second Conference on Origins of Life: Cosmic evolution, abundance and distribution of biologically important elements**. [May 5-8, 1968, Princeton, NJ] Interdisciplinary Communication Associates, Washington, DC. VII + 238 pp.
- 1973 Margulis, L., ed. **Proceedings of the Fourth Conference on Origins of Life: Chemistry and radioastronomy**. [Apr. 13-16, 1971, Elkridge, MD]. Springer-Verlag, New York, NY, XVI + 291 pp.
- Margulis, L., ed. **Proceedings of the Third Conference on Origins of Life: Planetary astronomy**. [Feb. 27-Mar. 1, 1970, Pacific Palisades, CA]. Springer-Verlag, New York, NY, XI + 268 pp.
- 1980 Ponnampertuma, C. and L. Margulis, eds. **Limits of Life**. [Proceedings of the Fourth College Park Colloquium on Chemical Evolution, Oct. 18-20, 1978, College Park, MD]. Reidel, Dordrecht, The Netherlands, XII + 199 pp.
- 1981 Margulis, L. **Symbiosis in Cell Evolution: Life and its environment on the early earth**. W. H. Freeman, San Francisco, CA, XXII + 419 pp. Translations: Russian, MIR Publishers, Moscow, Russia, 1983; Japanese: Tokyo, Japan, 1985.
- 1982 Margulis, L. **Early Life**. Science Books International, Boston, XIV + 160 pp. Reprinted, Jones and Bartlett, Boston, MA. Translations: Spanish, Origen de la Celula. Editorial Reverté, Barcelona, Spain, 1986.
- Margulis, L. and K. V. Schwartz. **Five Kingdoms: An illustrated guide to the phyla of life on earth**. W. H. Freeman, New York, NY, XIV + 338 pp. Translations: Spanish, Editorial Labor, Barcelona, Spain, 1985; German, Spektrum der Wissenschaft, Heidelberg, Germany, 1989; Japanese, Nikkei Science, Tokyo, Japan, 1987
- 1983 Margulis, L. and D. Sagan. **Nascita ed Evoluzione della Vita**. Gruppo Editoriale Fabbri, Milan, 63 pp.
- 1986 Margulis, L. and D. Sagan. **Microcosmos: Four billion years of evolution from our microbial ancestors**. Summit Books, New York, NY, IX + 301 pp. Translations: British, Allen & Unwin, London, United Kingdom, 1986; Spanish, Metatemas 39, Libros para pensar la ciencia, Spain, 1995; French, Albin Michel, Paris, France, 1989; French Paperback, Albin Michel, Paris, France 2002; Portuguese, Edicoes, Lisbon, Portugal, 1990; Italian, Arnoldo Mondadori, Rome, Italy, 1989; Danish translation: Nysyn, Munksgaard, Denmark, 1990; Japanese, Tokyo Kagaku Dojin, Tokyo, Japan, 1989; Chinese, Commonwealth Publishing Co. Ltd. China; Hebrew, Magnes Press, The Hebrew University, 1999; Portuguese Paperback, Editora Pensamento-Cultrix LTDA, São Paulo, Brazil, 2004. Paperback: University of California Press, Berkeley, CA, 300 pp.
- 2000 Margulis, L. and D. Sagan. **Origins of Sex: Three billion years of genetic recombination**. Yale University Press, New Haven, CT, XIII + 258 pp.
Translation: Japanese, 1995.
- Sagan, D., H. McKhann, M. Dolan and L. Margulis. **The Internship Experience: NASA Planetary Biology Internship program 1980-1986**. NASA Life Sciences, Washington, DC. VIII + 170 pp.
- Margulis, L., R. Guerrero and A. Lazcano, eds. **Origen de la Vida i Evolució de la Cèl·lula** (Origin of Life and Evolution of Cells). [Treballs de la Societat Catalana de Biologia, v. 39]. Societat Catalana de Biologia, Barcelona, Spain, 146 pp.
- 1988 Margulis, L. and D. Sagan. **The Microcosmos Coloring Book**. Harcourt Brace Jovanovich, Boston, MA, 232 pp.
- Margulis, L. and K. V. Schwartz. **Five Kingdoms: An illustrated guide to the phyla of life on Earth** 2nd edition. W. H. Freeman, New York, NY, XVI + 376 pp.
- Sagan, D. and L. Margulis. **Garden of Microbial Delights: A practical guide to the subvisible world**. Harcourt Brace Jovanovich, Boston, MA, VIII + 231 pp.
- 1989 Rambler, M. B., L. Margulis and R. Fester, eds. **Global Ecology: Towards a science of the biosphere**. Academic Press, Boston, MA, XII + 204 pp.
- Sagan, D. and L. Margulis. **Biospheres: From Earth to Space**. Enslow, Hillside, NJ, 96 pp.
- 1990 Margulis, L., J. O. Corliss, M. Melkonian and D. J. Chapman, eds. **Handbook of Protoctista: The structure, cultivation, habitats and life histories of the eukaryotic microorganisms and their descendants exclusive of animals, plants and fungi**. Jones and Bartlett, Boston, MA, xli + 914 pp.
- Nardon, P., V. Gianinazzi-Pearson, A. M. Grenier, L. Margulis and D. C. Smith, eds. **Endocytobiology IV**. Proceedings of the 4th International Colloquium on Endocytobiology and Symbiosis, July 4-8, 1989, Villeurbanne, France. Institut National de la Recherche Agronomique, Paris, France, 620 pp.

1991 Margulis, L. and R. Fester, eds. **Symbiosis as a Source of Evolutionary Innovation: Speciation and morphogenesis**. MIT Press, Cambridge, MA, XIII + 454 pp. 58

Margulis, L. and D. Sagan. **Mystery Dance: On the evolution of human sexuality**. Summit Books, New York, NY, 224 pp. Translations: Spanish, Kairós, Barcelona, Spain, 1993; Italian, Arnoldo Mondadori Editore, Milano, Italy, 1992; Danish, Munksgaard, Nysyn, Denmark, 1992; Dutch, Uitgeverij Contact, Amsterdam, The Netherlands, 1992; German, Biblioverlag, Berlin, Germany, 1996; Greek, NIKKAN, Greece, 1994; Japanese, Tokyo, Japan, 1993.

1992 Dolan, M., L. Olendzenski, L. Margulis, D. Sagan and S. Hiebert, eds. **The Internship Experience: NASA. planetary biology internship program 1986-1992**. NASA Life Sciences, Washington, DC. IV + 143 pp.

Khakhina, L. N. **Concepts of Symbiogenesis: A historical and critical study of the research of Russian botanists**. M. McMenamín and L. Margulis, eds. Yale University Press, New Haven, CT, XXIX + 177 pp.

Margulis, L. **Diversity of Life: The five kingdoms**. Enslow, Hillside, NJ, 80 pp.

Margulis, L. and L. Olendzenski, eds. **Environmental Evolution: The effect of the origin and evolution of life on planet Earth**. MIT Press, Cambridge, MA, XVIII + 405 pp.
Translations: Spanish, Mónica Solé Rojo: Evolución ambiental: Efectos del origen y evolución de la vida sobre el planeta Tierra. Alianza Editorial, SA, Madrid, Spain, 1996.

1993 Margulis, L. **Symbiosis in Cell Evolution: Microbial communities in the Archean and Proterozoic eons**. 2nd edition. W. H. Freeman, New York, NY, XXVII + 452 pp.

Margulis, L., H. I. McKhann and L. Olendzenski, eds. **Illustrated Glossary of the Protocista**. Jones and Bartlett, Boston, MA, IV + 288 pp.

Sagan, D. and L. Margulis. **Garden of Microbial Delights: A practical guide to the subvisible world**. Kendall-Hunt Publishers, Dubuque, IA, VII + 232 pp.

Margulis, L., ed. **BioSystems: From Gaia to microcosm**. Elsevier Scientific Publishers Ireland Ltd. 248 pp.

1994 Margulis, L., K. V. Schwartz and M. Dolan. **The Illustrated Five Kingdoms: A guide to the diversity of life on Earth**. HarperCollins College Publishers, New York, NY, IX + 229 pp.

1995 Margulis, L. and D. Sagan. **What Is Life?** A Peter N. Nevraumont Book. Simon & Schuster, New York; Weidenfeld and Nicolson, London, United Kingdom, 207 pp.
Translation: Spanish, ¿Qué es la vida? Tusquets Editores, Barcelona, pp. 207, 1996 and 2005; Japanese, Selica Shobo. Bureau des Copyrights Français, Tokyo, Japan, 1998; Chinese, Wa shi shui? Zhou Hanyan, trans. Jiangxi Education Press. Nanchang, Jiangxi Province, 2001.
Paperback: University of California Press, Berkeley, CA, pp. XV-288. 2000

1997 Dolan, M., L. Brynes, L. Margulis, J. Miller and D. Sagan. **The Internship Experience 1992-1996 Planetary Biology Internship**. NASA Space Sciences, Exobiology, Office of Space Science, Washington, DC. 158 pp.

Margulis, L. and D. Sagan. **Slanted Truths: Essays on Gaia, evolution and symbiosis**. Copernicus/Springer Verlag, New York, NY, XXIII+368 pp. Translations: Chinese, Jiangxi Education Press, Nanchang, Jiangxi Province, China, 481 pp. 1998.

Margulis, L. and D. Sagan. **What is Sex?** A Peter N. Nevraumont Book. Simon & Schuster, New York. 256 pp. Translation: Catalan, Què és el sexe? Tusquets Editores, Barcelona, Spain, 1998; Proa, La Mirada, Enciclopèdia Catalana, Barcelona, Spain, 244 pp. 1999; Japanese, Le Bureau des Copyrights Français, Tokyo, Japan, 1998; Chinese, Wo de ling yi ban? Wang Yue-rui and Zhou Hanyan, trans. Jiangxi Education Press. Nanchang, Jiangxi Province, China, 2001.

Margulis, L. and D. Sagan. **Microcosmos: Four billion years of evolution from our microbial ancestors**. Paperback: University of California Press, Berkeley, CA, 300 pp.

1998 Margulis, L. and K. V. Schwartz. **Five Kingdoms: An illustrated guide to the phyla of life on Earth**. 3rd edition. W.H. Freeman, New York, NY, XX + 520 pp.
Translations: Portuguese, **Cinco Reinos: Um guia ilustrado dos filos da vida na terra**. Editoria Guanabara Koogan, SA, Rio de Janeiro, Brazil, 2004; Spanish (in production), Tusquets Editores, Barcelona, Spain 2004.

Margulis, L. **Symbiotic Planet: A new look at evolution**. Basic Books, New York, NY, 147 pp.
Translations: Spanish, Planeta simbiótico. Random House Mondadori, Barcelona, Spain, 2002; Dutch, De Symbiotische Planeet. Een nieuwe kijk op de evolutie. Uitgeverij Contact, Amsterdam/Antwerpen, The Netherlands, 1999; German, Die andere Evolution. Spektrum Akademischer Verlag, Heidelberg/Berlin, Germany, 1999; Japanese. Soshisa, Tokyo, Japan, 2000; Chinese, Brockman, Inc., 1998. Paperback: Phoenix, Orion Books, Ltd., London, United Kingdom, 1999.

- 1999 Margulis, L., K. V. Schwartz and M. Dolan. **Diversity of Life: An illustrated guide to the five kingdoms**, 2nd edition. Jones and Bartlett, Sudbury, MA, 248 pp.
- 2000 Margulis, L., C. Matthews and A. Haselton, eds. **Environmental Evolution: Effects of the origin and evolution of life on planet Earth**. 2nd edition. MIT Press, Cambridge, MA. 338 pp.
- 2002 Margulis, L. and M. Dolan. **Early Life: Evolution on the Precambrian Earth**, 2nd edition. Jones and Bartlett, Sudbury, MA, pp. VII-168.
- Margulis, L. and D. Sagan. **Acquiring Genomes: A theory of the origins of species**. Basic Books, New York, 240 pp. Translations: Spanish, Captando Genomas: Una teoría sobre el origen de las especies. Editorial Kariós, Barcelona, Spain, 2003; Paperback: Basic Books, New York, NY, 2003.
- Margulis, L. **Peces luminosos: Historias de ciencia y amor**. Colección Metatemas. Tusquets, Barcelona, Spain.
- Margulis, L. **Una revolució en la evolució**. Col·lecció Honoris Causa, Universitat de València, València, Spain, 376 pp.
- Margulis, L. and K. V. Schwartz. **Five Kingdoms: An illustrated guide to the phyla of life on Earth**. 4th edition. University of Chicago Press.
- Margulis, L. **Symbiosis in Cell Evolution: Microbial communities in the Archean and Proterozoic eons**. 3rd edition. University of Chicago Press.

CHAPTERS AND FOREWORDS

- 1971 Margulis, L. Microbial evolution on the early Earth. In **Molecular Evolution 1: Chemical evolution and the origin of life**. R. Buvet and C. Ponnampereuma, eds. North-Holland, Amsterdam, The Netherlands, pp. 480-484.
- 1972 Margulis, L. Early cellular evolution. In **Exobiology**. C. Ponnampereuma, ed. Amsterdam, The Netherlands, pp. 342-368.
- 1974 Margulis, L. The classification and evolution of prokaryotes and eukaryotes. In **Handbook of Genetics**, vol. 1: **Bacteria, bacteriophages and fungi**. King, R. C., ed. Plenum, New York, NY, pp. 1-41.
- Margulis, L. Five-kingdom classification and the origin and evolution of cells. In **Evolutionary Biology**, vol. 7. T. Dobzhansky, M. K. Hecht and W. C. Steere, eds. Plenum, New York, NY, pp. 45-78.
- 1975 Margulis, L. Microtubules and evolution. In **Microtubules and Microtubule Inhibitors**. M. Borgers and M. de Brabander, eds. Amsterdam, The Netherlands, pp. 3-18.
- Margulis, L. Symbiotic theory of the origin of eukaryotic organelles: Criteria for proof. In **Symbiosis**. [Symposia of the Society for Experimental Biology, No. 29]. D. H. Jennings and D. L. Lee, eds. Cambridge University Press, Cambridge, MA, pp. 21-38.
- Margulis, L., S. Banerjee and J. K. Kelleher. Assay for antitubulin drugs in live cells: Oral regeneration in *Stentor coeruleus*. In **Microtubules and Microtubule Inhibitors**. M. Borgers and M. de Brabander, eds. Amsterdam, The Netherlands, pp. 453-470.
- 1976 Awramik, S. M., L. Margulis and E. S. Barghoorn. Evolutionary processes in the formation of stromatolites. In **Stromatolites**. [Developments in Sedimentology, 20]. M. R. Walter, ed. Elsevier, Amsterdam, The Netherlands, pp. 149-162. .
- Margulis, L. De rol van microben in het evolutieproces. In **De Microbiologie Drie Eeuwen na Antoni van Leeuwenhoek**. F. Wensinck, ed. Pudoc, Centrum voor Landbouwpublikaties en Landbouwdocumentatie, Wageningen, The Netherlands, pp. 72-96.
- 1977 Francis, S., L. Margulis, W. Caldwell and E. S. Barghoorn. Comparison of laboratory silicified blue-green algae with Precambrian microorganisms. In **Chemical Evolution of the Early Precambrian**. C. Ponnampereuma, ed. Academic Press, New York, NY, pp. 181-183.
- Margulis, L. Evolution of mitosis and the late appearance of metazoa, metaphyta and fungi. In **Chemical Evolution of the Early Precambrian**. C. Ponnampereuma, ed. Academic Press, New York, NY, pp. 187-189.
- Rambler, M., L. Margulis and E. S. Barghoorn. Natural mechanisms of protection of a blue-green alga against ultraviolet light. In **Chemical Evolution of the Early Precambrian**. C. Ponnampereuma, ed. Academic Press, New York, NY, pp. 133-141.
- 1978 Margulis, L. and J. E. Lovelock. The biota as ancient and modern modulator of the Earth's atmosphere. In **Influence of the Biosphere on the Atmosphere**. [Contributions to Current Research in Geophysics, vol. 5]. H. U. Dütsch, ed. Birkhäuser Verlag, Basel, Germany, pp. 239-243. (Reprinted from Pageoph, 1978.)

- 1979 Margulis, L., D. Chase and L. P. To. Possible evolutionary significance of spirochaetes. In **The Cell as a Habitat**. The Royal Society, London, United Kingdom, pp. 75-84. (Reprinted from **Proceedings of the Royal Society of London, Series B**, 1979).
- 1980 Lowenstam, H. A. and L. Margulis. Calcium regulation and the appearance of calcareous skeletons in the fossil record. In **The Mechanisms of Biomineralization in Animals and Plants: Proceedings of the third international biomineralization symposium**. M. Omori and N. Watabe, eds. Tokai University Press, Tokyo, Japan, pp. 289-300.
- Margulis, L. Phyla for bacteria. In **The Origins of Life and Evolution**. H. O. Halvorson and K. E. van Holde, eds. Alan R. Liss, New York, NY, pp. 87-95.
- Margulis, L. Symbiosis as parasexuality. In **Cellular Interactions in Symbiosis and Parasitism**. C. B. Cook, P. W. Pappas and E. D. Rudolph, eds. Ohio State University Press, Columbus, OH, pp. 263-273c.
- Thorington, G. and L. Margulis. Transmission of the algal and bacterial symbionts of green hydra through the host sexual cycle. In **Endocytobiology: Endosymbiosis and cell biology, a synthesis of recent research**. W. Schwemmler and H. E. A. Schenk, eds. De Gruyter, Berlin, Germany, pp. 175-222.
- 1981 Margulis, L. and J. E. Lovelock. Atmospheres and evolution. In **Life in the Universe**. J. Billingham, ed. MIT Press, Cambridge, MA, pp. 79-100.
- Margulis, L., L. P. To and D. G. Chase. The genera *Pillotina*, *Hollandina* and *Diplocalyx*. In **The Prokaryotes: A handbook on habitats, isolation and identification of bacteria**. M. P. Starr, H. Stolp, H. G. Trüper, A. Balows and H. G. Schlegel, eds. Springer-Verlag, Berlin, Germany, pp. 548-554.
- 1982 Brock, T. D., P. J. Cook, H. P. Eugster, A. M. Goodwin, H. L. James, L. Margulis, K. H. Nealson, J. O. Nriagu, A. F. Trendall and M. R. Walter. Sedimentary iron deposits, evaporites and phosphorites: State of the art report. In **Mineral Deposits and the Evolution of the Biosphere**. H. D. Holland and M. Schidlowski, eds. Springer-Verlag, Berlin, Germany, pp. 259-273.
- Grosovsky, B. D. D. and L. Margulis. Termite microbial communities. In **Experimental Microbial Ecology**. R. G. Burns and J. H. Slater, eds. Blackwell Scientific Publications, Oxford, United Kingdom, pp. 519-532.
- Margulis, L. The biological point of view: The effect of life on the planet. In **Formation of Planetary Systems**. A. Brahic, ed. Cepadues, Toulouse, France, pp. 891-893.
- Margulis, L. Chemistry and evolution: Kingdoms and phyla. In **Biochemical Aspects of Evolutionary Biology**. M. H. Nitecki, ed. University of Chicago Press, Chicago, IL, pp. 9-27.
- Margulis, L. Microtubules in microorganisms and the origins of sex. In **Microtubules in Microorganisms**. P. Cappucinelli and N. R. Morris, eds. Marcel Dekker, New York, NY, pp. 341-349.
- 1983 Margulis, L. and J. Stolz. Microbial systematics and a Gaian view of the sediments. In **Biomineralization and Biological Metal Accumulation: Biological and geological perspectives**. P. Westbroek and E. W. de Jong, eds. Reidel, Dordrecht, The Netherlands, pp. 27-53.
- 1984 Margulis, L. Foreword. In **Genesis on Planet Earth: The search for life's beginning**, 2nd edition. W. Day. Yale University Press, New Haven, CT, pp. XV-XVI.
- Margulis, L. Origen de la célula eucariótica. In **Darwin a Barcelona**. G. de Puytorac and J. Grain, eds. Promociones Publicaciones Universitarias, Barcelona, Spain, pp. 173-186
- Sagan, D. and L. Margulis. Gaia and philosophy. In **On Nature**. L. S. Rouner, ed. University of Notre Dame Press, Notre Dame, IN, pp. 60-75.
- 1985 Margulis, L. and D. Sagan. The real deficit: Our debt to the biosphere. In **The Biosphere Catalogue**. T. P. Snyder, ed. Synergetic Press, London, United Kingdom, pp. 1-3.
- Margulis, L., D. Sagan and L. Olendzenski. 1985. What is sex? In **The Origin and Evolution of Sex**. H. O. Halvorson and A. Monroy, eds. Alan R. Liss, New York, NY, pp. 69-85.
- 1986 Margulis, L. Foreword. In **Symbiosis: An introduction to biological associations**. V. Ahmadjian and S. Paracer. University Press of New United Kingdom, Hanover, NH, pp. IX-X.
- 1987 Margulis, L. Early life: The microbes have priority. In **Gaia: A way of knowing. political implications of the new biology**. W. I. Thompson, ed. Lindisfarne Press, Great Barrington, MA, pp. 98-109.
- Margulis, L. Foreword. In **The Universe and Life: Origins and evolution**. G. S. Kutter. Jones and Bartlett, Boston, MA, pp. VII-IX.

- 1988 Margulis, L. The ancient microcosm of planet Earth. In **origins and extinctions**. D. E. Osterbrock and P. H. Raven, eds. Yale University Press, New Haven, CT, pp. 83-107. (Paperback, Yale University Press, New Haven, 1992).
- Margulis, L. Intimate evolution of a nature lover. In **Gifted Young in Science: Potential through performance**. P.F. Brandwein and A.H. Passow, eds. National Science Teachers Association, Washington, DC. pp. 367-369.
- Margulis, L. Jim Lovelock's Gaia. In **Gaia, the Thesis, the Mechanisms and the Implications**. P. Bunyard and E. Goldsmith, eds. Wadebridge Ecological Centre, Cornwall, United Kingdom, pp. 50-65.
- Margulis, L. Speculation on speculation. In **The Reality Club 1**. J. Brockman, ed. Lynx Books, New York, NY, pp. 39-50.
- Margulis, L. Systematics: The view from the origin and early evolution of life. Secession of the Protocista from the animal and plant kingdoms. In **Prospects in Systematics**. D. L. Hawksworth, ed. Clarendon Press, Oxford, United Kingdom, pp. 430-443.
- Margulis, L. and D. Bermudes. Symbiosis and evolution: A brief guide to recent literature. In **Cell-to-Cell Signals in Plant, Animal and Microbial Symbiosis**. S. Scannerini, D. C. Smith, P. Bonfante-Fasolo and V. Gianinazzi-Pearson, eds. Springer-Verlag, Berlin, Germany, pp. 159-165.
- Margulis, L. and D. Sagan. Sex: The cannibalistic legacy of primordial androgynes. In **The Evolution of Sex**. R. Bellig and G. Stevens, eds. [Nobel Conference XXIII]. Harper & Row, San Francisco, CA, pp. 23-40.
- Sagan, D. and L. Margulis. Gaia and biospheres. In **Gaia, the Thesis, the Mechanisms and the Implications**. P. Bunyard and E. Goldsmith, eds. Wadebridge Ecological Centre, Cornwall, United Kingdom, pp. 237-242.
- 1989 Margulis, L. and R. Guerrero. From planetary atmospheres to microbial communities: A stroll through space and time. In **Changing the Global Environment: Perspectives on human involvement**. D. B. Botkin, M. F. Caswell, J. E. Estes and A. A. Orio, eds. Academic Press, Boston, MA, pp. 51-67.
- Margulis, L. and J. E. Lovelock. Gaia and geognosy. In **Global Ecology: Towards a science of the biosphere**. M.B. Rambler, L. Margulis and R. Fester, eds. Academic Press, Boston, MA, pp. 1-30.
- 1990 Margulis, L. Big trouble in biology: Physiological autopoiesis versus mechanistic neo-Darwinism. In **Doing Science: The reality club 2**. J. Brockman, ed. Prentice Hall, New York, NY, pp. 211-235.
- Margulis, L. Des procaryotes aux protistes eucaryotes. In **Journée Édouard Chatton**. Muséum d'Histoire Naturelle, Perpignan, France, pp. 13-16.
- Margulis, L. Speculation on speculation. In **Speculations: The reality club**. J. Brockman, ed. Prentice Hall, New York, pp. 157-167.
- Margulis, L. and R. Guerrero. From origins of life to evolution of microbial communities: A minimalist approach. In **Prebiological Self Organization of Matter**. C. Ponnampereuma and F. R. Eirich, eds. A. Deepak, Hampton, VA, pp. 261-278.
- Margulis, L., G. Hinkle and G. Tzertzinis. Symbiosis in the origin of eukaryotic cell motility: Current status. In **Endocytobiology IV**. P. Nardon, V. Gianinazzi-Pearson, A. M. Grenier, L. Margulis and D. C. Smith, eds. Institut National de la Recherche Agronomique, Paris, France, pp. 523-525.
- 1991 Margulis, L. Come nasce la vita. In **La Narrazione delle Origini: A cura di Irena Preta**. Gius. Laterza & Figli, Roma-Bari, Italy, pp. 30-36.
- Margulis, L. Gaia, a new look at the Earth's systems. In **Technology, Development and the Global Environment**. W. J. Makofske, H. Horowitz, E. F. Karlin and P. McConnell, eds. Institute for Environmental Studies, School of Theoretical and Applied Science, Ramapo College, Mahwah, NJ, pp. 299-305.
- Margulis, L. Symbiogenesis and symbiogenesis. In **Symbiosis as a Source of Evolutionary Innovation: Speciation and morphogenesis**. L. Margulis and R. Fester, eds. MIT Press, Cambridge, MA, pp. 1-14.
- Margulis, L. Symbiosis in evolution: Origins of cell motility. In **Evolution of Life: Fossils, molecules and culture**. S. Osawa and T. Honjo, eds. Springer-Verlag, Tokyo, Japan, pp. 305-324.
- Margulis, L. and R. Guerrero. Two plus three equal one: Individuals emerge from bacterial communities. In **Gaia 2. Emergence: The new science of becoming**. W. I. Thompson, ed. Lindisfarne Press, Hudson, NY, pp. 50-67.

Margulis, L. and G. Hinkle. The biota and Gaia: 150 years of support for environmental sciences. In **Scientists on Gaia**. S. H. Schneider and P. J. Boston, eds. MIT Press, Cambridge, MA, pp. 11-18.

Margulis, L. and D. Sagan. Microcosmos. In **From Gaia to Selfish Genes: Selected writings in the life Sciences**. C. Barlow, ed. MIT Press, Cambridge, MA, pp. 57-66.

Sagan, D. and L. Margulis. Epilogue: The uncut self. In **Organism and the Origins of Self**. [Boston Studies in the Philosophy of Science, vol. 129]. A. I. Tauber, ed. Kluwer Academic, Dordrecht, The Netherlands, pp. 361-374.

1992 Margulis, L. Spirochetes and the origin of undulipodia. In **Environmental Evolution: The effect of the origin and evolution of life on planet Earth**. L. Margulis and L. Olendzenski, eds. MIT Press, Cambridge, MA, pp. 177-203.

Margulis, L. Symbiosis theory: Cells as microbial communities **Environmental Evolution: The effect of the origin and evolution of life on planet Earth**. L. Margulis and L. Olendzenski, eds. MIT Press, Cambridge, MA, pp. 151-174.

Margulis, L. and G. Hinkle. Large symbiotic spirochetes: **Clevelandina, Cristispira, Diplocalyx, Hollandina** and **Pillotina**. In **The Prokaryotes. A Handbook on the Biology of Bacteria: Ecophysiology, isolation, identification, applications**, 2nd edition, vol. 4. A. Balows, H. G. Trüper, M. Dworkin, W. Harder and K.-H. Schleifer, eds. Springer-Verlag, New York, NY, pp. 3965-3978.

Margulis, L. and A. I. Tauber. Foreword. In **Larvae and Evolution: Toward a new zoology**. D. I. Williamson. Chapman and Hall, New York, NY, pp. IX-XIV.

Sagan, D. and L. Margulis. Bacterial bedfellows. In **Cooperation: Beyond the age of competition**. [The World Futures General Evolution Studies, vol. 4]. A. Combs, ed. Gordon and Breach, Philadelphia, pp. 121-125. (Reprinted from **Natural History**, 1987).

1993 Margulis, L., R. Guerrero and J.M. Camarasa. L'evolució del planeta Terra. pp. 27-33. La història de l'atmosfera i del clima, pp. 56-65. La història de la vida, pp. 74-79. In **Biosfera** vol. 1. **Planeta viu**. R. Folch, ed. Enciclopèdia Catalana, Barcelona, Spain.

Margulis, L. and D. Sagan. La vida, patrimoni de la Terra? In **Biosfera 1. Planeta viu**. R. Folch, ed. Enciclopèdia Catalana, Barcelona, Spain.

Margulis, L. and D. Sagan. Biodiversity: A matter of species survival. In **Developing Biological Literacy: A guide to developing secondary and post-secondary biology curricula**. BSCS, Riverside, CA, pp. 59-63.

Sagan, D. and L. Margulis. Gaia hypothesis. In **McGraw-Hill Yearbook of Science and Technology**. McGraw-Hill, New York, NY, pp. 155-156.

Margulis, L. Microbial communities as units of selection. In **Trends in microbial ecology**. Guerrero, R. and C. Pedrós-Alió, eds. [Proceedings of ISME-6] Spanish Society for Microbiology, Baelcelona, Spain, pp. 349-352.

Sagan, D. and L. Margulis. God, Gaia and biophilia. In **The Biophilia Hypothesis**, S. R. Kellert and E. O. Wilson, eds. Island Press, Washington DC. pp. 345-364.

Margulis, L., ed. **BioSystems: From Gaia to microcosm**. Elsevier Scientific Publishers Ireland Ltd. 248 pp.

1994 Margulis, L. Le parole sono grida di guerra: La simbiogenesi e il nuovo spazio per la biologia del mutualismo. In **Un'enciclopedia d'orientamento 59. Biologia Teorica**. Editoriale Jaca Book spa, Milano Italy, pp. 45-74.

Margulis, L. Thinking like an ecosystem. Bacteria. In: **Almanac of the Environment: The ecology of everyday life**. V. Harms. The National Audubon Society, pp. 18.

Margulis, L. and J. Cohen. Combinatorial generation of taxonomic diversity: Implication of symbiogenesis for the Proterozoic fossil record. In **Early Life on Earth. Nobel Symposium No. 84**. S. Bengtson, ed. Columbia University Press, New York, NY, pp. 327-333.

Margulis, L. and M. McMenamin. Symbiosis. In **Evolution Extended: Biological debates on the meaning of life**. C. Barlow, ed. The MIT Press, Cambridge, MA, pp. 102-110.

Margulis, L., R. Guerrero and D. Sagan. Els paisatges bacterians litorals. In **Biosfera** vol. 10. **Litorals i oceans**. R. Folch, ed. Enciclopèdia Catalana. Barcelona, Spain, pp. 333-340.

Sagan, D. and L. Margulis. Gaian views. In **Ecological Prospects: Scientific, religions and aesthetic perspectives**. C. K. Chapple, ed. SUNY Press, Albany, NY, pp. 3-9.

Margulis, L. Living by Gaia. In **Talking on the Water**, J. White. Sierra Club Books, San Francisco, pp. 57-77.

Margulis, L. Foreword. In **Hypersea**, M. McMenamin and D. McMenamin. Columbia University Press, pp. XIII-XIV.

- 1995 Margulis, L. and M. Dolan. Gaia: Cosmic beginnings, nonhuman ends. In **Cosmic Beginnings and Human Ends**. C. Matthews and R. Varghese, eds. Open Court, Chicago, IL, pp. 187-204.
- Sagan, D. and L. Margulis. Facing nature. In **Biology, Ethics and the Origins of Life**. H. Rolston, III, ed. Jones & Bartlett, Boston MA, pp. 39-62.
- Margulis, L. From kefir to death. In **How Things Are**. J. Brockman and K. Matson, eds. William Morrow & Co., New York, pp. 69-78.
- Reprinted 1999 in **EcotropicWorks**. J. Champion, ed. Ecotropic Works, pp. 94-99.
- Margulis, L. A pox called man. In **Science for the Earth**, T. Wakeford and M. Walters, eds. John Wiley & Sons, Ltd., United Kingdom, pp. 19-37.
- Margulis, L. and E. F. Karlin. Gaia, a new look at the Earth's surface. In **Technology and Global Environmental Issues**, W. J. Makofske and E. Karlin, eds. HarperCollins, New York, NY, pp. 336-352.
- Margulis, L. Gaia is a tough bitch. In **The Third Culture**. Brockman, J. Simon & Schuster, New York, NY, pp. 129-146.
- Margulis, L. Powerless protocists. What to do about standards for 30,000,000 non-human species of organisms? In **One Science-One World? Quality, technology and training for global communication**. Proceedings of IFSE-7, July 18-22, 1993.
- M. Balaban, G. de Gaetano and M. Romagnoli, eds. IFSE, S. Maria Imbaro, Chieti, Italy, pp. 141-150.
- Margulis, L. and M. McMenamin. Symbiosis. In **Orígenes de la vida. En el centenario de Aleksandr Ivanovich Oparin**. F. Morán, J. Peretó, A. Moreno, eds. Editorial Complutense, Madrid, Spain, pp. 215-224.
- Sagan, D. and L. Margulis. Life Sciences. Taxonomy. In **Encyclopedia of the Future**. S. Kurtz, ed. Macmillan Publishing Co., New York, NY, 2: 562-564.
- 1996 Margulis, L. Jim Lovelock's Gaia. In **Gaia in Action: Science of the living earth**, P. Bunyard, ed. Floris Books, Edinburgh, Scotland, pp. 54-64.
- Margulis, L., Guerrero, R. and P. Bunyard. We are all symbionts. In **Gaia in Action: Science of the living earth**, P. Bunyard, ed. Floris Books, Edinburgh, Scotland, pp. 167-185.
- 1998 Margulis, L. Foreword to English translation of **The Biosphere**, V. I. Vernadsky (1926). A Peter N. Nevraumont Book. Copernicus/Springer-Verlag, New York, NY, pp.14-19.
- Margulis, L. Papel de las bacterias en la simbiogénesis y la evolución. In **Libro de Resúmenes. Reunión científica de microbiología del medio acuático**. Girona, 29-31 de mayo, 1998. Universitat de Girona, Spain, pp.157-158.
- Margulis, L. Una revolución en la evolución. In **Discursos de investidura de doctor honoris causa de los profesores**. Universidad Autónoma de Madrid, Spain, pp. 65-83.
- Margulis, L., Sagan, D. and M. J. Chapman. Kingdom Bacteria. Kingdom Protocista. In **The Diversity of Living Organisms**. R. S. K. Barnes, ed. Blackwell Science Ltd. Oxford, United Kindom, pp. 3-28; 31-109.
- Margulis, L. Speculation on Speculation. In **Oxymoron: The arts and sciences annual**, vol. 2. Oxymoron Media, Inc., New York, NY, pp. 78-81.
- 1999 Sagan, D. and L. Margulis. Evolution, natural selection, pp. 241-243. Gaia hypothesis, pp. 268-269. In: **Encyclopedia of Environmental Science**. D. Alexander and R. W. Fairbridge, eds. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Margulis, L. From kefir to death. In **EcotropicWorks**. J. Champion, ed. pp. 94-99. Reprinted from **How Things Are**. J. Brockman and K. Matson, eds. William Morrow & Co., New York, NY, pp. 69-78.
- Margulis, L. and D. Sagan. Foreword. In **Cloning the Buddha: The moral impact of biotechnology**. R. Heinberg. Quest Books, Wheaton, IL.
- Margulis, L. and D. Sagan. Foreword. In **LifeWithout Light: A journey to earth's dark ecosystems**. M. Stewart. Franklin Watts, Division of Grolier Publishing, New York, NY, pp. 4.
- Margulis, L. Proof positive for wet mergers in the eternal takeover. In **Predictions. Thirty great minds on the future**. S. Griffiths, ed. Oxford University Press, United Kingdom, pp. 159-167.
- Margulis, L. The Evolution of Gaia: A Conversation with Lynn Margulis. In **Twilight of the Clockwork God**. J. D. Ebert. Council Oak Books, Tulsa, OK, pp. 68-87.
- Margulis, L. Foreword. In **The Spirit in the Gene: Humanity's proud illusion and the laws of nature**. R. Morrison. Cornell University Press, Ithaca, NY, pp. VII-X.
- 2000 Margulis, L. and 18 others. Foreword. In **Encyclopedia of the Biosphere**. Vol. 1. **Our Living Planet**. The Gale Group, Detroit, MI, pp. 7-8.
- Margulis, L. Microbial Minds. In **Forces of Change: A new view of nature**. The Smithsonian Institution and National Geographic, Washington, DC, pp. 128-129.

Margulis, L. Spirochetes. In: **Encyclopedia of Microbiology**. 2nd edition. J. Lederberg, ed. Academic Press, New York, NY, vol. 4: 353-363.

Margulis, L. Symbiosis and the origin of protists. In **Environmental Evolution: Effects of the origin and evolution of life on planet Earth**. 2nd edition. MIT Press, Cambridge, MA, pp. 141-157.

Margulis, L., Dolan, M. F. and R. Guerrero. The chimeric eukaryote: Origin of the nucleus from the karyomastigont in amitochondriate protists. In **Variation and Evolution in Plant and Microorganisms: Toward a new synthesis 50 years after Stebbins**. F. J. Ayala, W. M. Fitch and M. T. Clegg, eds. National Academy Press, Washington, DC. pp. 21-34.

2001 Margulis, L. The Conscious Cell. In **Cajal and Consciousness: Scientific approaches to consciousness on the centennial of Ramón y Cajal's *Textura***. P. C. Marijuan, ed. Annals of the New York Academy of Sciences, New York, NY, vol. 929: 55-71.

Margulis, L. Life from Scum. In **The Nature of Life: Readings in biology**. N. Carr, J. Couldson, M. Levine, G. Schoepfel, D. Whitfield and M. Stefanski, eds. The Great Books Foundation, Chicago, IL, pp. 263-281.

Margulis, L. Bacteria in the Origins of Species: Demise of the Neo-Darwinian Paradigm. In **A New Century of Biology**, W. J. Kress and G. W. Barrett, eds., Smithsonian Institution, Washington, DC, pp. 9-27 Translation: Japanese, Yuri Oiwa, Tsukiji-shokan Publishing Co. Ltd. Japan.

Margulis, L. Microbes in Evolution. In **Jahrbuch 2001 des Collegium Helveticum der ETH Zurich**. H. Nowotny, M. Weiss and K. Hänni, eds. Zurich, Switzerland. pp. 285-289.

Margulis, L. and D. Sagan. Foreword. In **The Nature of Life: Readings in biology**. N. Carr, J. Coulson, M. Levine, G. Schoepfel, D. Whitfield and M. Stefanski, eds. The Great Books Foundation, Chicago, IL. pp. xi-xvi.

Margulis, L. and D. Sagan. Endosymbiosis. In **Plant Sciences**. Macmillan Reference USA. R. Robinson, ed. Gale Group, Farmington Hills, MI. pp. 111-113.

Sagan, D. and L. Margulis. Eukaryotes, Origin of. In **Encyclopedia of Biodiversity**, vol. 1. Academic Press, San Diego, CA, 2: 623-633.

2002 Sagan, D. and L. Margulis. Gaia and the Ethical Abyss: A Natural Ethic Is a Good Thing. In **The Good in Nature and Humanity: Connecting science, religion and spirituality with the natural world**. S. R. Kellert and T. J. Farnham, eds. Island Press. Washington, DC, pp. 91-101.

Margulis, L. Foreword. In **The Ice Chronicles**. P. Mayewski and F. White. University Press of New England, Hanover, NH. XV-XVIII.

Margulis, L. and D. Sagan, Five Kingdoms of Nature. In **Life on Earth: An encyclopedia of biodiversity, ecology and evolution**. Vol. 1, N. Eldredge, ed. ABC-CLIO, Inc., Santa Barbara, CA, pp. 357-361.

Margulis, L. and D. Sagan, Lichens. In **Life On Earth: An encyclopedia of biodiversity, ecology and evolution**. Vol. 2, N. Eldredge, ed. ABC-CLIO, Inc., Santa Barbara, CA, pp. 469-471.

Margulis, L. and D. Sagan. Microcosms. In **Human Experience I: Who am I?** O. E. Katter Jr., eds. Tapestry Press, Ltd. Acton, MA, pp. 47-53.

Margulis, L. and D. Sagan. Technology, life and evolution. In **MeQriMa CLEUP**. Editrice-Padava Italy, N. 4, Giugno, 140-147 pp. 71

Margulis, L. Foreword. In **Del Big Bang a Dolly (From the Big Bang to Dolly)**. C. Montúfar and G. Trueba, eds. University of San Francisco, Quito, Ecuador, pp. III-IV.

2003 Margulis, L. Foreword. In **The Origins of Larvae**. D. Williamson. Port Erin Marine Laboratory, University of Liverpool, Kluwer Academic Publishers, pp. IX-XIII.

Guerrero R. FLS and L. Margulis FLS. The Linnean Task: the documentation and preservation of the world's biological diversity. Chapter 32. In **Biological Collections and Biodiversity**. B. S. Rushton, P. Hackney and C. R. Tyrie eds. Westbury Publishing London, United Kingdom, pp. 287-298.

2004 Margulis, L. Introduction: Gaia by any other name. In **Scientists Debate Gaia: The next century**. S. H. Schneider, J. R. Miller, E. Crist and P. J. Boston, eds. MIT Press, Cambridge, MA, pp. 7-12.

Melnitsky, H., F. Rainey and L. Margulis. The karyomastigont model of eukaryosis. In **Microbial Phylogeny and Evolution: Concepts and controversies**. J. Sapp ed. Oxford University Press, NY, pp. 261-280.

Margulis, L. What is canopy biology? A microbial perspective. In **Forest Canopies** 2nd edition. M. D. Lowman, and H. B. Rinker, eds. Elsevier/Academic Press, San Diego, CA, pp. 143-150.

- Margulis, L. In **Face to Face: Mind, life and the universe** (Cara a cara: con la vida, la mente y el universo: conversaciones con los grandes científicos de nuestro tiempo). E. Punset. Planeta Publishers, Madrid, pp. 335-346.
- Margulis, L. Mixing it up. In **Curious Minds: How one becomes a scientist**. J. Brockman. Pantheon Books, NY, pp. 101-109.
- Margulis, L. "Mixing it up". In **When WeWere Kids: How a child becomes a scientist**. J. Brockman. Jonathan Cape Publishers, London, pp. 101-109.
- 2005** Margulis, L. Foreword In **Microbial Diversity: Form and function in prokaryotes**. O. Ogunseitan. Blackwell Science Ltd., Oxford, United Kingdom, pp. IX-XI.
- 2004** Margulis, L. Introduction: Gaia by any other name. In **Scientists Debate Gaia: The next century**. S. H. Schneider, J. R. Miller, E. Crist and P. J. Boston, eds. MIT Press, Cambridge, MA, pp. 7-12.
- Melnitsky, H., F. Rainey and L. Margulis. The karyomastigont model of eukaryosis. In **Microbial Phylogeny and Evolution: Concepts and controversies**. J. Sapp ed. Oxford University Press, NY, pp. 261-280.
- Margulis, L. What is canopy biology? A microbial perspective. In **Forest Canopies** 2nd edition. M. D. Lowman, and H.B. Rinker, eds. **Elsevier/Academic Press**, San Diego, CA, pp. 143-150.
- Margulis, L. In **Face to Face: Mind, life and the universe** (Cara a cara: con la vida, la mente y el universo: conversaciones con los grandes científicos de nuestro tiempo). E. Punset. Planeta Publishers, Madrid, pp. 335-346.
- Margulis, L. Mixing it up. In **Curious Minds: How one becomes a scientist**. J. Brockman. Pantheon Books, NY, pp. 101-109.
- Margulis, L. "Mixing it up". In **When WeWere Kids: How a child becomes a scientist**. J. Brockman. Jonathan Cape Publishers, London, pp. 101-109.
- 2005** Margulis, L. Foreword In **Microbial Diversity: Form and function in prokaryotes**. O. Ogunseitan. Blackwell Science Ltd., Oxford, United Kingdom, pp. IX-XI.
- Chapters and Forewords in preparation or press Margulis, L. and D. Sagan. What if your great-great grandfather were green? In **What if?** John Michel, eds.
- Margulis, L. Foreword In **The Center of a Universe**. M. Ogle. Margulis, L. Foreword. In **Buddha's Way in Darwin's World: Meditation in nature**. C. Fisher. Open Court Publishers, Chicago. IL.

TECHNICAL LETTERS, MEETING REPORTS AND EDITORIALS

- 1968** Margulis, L. Visible light: Mutagen or killer? **Science** 160: 1255.
- 1971** Margulis, L. Origin of life. [Meeting report, International Society of the Origin of Life, April 1970, Pont-à-Mousson, France]. **BioScience** 21: 489-490.
- 1972** Propst, S., S. Banerjee, J. K. Kelleher and L. Margulis. Inhibition of cilia regeneration by antineoplastic agents: Delay of band migration by vinblastine (NSC-49842), griseofulvin (NSC-34533) and b-peltatin (NSC-24819). **Cancer Chemotherapy Reports Part 1** 56: 557-558.
- 1974** Barghoorn, E. S., J. H. Troughton and L. Margulis. Dating the beginnings of photosynthesis. [Letter to the editor]. **American Scientist** 62: 389.
- 1975** Margulis, L. and F. J. R. Taylor. Symposium on the evolution of mitosis in eukaryotic microorganisms. **BioSystems** 7: 295-297.
- 1976** Margulis, L. The early Earth. [Meeting report, Second College Park Symposium, Oct. 29-Nov. 1, 1975, University of Maryland]. **Nature** 259: 175-176.
- Rambler, M. and L. Margulis. Comment on Egami's concept of the evolution of nitrate respiration. **Origins of Life** 7: 73-74.
- 1979** Dastoor, M. N., L. Margulis and K. H. Nealson, eds. **Interaction of the Biota with the Atmosphere and Sediments**. [Final report, NASAWorkshop on Global Ecology, October 18-20, 1979, Washington, DC.]. NASA, Washington, DC. XI + 147 pp.
- 1980** Margulis, L., J. F. Danielli and L. Wolpert. Short articles on unsolved problems. [Editorial]. **Journal of Theoretical Biology** 85: 1-2.
- Margulis, L., K. H. Nealson and G. Tomlinson, eds. **Planetary Biology and Microbial Ecology: Summer program research report**. NASA Life Sciences, Washington, DC. 203 pp.
- Watson, A. J., J. E. Lovelock and L. Margulis. Discussion: What controls atmospheric oxygen? [Letter to the editor]. **BioSystems** 12: 123-125.

1983 Giusto, J. P. and L. Margulis. Karyotypic fissioning. [Two letters to the editor]. **BioSystems** 16: 169-170, 171-172.

Margulis, L., K. H. Nealson and I. Taylor, eds. **Planetary Biology and Microbial Ecology: Biochemistry of carbon and early life**. [NASA Technical Memorandum 86043; summer program research report, 1982]. NASA, Scientific and Technical Information Branch, [Washington, DC.], XL + 135 pp.

Thiemann, W. and L. Margulis. Seventh International Conference on the Origins of Life and the fourth meeting of ISSOL. [Mainz]. **ISSOL** 11: 2.

1984 Margulis, L. Catalunya. **ISSOL** 12: 4-6.

Margulis, L. U. Autónoma Mexico. **ISSOL** 12: 4.

Margulis, L. and B. D. Dyer. Meeting report: 5th International Meeting International Society for Evolutionary Protistology [Jun 4-6, 1983, Banyuls-sur-Mer, France]. **BioSystems** 16: 365-368.

Margulis, L., M.-O. Soyer-Gobillard and J. Corliss, eds. **Evolutionary Protistology: The organism as cell**. [Proceedings of the 5th Meeting of the International Society for Evolutionary Protistology, June 1983, Banyuls-sur-Mer, France]. Reidel, Dordrecht, xii + pp. 169-352. [Reprinted from **Origins of Life** vol. 13, nos. 3-4, 1984, pp. 169-352].

1985 Margulis, L. Undulipodiated cells. **BioScience** 35: 333.

Margulis, L. and D. Sagan, eds. **The Global Sulfur Cycle**. [NASA Technical Memorandum 87570; summer program research report, 1984; coordinated publication effort]. NASA, Scientific and Technical Information Branch, XLII + 262 pp.

1986 Margulis, L. From ecology to geognosy. [Letter to the editor]. **Ecologist** 16: 52-53.

Sagan, D., H. I. McKhann, M. Dolan and L. Margulis. **The Internship Experience: NASA planetary biology internship program 1980-1986**. NASA Life Sciences, Washington, DC, VIII + 170 pp.

1987 Margulis, L., R. Guerrero and I. Esteve. Session on early biochemical and cellular evolution. **ISSOL** 15: 7-8.

1989 Hinkle, G. and L. Margulis. Non-Mendelian genetic systems. [Meeting report: 16th International Genetics Congress, Toronto]. **Genome** 31: 486-487.

Margulis, L. and K. H. Nealson. Symbiosis as the source of evolutionary innovation: Thoughts before the Bellagio-Conference. **Endocytobiosis and Cell Research** 6: 235-239.

1990 Margulis, L. Heat exchange. **The Sciences** 30: 4-5.

Margulis, L. Kingdom come. [Letter to the editor]. **New Scientist** 127: 65.

1991 Margulis, L. Evolution of eukaryotes. [Letter to the editor re: "Giardia: A missing link between prokaryotes and eukaryotes", K. S. Kabnick and D. A. Peattie]. **American Scientist** 79: 187-188.

Margulis, L. Lynn Margulis replies. [to Peter Satir's letter "Mystery guest"]. **The Sciences** 31: 7.

Margulis, L. and R. Fester. Bellagio conference and book **Symbiosis as a Source of Evolutionary Innovation: Speciation and morphogenesis**. **Symbiosis** 11: 93-101.

1992 Margulis, L. Protoctists and polyphyly: comment on "The number of symbiotic...by T. Cavalier-Smith". **BioSystems** 28: 107-108.

Dolan, M., L. Olendzenski, L. Margulis, D. Sagan and S. Hiebert, eds. **The Internship Experience: NASA planetary biology internship program 1986-1992**. NASA Life Sciences, Washington, DC, IV + 143 pp.

1993 Margulis, L. Gaia in **Science**. [Letter to the Editor]. **Science** 259: 745.

Margulis, L. Letter to the editor. **The Skeptical Inquirer** 17: 334.

Margulis, L. The power of misrepresentation. [Letter to the Editor]. **Whole Earth Review** 78: 123.

Margulis, L. Letter to the editor. **Sierra** July/August 32.

Margulis, L. The powerful protoctists. [Letter to "Advice and Dissent"]. **The Journal of NIH Research**. 5: 14,16.

Margulis, L. and G. E. Fox. Early biological evolution. [Report on ISSOL '93 session S5] **The Newsletter of ISSOL** 20: 17-19.

1997 Margulis, L. and M. Dolan. Reply to "Our Symbiotic Origins?" [Letter to the Editor] **The Sciences**. Jul/Aug 47.

1998 Margulis, L. and M. Dolan. Not all symbioses are microbial: Newfoundland's whales and fossils. Trinity Bay, Newfoundland, Canada [July 11-15, 1997] Meeting report. **Symbiosis** 24: 173-178.

1999 Margulis, L. and M. Dolan. Did centrioles and kinetosomes evolve from bacterial symbionts? Report of the Henneguy-Lenhosse theory meeting. **Symbiosis** 26: 199-204

2000 Benson, J., Dolan, M. F. and Margulis, L. eds. **The Internship Experience: NASA planetary biology internship program 1993-2000.**

Margulis, L., Dolan, M. F. and R. Guerrero. The chimeric eukaryote: Origin of the nucleus from the karyomastigont in an amitochondriate protists. In: Colloquium on Variation and Evolution in Plants and Microorganisms: Towards a New Synthesis: 50 Years after Stebbins, F.J. Ayala, W.M. Fitch and M.I. Clegg, eds. **Proceeding of the National Academy of Sciences** 97: 6954-6959.

Margulis, L. and R. Guerrero. Towards a unified microbiology. **Forum Microbiologicum.** Spr/Sum., pp. 4-5.

NON-TECHNICAL PUBLICATIONS

1962 Sagan, L. Notes on the revolution in biology today. **Graduate Journal (University of California)** 1: 3-9.

1963 Sagan, L. The dilemma in popularization. **Graduate Journal (University of California)** 2: 57-60.

1964 Sagan, L. Communications: An open letter to Mr. Joe K. Adams. **Psychedelic Review** 1: 354-356.

1966 Sagan, L. Growing your own changes. **Nature and Science** 3: 6-7.

Sagan, L. Quick counting. **Nature and Science** 4: 10-11.

1968 Margulis, L. Why I am not a humanistic Jew. **Humanistic Judaism** 1: 23-24.

1971 Margulis, L. The origin of plant and animal cells. **American Scientist** 59: 230-235.

1975 Margulis, L. and J. E. Lovelock. The atmosphere as circulatory system of the biosphere – The Gaia hypothesis. **CoEvolution Quarterly** No. 6: 30-40.

1976 Ballester, A., E. S. Barghoorn, D. B. Botkin, J. Lovelock, 76

R. Margalef, L. Margulis, J. Oró, R. Schweickart, D. Smith, T. Swain, J. Todd, N. Todd and G. M. Woodwell. Ecological considerations for space colonies. **CoEvolution Quarterly** Winter: 96-97.

Margulis, L. Is balance really possible where even gravity is manufactured? Comments on O'Neill's space colonies. **CoEvolution Quarterly**: 9: 7.

Margulis, L. and J. E. Lovelock. Is Mars a spaceship, too? **Natural History** 85: 86-90.

1977 Margulis, L. Life on the early Earth. **Engineering and Science Magazine** 40: 13-19.

Margulis, L. Peer review attacked. [Letter to the editor]. **The Sciences** 17: 5, 31.

Margulis, L. Strange ancestral relations. **Cosmos** 1: 41-45.

Margulis, L. and J. E. Lovelock. Planet Earth is our only hope. **Geographical Magazine** 49: 473-478.

Margulis, L. and J. E. Lovelock. The view from Mars and Venus. **The Sciences** 17: 10-13.

Rambler, M. B., L. Margulis, J. Schaadt and G. P. Fulton. Use of the interactive lecture system in the teaching of microbiology. **ASM News** 43: 270.

1980 Lindegren, C. L. and L. Margulis. Dogma & iconoclasm in biology: The gene is not enough. **CoEvolution Quarterly** No. 26: 60-68.

Margulis, L. After Viking: Life on Earth. **The Sciences** 20: 24-26.

Margulis, L. and J. E. Lovelock. L'atmosphère est-elle le système circulatoire de la biosphère? L'hypothèse Gaïa. **CoEvolution (Paris)** 1: 20-31.

1981 Hammond, A. and L. Margulis. Creationism as science: Farewell to Newton, Einstein, Darwin. **Science** 81: 55-57.

Margulis, L. Gaia lives, has blurred boundaries. **CoEvolution Quarterly** Spring, pp. 63-65.

Margulis, L. How many kingdoms? Current views of biological classification. **American Biology Teacher** 43: 482-489.

Margulis, L. La Terre, île de vie. **CoEvolution (Paris)** 5: 31-33.

1982 Margulis, L. Symbiosis and the evolution of the cell. In **1982 Yearbook of Science and the Future**. Encyclopedia Britannica Yearbooks, Chicago, pp. 104-121.

Margulis, L. L'agenda de la vie. **CoEvolution (Paris)** 7: 3.

1983 Kaveski, S. and L. Margulis. The "sudden explosion" of animal fossils about 600 million years ago: Why? **American Biology Teacher** 45: 76-82.

Kaveski, S., L. Margulis and D. C. Mehos. There's no such thing as a one-celled plant or animal. **Science Teacher** 50: 34-36, 41-43.

Margulis, L. Naissance de la naissance. **CoEvolution (Paris)** 12: 59-63.

Margulis, L. and J. E. Lovelock. Le petit monde des pâquerettes: Un modèle quantitatif de Gaïa. **CoEvolution (Paris)** 11: 48-52.

- 1984 López Cortés, A., L. Margulis and J. Stolz. Las comunidades microbianas estratificadas de Baja California Norte. **Ciencia y Desarrollo** 59: 45-52.
- Margulis, L. and T. H. Kunz. Glimpses of biological research and education in Cuba. **BioScience** 34: 634-639.
- 1985 Margulis, L. Gaia minus man. [Letter to the editor]. **Outside** 10: 8.
- Margulis, L. and D. Sagan. El origen de las células eucariontes. **Mundo Científico** 46: 366-374.
- Margulis, L. and D. Sagan. L'origine des cellules eucaryotes. **La Recherche** 163: 200-208.
- Sagan, D. and L. Margulis. The riddle of sex. **Science Teacher** 52: 16-22.
- Stolz, J. F. and L. Margulis. Obituary: Professor Elso Sterrenberg Barghoorn, 1915-1984. **Precambrian Research** 27: 401-402.
- 1986 Margulis, L. and D. Sagan. Strange fruit on the tree of life. **The Sciences** 26: 38-45.
- 1987 Margulis, L. Scientists decry a slick new packaging of creationism. [W. J. Bennetta, ed.] **Science Teacher** 54: 36-43.
- Margulis, L. The way of all neurons. [Letter to the editor]. **The Sciences** 27: 11.
- Margulis, L. and D. Sagan. Microcosmos: The universe within us reveals evolution's secrets. **Bostonia** 61: 55-58.
- Sagan, D. and L. Margulis. Bacterial bedfellows. **Natural History** 96: 26-33.
- Sagan, D. and L. Margulis. Cannibal's relief: The origins of sex. **New Scientist** 115: 36-40.
- Sagan, D. and L. Margulis. Gaia and the evolution of machines. **Whole Earth Review** 55: 15-21.
- 1988 Margulis, L. Intimate evolution of a nature lover. In **Gifted Young in Science: Potential through performance**. P. F. Brandwein and A. H. Passow, eds. National Science Teachers Association, Washington, DC, pp. 367-369.
- Margulis, L. Letter on **The Health of Nations**. **New York Times Book Review** January 10: 35.
- Margulis, L. Lynn Margulis. **Whole Earth Review** 61 (20th Anniversary Issue) 86.
- Margulis, L. Seventy-five reasons to become a scientist. [Reason 61]. **American Scientist** 76: 461.
- Sagan, D. and L. Margulis. Biological perspectives: An overview. In **Theme and Variations: The impact of great ideas**. L. Behrens and L. J. Rosen, eds. Scott, Foresman, Glenview, IL. pp. 825-832.
- 1989 Margulis, L. Gaia: The living Earth. An Elmwood dialogue with Lynn Margulis and Fritjof Capra. **Elmwood Newsletter** 5: 1, 8-9.
- 1990 Margulis, L. [Letter to the editor]. **CreativeWoman** 10: 34.
- Margulis, L. Lynn Margulis. Confessions of a nature lover. In **Minds for History Directory**. Minds for History Institute at Arcosanti, Mayer, AZ, pp. 38-47.
- Margulis, L. and M. McMenamin. Marriage of convenience: The motility of the modern cell may reflect an ancient symbiotic union. **The Sciences** 30: 31-37.
- Margulis, L. and D. Sagan. Water and Gaia. **Annals of Earth** 8: 24-25
- 1991 Margulis, L. Lynn Margulis on Gaia and garbage. **Gaian Science** May-July, pp. 11-12.
- Margulis, L. Students will learn by doing. **Science Scope** 14: 16.
- Margulis, L. and D. Sagan. Life after competition. **Best of Edges** 4: 26-27.
- Sagan, D. and L. Margulis. Gaia: A "good four-letter word". **Gaia Magazine** 3: 4-6.
- 1992 Margulis, L. Rethinking life on Earth. The parts: Power to the protoctists. **Earthwatch** 11: 25-29.
- Margulis, L. La sonrisa del gato. Mitosis y movilidad celular: Un mismo origen simbiótico. **Ciencias** 27: 11-16.
- Margulis, L. (with M. Domínguez and J. Pereté). La terra: un planeta rodó. **El Temps** IX 398: 62-64.
- 1993 Margulis, L. The red shoe dilemma. In: **A Hand Up: Women mentoring women in science**. DC. Fort, ed. The Association for Women in Science, Washington, DC, pp. 160-163.
- Cole, C. with L. Margulis and D. Sagan. Microbial microcosm. **In Context** 34: 18-20.
- Haglund, K. with L. Margulis. The landmark interviews. Come the evolution. **The Journal of NIH Research** 5: 65-72.
- Margulis, L. The inheritance of acquired microbes. **Current Contents/Citation Classic**. Institute for Scientific Information. 24: 8-9.
- Margulis, L. and D. Sagan. I progenitori a sessuati. **SFERA** 37: 20-23.
- Margulis, L. Under high pressure. **Science** 259: 745.
- 1994 Margulis, L. Essay: Sex, death and kefir. **Scientific American** 271: 2: 96.
- 1995 Margulis, L. and L. Olendzenski. In Memoriam: Kenneth Estep (1952-1995). **Journal of Eukaryotic Microbiology** 42: 652-654

1996 Margulis, L. NASA's Life Science. **Science** 271: 431.

Margulis, L. René Descartes y la negación de la presencia vital. **Quark** 3: 13-21.

Margulis, L. The next 35 years of microbiology. In: A billion seconds of the sciences fin-de siècle perspectives on science ± 35 years. **The Sciences** 36: 6,7,9,11,12,16.

Margulis, L. Putting science first: Memories of family science experiences. **Science and Children**, October, 34: 29-30.

Cáceres, J. and L. Margulis. Entrevista. Lynn Margulis: "No destruirem el planeta, però sí que podem destruir-nos a nosaltres mateixos". **El Temps Ambiental**. March, pp. 7-9.

Sagan, D. and L. Margulis. Life Sciences. In: **Encyclopedia of the Future**. G. T. Kurian and G. T. T. Molitor, eds. Simon & Schuster Macmillan, New York, 2: 562-564.

1997 Margulis, L. and M. Dolan. Swimming against the current. **The Sciences** 37: 20-25.

Margulis, L. and D. Sagan. Stamps and small steps: The origins of life and our cells. **Netview. Global Business Network News** 8: 1-6.

1998 Margulis, L. Science and faith. [Letter to the editor] **Mother Jones** Jan/Feb, pp. 10-11.

Margulis, L. Collecting, classifying, naming, knowing: The tasks of Tring. **Special Section, The NaturalWorld. The New York Times**, June 2, pp. 4.

Margulis, L. Dear Susan B. In: A woman's worth: 1857 letter echoes still. P. Cohen. **Arts & Ideas. New York Times**. July 18, pp. 15, 17.

Margulis, L. and M. Chapman. Gaia & biospheres. **The Columbia Earth Institute: Earth matters** Spring, p. 7, 24.

Guerrero, R. and L. Margulis. Stone soup. **The Sciences** 38: 34-38. Sagan, D. and L. Margulis. Academic apartheid and the universal university. **Netview. Global Business Network News** 9: 23-26.

Margulis, L. Life on Earth doesn't need us. **The Independent**, Sept. 2, Comment/5.

Sagan, D. and L. Margulis. Academic apartheid and the universal university. **UNESCO Nature & Resources** 34: 4-6. (English, French and Spanish) Margulis, L. Another four-letter word: Gaia. **Whole Earth Magazine** Winter: 49-50.

Margulis, L. Una revolución en la evolución. In: Discurso de investidura como doctor "honoris causa". **Universidad Autónoma de Madrid**.

1999 Margulis, L. and M. Dolan. [Letter to the editor] What's going on at Temple University? **Skeptical Inquirer**. Jan/Feb. pp. 66.

Margulis, L. and L. Brynes. Hard testimony: Teaching past environments with fossil foraminifera. **UNESCO Nature & Resources** 35: 4-17 (English, French and Spanish).

Margulis, L. and L. Brynes. Rock not always a hard place. Manufacturing minerals is a life process. **Whole Earth Review**. Fall: 68-71.

Margulis, L. Forced to choose. **American Scientist**. Nov-Dec. 87: 545-547.

Margulis, L. This view of Stephen Jay Gould. **Natural History**. 108: 52-53.

Kittredge, J., Margulis, L. and D. Sagan. Bacteria in perspective. Five kinds of life. **The Natural Farmer**. Winter: 10-11.

Margulis, L. and A. Wier. Leidy's termites and his other backyard bugs. **Conference Proceedings. Invertebrates in Captivity Conference '99. Sonoran Arthropod Institute**, pp. 1-9.

Margulis, L. and D. Sagan. Second nature. Welcome to the machine. **UMASS Magazine** 4: 24-29.

2000 Guerrero, R., L. Margulis and M. Dolan. Inventory the microcosmos! **Whole Earth Review**. Fall: 14-17.

Margulis, L. and D. Sagan. The microcosm. **Wild Earth**. Fall 2000: 12-16.

Margulis, L. and R. Guerrero. Towards a Unified Microbiology. **Forum Microbiologicum**. Spring/Summer 2000: 4-5, Capetown, South Africa.

2001 Margulis, L. and D. Sagan. Marvellous microbes. **Resurgence**. May/June 206: 10-12.

Margulis, L. and J. Rummel. Life in NASA and the rest of the universe: New scientific opportunities. **BioScience** 51: 317.

Margulis, L. and D. Sagan. The beast with five genomes. **Natural History Magazine**. June 2001, pp. 38-41.

Margulis, L. and K. V. Schwartz. Systematics and the kingdoms of life. Excerpted by Richard Schrock from *Five Kingdoms: An Illustrated Guide to the Phyla of Life on Earth*, 3rd ed. **Kansas Biology Teacher** 10: 10-13.

Margulis, L. La resistencia del planeta. **La Vanguardia**. June 10, p. 32.

Margulis, L. What is canopy biology? A microbial perspective. Canopy Forum, H.B. Rinker, ed. **Selbyana** 22: 232-238.

Margulis, L. Origen de las especies por la herencia de microorganismos adquiridos. **Ibérica: Actualidad tecnológica**. 446: 516-517.

2002 Margulis, L., D. Sagan and J. H. Whiteside. From cells to cities. **Alexander von Humboldt Kosmos** 79: 23-24.

2003 Gunnard, J., Wier, A., Margulis, L. Mycological maestros: In the Ecuadoran rainforest, a "missing link" to the evolution of termite agriculture? **Natural History** 5: 22-26, 74.

Margulis, L. Biology's Renaissance Man, quote in **The Scientist** 17: 14, 18.

2004 Margulis, L. On Syphilis and Nietzsche's Madness: Spirochetes awake! **Daedalus** by the American Academy of Arts and Sciences, Fall: 118-125.

Margulis, L. The problem of life. **Project Syndicate** (in press). Margulis, L. Mixing It Up: How I became a scientist. **Natural History** 113: 80.

Margulis, L. Serial Endosymbiotic Theory (SET) and Composite Individuality: Transition from bacterial to eukaryote genomes. **Microbiology Today**, UK. 31: 172-174.

2005 Margulis, L. and B. P. Eldridge. What a Revelation any science is!: 100 year anniversary of Howard T. Ricketts discovery of arthropodborne pathogens. **ASM News** 71: 65-70.

Margulis, L. Ernst Mayr Obituary. **Metode** publication of the University of Valencia, Burjassot, Spain (in press). Margulis, L. Ernst Mayr, Biologist Extraordinaire. **American Scientist**. May-June.

Non-technical publications in preparation or press Margulis, L. and M. F. Dolan. From microbial transformation to mental titillation: Aspects of the spirochete hypothesis.

Margulis, L. and D. Sagan. Classification of living things and the Five Kingdom system. **Lincoln Library of Essential Information** 44th edition Cleveland, OH.

Sagan, D. and L. Margulis. Candidiasis, viruses and the origins of clowns. **Daedalus**.

POETRY

2003 Margulis, L. and R. Guerrero. Translation of La casada infiel (The unfaithful wife) by Federico García Lorca. **The Massachusetts Review**, Amherst MA, p. 505.

FILMS (16 mm)

1973 *Stentor coeruleus*: **Oral Membranellar Band Regeneration**. With S. Banerjee and J. G. Schaadt. Boston University. 12 min. Color.

1976 **Hindgut Flagellates from *Coptotermes formosanus* (Hawaii)**. With J. G. Schaadt and L. To. Boston University. 6 min. Color and black & white.

Spirochetes. With J. G. Schaadt. Boston University. 8 min. Color and black & white.

1977 **Microbes from *Pterotermes occidentis***. With A. T. W. Cheung. California Institute of Technology. 10 min. Black & white, high-speed.

1978 **Microtubules and Termite Hindgut Spirochetes**. With L. To and D. Chase. American Society of Cell Biology, Nov. 4-8, San Antonio, TX. (Abstract in **Journal of Cell Biology**). 10 min. Color.

***Pterotermes occidentis*: A DryWood Termite and its Microbiota**. With J. G. Schaadt and L. To. 12 min. Color.

1981 **Undulipodia and Spirochetes**. 6 min. Black & white. **1985** **Cell Motility**. With L. Olendzenski and J. G. Schaadt. 11 min. Color and black & white .

Miles to Microns. With J. Stolz, J. G. Schaadt and L. Olendzenski. 12 min. Color.

1987 **Miles to Microns**. Short version, with L. Olendzenski. 5 min. Color.

1989 **Bacterial Virtuositities**. With L. Olendzenski.

VIDEOS

1982 Margulis, L. and K. McSchefferey. **Five Kingdoms of Life**. Boston University. 33 min.

1985 Margulis, L. and R. L. Bondurant. **The Gaia Hypothesis**. NASA Lewis Research Center, Cleveland. Distributed by NASA CORE, Oberlin, OH. 57 min.

1986 Margulis, L., L. Olendzenski, J. G. Schaadt and G. R. Fleischaker. **Cell Motility**. 14 min.

1991 Margulis, L. and L. Olendzenski. **Life Histories of Common Fungi**. Distributed by Ward's Natural Science Establishment.

Margulis, L. and L. Olendzenski. **Dreaming the Dream: A Voyage with the Resource Institute Aboard "Crusader" (Southeast Alaska)**. Resource Institute. 10 min.

1992 Margulis, L. and L. Olendzenski. **MicrobialMat Spirochetes**. 10 min.

Margulis, L. and L. Olendzenski. **Microbial Mat Amoebae**. 12 min.

Margulis, L. and L. Olendzenski. **Arthromitus**. 8 min.

1993 Margulis, L. and L. Olendzenski. **Our Living Planet Earth Video Series. Part I: Origins of Life. Part II: Five Kingdoms of Life. Part III: People Are Mammals**. Ward's Natural Science Establishment, Rochester, N.Y. 10 min. each. Color, ?".

1994 Margulis, L. and R. Guerrero. **Phragmites pigment cells**. 4 min.

1995 Margulis, L. and L. Olendzenski. **Banded iron formation**. 8 min.

1996 Margulis, L. and D. Sagan. Music by J. Sagan. Video production, L. Olendzenski and L. Margulis. **Gaia to Microcosm: (30 minutes four part video) 1) Bacteria to biosphere. 2) Photosynthetic bacteria - Sunlight transformers. 3) Spirosymplokos deltaeiberi - Microbial mats and mud puddles. 4) Ophrydium versatile -What is an individual? Teacher's video guide**. Kendall/Hunt, Dubuque, IA.

Margulis, L. and L. Olendzenski. **Kefir: The drinkable symbiosis**. 4 min.

1997 Margulis, L. and M. McMenamin. **Geology: Time of appearance of major life forms in the fossil record**. 10 min.

1998 Olendzenski, L., S. Goodwin and L. Margulis. **Looking at Microbes**. vol. I. **Introduction. 1) Using the microscope. 2) Making media. 3) Isolating bacteria and fungi. 4) Staining**. Vol. II: **1) Microbial motility. 2) Bacterial spores. 3) Rumen microbes. 51 min.** Music by J. Sagan and S. Godin. Jones and Bartlett Publishers, Sudbury, MA.

Haselton, A. and L. Margulis. **Kombucha: The "mushroom" tea**. 3 minutes

Margulis, L. **Biominerization: Heinz Lowenstam**. 13 minutes.

1999 Wier, A. and L. Margulis. **Microcosmos Videos**. Vol. I. **Cells and Reproduction. 1) Cell motility. 2) Mitosis. 3) Sex or reproduction?** Vol. II. **Evolution and Diversity. 1) Five kinds of life. 2) Nitrogen fixation, Azolla-Anabaena symbiosis. 3) Green animals. 4) Why "Protoctista"?** With booklet. Jones and Bartlett Publishers, Sudbury, MA.

Margulis, L., T. Guillemette and T. Teal. **Chromidia: Propagules of protists**. 7 min.

Margulis, L., L. Olendzenski and J. Jorgensen. **Who's eating the wood?** 9 min.

2001 Margulis, L. and L. Olendzenski. **Forams: Living and fossil protists**. NeoSci, Rochester, NY.

Margulis, L., M. J. Chapman, J. Benson and T. Sagan. **Gunnera: Plant-cyanobacterial symbioses**. 6 min.

Sagan, T., Benson, J. and L. Margulis. **Nematocyst thieves**. 5 min.

2002 Margulis, L., M. Dolan and A. Wier. **Staurojoenina: Hypermastigote from Neotermes**. 8 min.

Margulis, L. and M. Dolan. **Calonymphids: Multinucleate trichomonads**. 8 min.

2003 Margulis, L. **Eukaryosis: Origin of eukaryotic cells**. 17 min.

2004 Margulis, L. and D. Mollenhauer. **Forbidden Fertilization**. 7 min.

Videos in preparation or press Margulis, L. **Mixotricha**.

CD-ROM

1996 Margulis, L., H. I. McKhann and L. Olendzenski. **Protoctist Glossary. An illustrated reference guide to terms and taxa**. Biodiversity Center of ETI, Multimedia Interactive Software. Amsterdam, The Netherlands.

Margulis, L. and K.V. Schwartz. **Five Kingdoms. A multimedia guide to the phyla of life on Earth**. Biodiversity Center of ETI, Multimedia Interactive Software. Amsterdam, The Netherlands.

2002 Margulis, L. and K.V. Schwartz. **Five Kingdoms. A multimedia guide to the phyla of life on Earth**, 2nd edition. Biodiversity Center of ETI, Multimedia Interactive Software. Amsterdam, The Netherlands.

SLIDE SETS (35 mm)

1987 Margulis, L. and K. V. Schwartz. **Life on Earth: The Five Kingdoms**. [Introduction, Monera, Fungi, Plants.] Ward's Natural Science Establishment, Rochester, NY.

1988 Margulis, L. and K. V. Schwartz. **Life on Earth: The Five Kingdoms**. [Protoctista, Animals.] Ward's Natural Science Establishment, Rochester, NY.

POSTERS

1992 Five Kingdoms. Drawings by Christie Lyons based on design by Dorion Sagan. Ward's Natural Science Establishment, Rochester, NY.

A Carbon Cycle. Designed by Richard Pace. Ward's Natural Science Establishment, Rochester, NY.

What Are Forams? Designed by K. Rainis and L. Brynes. NeoSci, Rochester, NY.

2003 Microscopy, Earth History, and Clasts. Designed by L. Brynes, A. MacConnell, L. Margulis, and M. Partee. NeoSci, Rochester, NY.

BOOKLETS/TEACHING UNITS

1977 Committee on Planetary Biology and Chemical Evolution, Space Science Board, Assembly of Mathematical and Physical Sciences, National Research Council. [P. Mazur, E. S. Barghoorn, C. D. Cox, H. O. Halvorson, T. H. Jukes, I. R. Kaplan and L. Margulis].

Post-Viking Biological Investigation of Mars. National Academy of Sciences, Washington, DC. IX + 26 pp.

1978 Committee on Planetary Biology and Chemical Evolution, Space Science Board, Assembly of Mathematical and Physical Sciences. [P. Mazur, E. S. Barghoorn, H. O. Halvorson, T. H. Jukes, I. R. Kaplan and L. Margulis]. **Recommendations on Quarantine Policy for Mars, Jupiter, Saturn, Uranus, Neptune and Titan.** National Academy of Sciences, Washington, DC. XII + 70 pp.

1980 Committee on Planetary Biology and Chemical Evolution, Space Science Board, Assembly of Mathematical and Physical Sciences. [L. Margulis, E. S. Barghoorn, R. Burris, H. O. Halvorson, K. H. Nealson, J. Oró, L. Thomas, J. C. G. Walker and G. M. Woodwell]. **Origin and Evolution of Life – Implications for the Planets: A Scientific Strategy for the 1980's.** National Academy of Sciences, Washington, DC, X + 80 pp.

1985 Margulis, L. **Sharing with Children: New Ideas on the evolution of life.** [Catherine Molony Memorial Lecture]. City College Workshop Center, New York, NY, 23 pp.

1992 Armstrong, L. and L. Margulis. **Teacher's Guide to the Five Kingdom Poster.** Guide to classroom activities. Ward's Natural Science Establishment, Rochester, NY.

Margulis, L., et al. **What Happens to Trash and Garbage? An Introduction to the Carbon Cycle.** Teacher's guide for junior high school science. Ward's Natural Science Establishment, Rochester, NY. 44 pp. NeoSci, Rochester, NY. 2nd edition.

Margulis, L. and L. Olendzenski. **What Happens to Trash and Garbage? An Introduction to the Carbon Cycle.** Guide to the carbon cycle poster. Ward's Natural Science Establishment, Rochester, NY; 2nd edition. NeoSci, 2001.

1996 Margulis, L. and D. Sagan. **Gaia to Microcosm.** Guide to four videos of microscopic life for the science classroom and beyond. Kendall-Hunt Publishing Co., Dubuque, IA.

1998 Margulis, L., E. Davis and D. Sagan. **Looking at Microbes: The microbiology laboratory for students.** Instructor's guide to video. Jones and Bartlett Publishers, Sudbury, MA. 28 pp.

2001 Margulis, L. and L. Brynes. **Living sands: Mapping time and space with forams.** Teacher's guide, student workbook, video. NeoSci, Rochester, NY.

2003 Margulis, L. **Biosphere Technologies and the Myth of Individuality.** Session five in The Future of Human Nature: A symposium on the promises and challenges of revolutions in genomics and computer sciences. The Pardee Center Conference Series, Spring 2003. Boston University.

2004 Case, E. Brynes, A. and L. Margulis. **Teacher's Guide to the Microcosmos: Microscopy, Earth History, and Clast poster.** NeoSci, Rochester, NY.

Margulis, L. and E. Case. **Peas and particles: Estimating large numbers to understand natural selection.**

Amherst Conservation Land: Local tree and shrub guide. Drawings by Christie Lyons. [E. Case, J. Benson, S. Vickers, and L. Margulis] University of Massachusetts Graduate School.

INTERACTIVE LECTURE AUDIOTAPES

1973 Symbiotic Theory of the Origin of Plant and Animal Cells. Polaroid Corporation, Cambridge, MA. Electrowriter.

1973 The Gaia Hypothesis and the History of the Earth's Atmosphere with J. E. Lovelock. Boston University, Boston, MA. Slides.
1980 Genetic Basis of Evolution. Polaroid Corporation, Cambridge, MA. Electrowriter.
1985 Spirochetes and the Origin of Undulipodia. Boston University, Boston, MA. Slides.
The Symbiotic Theory: Cells as Microbial Communities. Boston University, Boston, MA. Slides.

REVIEWS

1972 Margulis, L. Review of **Molecular Evolution 1: Chemical evolution and the origin of life.** R. Buvet and C. Ponnampertuma, eds. **Review of Palaeobotany and Palynology:** 256-258.
Margulis, L. Review of **Papers on Genetics: A book of readings.** L. Levine. **American Scientist** 60: 380.
1973 Margulis, L. Review of **The Life Puzzle: On crystals and organisms and on the possibility of a crystal as an ancestor.** G. Cairns-Smith. **Space Life Sciences** 4: 516-517.
Margulis, L. Review of **Structure and Function of Chloroplasts.** M. Gibbs, ed. **Transactions of the American Microscopical Society** 92: 333-334.
1974 Margulis, L. Review of **The Modern Concept of Nature: Essays on theoretical biology.** H. J. Muller. **Journal of the History of Biology** 7: 344-345.
Margulis, L. Review of **Molecular Evolution and the Origin of Life.** S. Fox and K. Dose. **American Scientist** 62: 241-242.
Margulis, L. Review of **Origin and Development of Living Systems.** J. Brooks and G. Shaw. **Quarterly Review of Biology** 49: 55.
Margulis, L. Review of **Readings in Genetics and Evolution: A selection of Oxford biology readers.** multi-authored; foreword by J. J. Head. **Journal of College Science Teaching** 3: 296.
Margulis, L. Review of **Theory and Experiment in Exobiology.** Vol. 2, A. W. Schwartz, ed. **Quarterly Review of Biology** 49: 55-56.
1975 Margulis, L. Review of **Ecotopia: The notebooks and reports of William Weston.** E. Callenbach. **CoEvolution Quarterly** Fall, p. 112.
Margulis, L. Reviews of **Interstellar Communication: Scientific perspectives.** C. Ponnampertuma and A. G. W. Cameron; and **Communication with Extraterrestrial Intelligence (CETI).** C. Sagan, ed. **Quarterly Review of Biology** 50: 120-121.
Margulis, L. Review of **The Origin of Life and Evolutionary Biochemistry.** K. Dose, S. W. Fox, G. A. Deborin and T. E. Pavlovskaya, eds. **Origins of Life** 6: 452-454.
1976 Margulis, L. Review of **Biology of the Blue Green Algae.** G. E. Fogg, W. P. D. Stewart, P. Fay and A. E. Walsby. **Icarus** 27: 181-182.
Margulis, L. Review of **The Evolution of the Bioenergetic Processes.** E. Broda. **Science** 192: 249.
1977 Margulis, L. Algal genetics. Review of **The Genetics of Algae.** R. A. Lewin, ed. **Nature** 267: 83.
Margulis, L. Reviews of **Paleobiogeography,** C. A. Ross, ed. And **Structure and Classification of Paleocommunities.** R. W. Scott and R. R. West, eds. **Origins of Life** 8: 178-179.
1978 Margulis, L. Reviews of **Biology of the Cell: An evolutionary approach.** W. deWitt; and **Biology of the Cell: Laboratory explorations.** W. deWitt and E. R. Brown. **American Scientist** 66: 234-235.
Margulis, L. Sex and development in mitochondria and chloroplasts. Review of **Genetics and Biogenesis of Chloroplasts and Mitochondria.** T. H. Bücher, W. Neupert, W. Sebald and S. Werner, eds. **Evolution** 32: 218-219.
Margulis, L. Review of **The Origin and Early Evolution of Animals.** E. D. Hanson. **Journal of Protozoology** 25: 252.
1979 Margulis, L. Genesis: On Earth or in outer space? Reviews of **Lifecloud: The origin of life in the universe.** F. Hoyle and N. C. Wickramasinghe; and **Genesis on Planet Earth, the Search for Life's Beginning.** W. Day. **Chemical and Engineering News** 57: 29-33.
Margulis, L. Review of **Working it Out,** S. Ruddick and P. Daniels, eds. **The Sciences** 19: 28.
1980 Margulis, L. Review of **The Eighth Day of Creation: The makers of the revolution in biology.** H. F. Judson. **CoEvolution Quarterly** 25: 42-43.

Rambler, M. and L. Margulis. Review of **Genesis on Planet Earth: The search for life's beginnings**, W. Day. **Origins of Life**. 10: 309-310.

1981 Margulis, L. Review of **Gaia**, J. E. Lovelock. **Origins of Life**. 11: 267-268.

1982. Margulis, L. Review of **On the Origins of Chloroplasts**. J. A. Schiff, ed. **American Scientist** 70: 541.

1983 Margulis, L. Review of **Aquatic and Terrestrial Humic Materials**. R. F. Christman and E. T. Gjessing. **Geochimica et Cosmochimica Acta** 47: 2064.

Margulis, L. Review of **Cosmochemistry and the Origins of Life**. C. Ponnampereuma, ed. **Origins of Life** 13: 165-166.

Margulis, L. Review of **The Material Basis of Evolution**, R. Goldschmidt. **Journal of College Science Teaching** 12: 233, 240.

1984 Margulis, L. Chemical evolution broadly conceived. Review of **Aspects of Chemical Evolution: XVIIth Solvay Conference on Chemistry**. G. Nichols, ed. **Geochimica et Cosmochimica Acta** 48: 2773-2774.

Margulis, L. The fate of the Earth. Review of **The Coevolution of Climate and Life**. S. Schneider and R. Londer. **Science** 84: 90-93.

Margulis, L. Review of **Earth's Earliest Biosphere: Its origin and evolution**. J. W. Schopf, ed. **Geology** 12: 511.

Margulis, L. Way, way back. Review of **Earth's Earliest Biosphere: Its origin and evolution**. J. W. Schopf, ed. **Times Literary Supplement** August 10: 903.

Margulis, L. Review of **Earth's Earliest Biosphere: Its Origin and Evolution**. J. W. Schopf, ed. **ISSOL** 12: 2.

Margulis, L. Review of **Molecular Evolution and Protobiology**. K. Matsuno, K. Dose, K. Harada and D. L. Rohlffing, eds. **Geology** 12: 639.

1985 Margulis, L. Review of **A Sceptics Guide to the Origin of Life on Earth**. R. Shapiro. **Origins of Life** 16: 172-173.

Margulis, L. The living Earth from space. Review of **Gaia: An atlas of planetary management**. N. Myers, ed. **BioScience** 35: 447-448.

Margulis, L. The ultimate intimacy. Review of **Intracellular Symbiosis**. K. Jeon, ed. **BioScience** 35: 455-456.

1986 Margulis, L. Review of **Evolution of Prokaryotes**. K. H. Schleifer and E. Stackebrandt, eds. **Quarterly Review of Biology** 61: 406-407.

Margulis, L. Extrapolations: From mutation to evolution. Review of **Microorganisms as Model Systems for Studying Evolution**. R. P. Mortlock, ed. **BioScience** 36: 274-275.

1987 Margulis, L. The importance of being affectionate. Review of **The Health of Nations: True causes of sickness and well-being**. L. A. Sagan. **New York Times Book Review** 29: 9.

1988 Margulis, L. Evolution of genes and organisms. Review of **Four Billion Years: An essay on the evolution of genes and organisms**. W. Loomis. **New Scientist** 119: 67.

Margulis, L. Review of **Genetic Takeover and the Mineral Origins of Life**. A. G. Cairns-Smith. **Geology** 16: 479.

Margulis, L. Review of **Hydrothermal Vents of the Eastern Pacific: An overview**. M. L. Jones. **American Scientist** 76: 79.

1989 Margulis, L. Review of **Evolution Without Selection: Form and Function by Autoevolution**. A. Lima-de-Faria. **BioSystems** 23: 87-88.

1990 Margulis, L. and E. Dobb. Untimely requiem. Review of **The End of Nature**. B. McKibben. **The Sciences** 30: 44-49.

Margulis, L. Review of **Microbial Mats: Physiological ecology of benthic microbial communities**. Y. Cohen and E. Rosenberg, eds. **American Scientist** 78: 566-569.

1991 Margulis, L. Review of **Where the Truth Lies: Franz Moewus and the Origins of Molecular Biology**. J. Sapp. **American Scientist** 79: 377.

1992 Margulis, L. Review of **Major Events in the History of Life**. J.W. Schopf, ed. **Origins of Life and Evolution of the Biosphere** 22: 390.

Margulis, L. Save nature, save ourselves. Review of **Diversity of Life**. E. O. Wilson. **The Boston Sunday Globe** Sept. 20: B40; B43.

Margulis, L. Protoctists and polyphyly: Comment on 'The number of symbiotic origins of organelles'. T. Cavalier-Smith. **BioSystems** 28: 107-108.

1993 Margulis, L. Cells First. Review of **Beginnings of Cellular Life: Metabolism recapitulates biogenesis**. H.J. Morowitz. **BioScience** 43: 638-639.

Margulis, L. Review of **The Proterozoic Biosphere: An multidisciplinary study**. Schopf, W.J. and Klein, C., eds. **Quarterly Review of Biology** 68: 572-573.

1994 Margulis, L. Review of **How the Leopard Got His Spots**. B. Goodwin. **The Times (London) Higher Education Supplement**. Dec. 23, p. 20.

1995 Margulis, L. Invisible empire. Review of **Unseen Power: How microbes rule the world**. B. Dixon. **The Sciences**. 35: 41-45.

1997 Margulis, L. Grandeur in the saga of the rocks. Review of **Life: An Unauthorized Biography: A natural history of the first 4,000,000,000 years of life on Earth**. P. Fortey. **The Times (London) Higher Education Supplement** Oct. 3, p. 23.

Margulis, L. Review of **Beliefs and Biology: Theories of life and living**. J. B. Trusted. **ISIS** 88: 3: 522-523.

1998 Margulis, L. Review of **Life at Small Scale: The Behavior of Microbes**. D. B. Dusenbery. **ASM News** 64: 5: 296.

Margulis, L. The pox that scars Eden. Review of **Life in the Balance: Humanity and the biodiversity crisis**. N. Eldredge. **The Times Higher Education Supplement** May 22, p. 21.

Margulis, L. Perfection in grenade throwing. Review of **Darwin among the Machines**. G. Dyson. **The Times Higher Education Supplement**. Aug. 14, p. 18.

Margulis, L. Pre-Palaeozoic sunbathers. Review of **The Garden of Ediacara: Discovering the first complex life**. M. A. S. McMenamin. **The Times Higher Education Supplement** Oct. 30, p. 25.

Margulis, L. Review of **Genetics and the Manipulation of Life**. C. Holdrege. **Whole Earth**. Summer, p. 42.

Margulis, L. A flashy feast of loose change. Review of **Evolution: Society, science and the universe**. A.C. Fabian, ed. **The Times Higher Education Supplement** Apr. 17, p. 22.

Margulis, L. Still confident of being surprised. Review of **What Remains to Be Discovered**. J. Maddox. **The Times Higher Education Supplement** Feb. 5, p. 22.

Margulis, L. Review of **The Deep Hot Biosphere**. T. Gold. **Physics Today** Aug. p. 65.

Margulis, L. Review of **Our Cosmic Origins: From the big bang to the emergence of life and intelligence**. A. Delsemme. **The Quarterly Review of Biology** 74: 34.

Margulis, L. Microscopic manoeuvres. Review of **The Birth of the Cell**. H. Harris and Joseph Leidy: **The last man who knew everything**. L. Warren. **The Times Higher Education Supplement** Apr. 16, p. 22.

Margulis, L. Review of **Darwin Among the Machines: The evolution of global intelligence**. G. B. Dyson. **International Microbiol** 2: 57-58.

Margulis, L. Review of **J. D. Bernal: A life in science and politics**. B. Swann and F. Arahamian, eds. **Internatl. Microbiol.** 2:281-282.

Margulis, L. Review of **J. D. Bernal: A life in science and politics**. B. Swann and F. Arahamian, eds. **Science, Technology & Human Value** Spring, 25: 252-253.

Margulis, L. and D. Sagan. Exercises in eternal delight. Review of **The Energy of Life**. G. Brown. **The Times Higher Education Supplement** Apr. 14, p. 30.

Margulis, L. Reviews of **Sacred Depths of Nature**. U. Goodenough (and) **Almost Like a Whale**. S. Jones. **The Times Higher Education Supplement** Oct. 27, p. 35.

2001 Margulis, L. Life from smut. Review of **Sparks of Life: Darwinism and the Victorian debates over spontaneous generation**. James E. Strick. **Science** 291: 991-992.

Margulis, L. Victims were spotted living close to tiny ticks in urban margins. Review of **The Biography of a Germ**. Arno Karlen. **Times Higher Education Supplement** Feb. 16, pp. 26-27.

Margulis, L. and D. Sagan. Searching for causes and codes of complexity that allow squirrels to fly to the "adjacent possible". Review of **Investigations**. S. Kauffman and **Cosmic Evolution: The rise of complexity in nature**. E. J. Chaisson. **The Times Higher Education Supplement** Nov. 9, pp. 22-23.

2002 Margulis, L. A scientific truth set in stone. Review of **What is Evolution?**. Ernst Mayr. **The Times Higher Education Supplement** March 8, p. 28.

Margulis, L. Odd, colourful organisms often confused with plants. Review of **Lichens of North America**. I.M. Brodo, S. D. Sharnoff and S. Sharnoff. **Times Higher Education Supplement** Sept. 16, 795.

Margulis, L. The evolving cure. Review of **Frank Ryan: Tuberculosis: The greatest story never told**. **International Microbiology**. 5: 151-152.

2003 Margulis, L. Microbial actors in the evolutionary drama. Review of **Liaisons of Life: From hornworts to hippos, how the unassuming microbe has driven evolution**. T. Wakeford. **American Institute of Biological Sciences**. 53: 179-180.

Margulis, L. Review of **Lichens of North America**. I. M. Brodo, S. D. Sharnoff and S. Sharnoff. **Internatl Microbiol.** 6: 149-150.

- Margulis, L. Hard life giving you the hump? Review of **Life at the limits: Organisms in extreme environments**. D. A. Wharton. Cambridge University Press. **Times Higher Education Supplement** July 25, p. 29.
- Margulis, L. Review of **Lichens of North America**. I. M. Brodo, S. D. Sharnoff and S. Sharnoff. **BioScience**. 53: 776-778.
- Sagan, D. and Margulis, L. God's recipes give food for thought but life still grips to secrets. Review of **The Emergence of Everything: How the world became complex**. H. J. Morowitz. **Times Higher Education Supplement**. October 24, p. 26-27. 2004.
- 2004 Margulis, L. Leaders prone to bouts of insanity. Review of **Pox: Genius, madness and the mysteries of syphilis**. D. Hayden. **Times Higher Education Supplement**. January 2, p. 26.
- Margulis, L. Rich feast on stony ground. **Life on a Young Planet**. A. Knoll. **Times Higher Education Supplement**. March 5, p. 26.
- Margulis, L. Biology begins. **A review of Origin and Early Evolution of Life**. T. Fenchel. **The Quarterly Review of Biology**. 79: 206-207.

STUDENT THESES

- 1969 Van Wie, C. C. An electron microscopic investigation of the intact and shed membranellar bands of *Stentor coeruleus*. Master of Arts. Boston University.
- 1976 Harwood, C. S. Isolation and characterization of *Maremonas rubrum*, gen. et sp. nov.; a red marine bacterium. Master of Arts. Boston University.
- Kelleher, J. K. Interaction of anti-microtubule agents with tubulin *in vitro* and in *Stentor coeruleus*. Doctor of Philosophy. Boston University.
- 1977 Cooper, G. J. Microtubule protein polymerization inhibitors and uptake and migration of symbiotic algae in *Hydra viridis*. Master of Arts. Boston University.
- 1978 Dyer, B. D. *Reticulitermes flavipes* hind gut ecosystem: Flagellate niches analyzed by selective defaunation. Master of Arts. Boston University.
- Giusto, J. P. Chromosomal mechanisms in catarrhine evolution. Master of Arts. Boston University.
- To, L. P. Ultrastructural and biochemical characterization of the hindgut microbiota of dry wood termites. Doctor of Philosophy. Boston University.
- 1979 Fracek, S. P., Jr. Colchicine, nocodazole and trifluralin: Different effects of microtubule polymerization inhibitors on the uptake and migration of endosymbiotic algae in *Hydra viridis*. Master of Science. Boston University.
- Giovannoni, S. J. A strain of red *Beneckea* from cyanobacterial mats of Laguna Mormona, Baja California. Master of Arts. Boston University.
- 1980 Rambler, M. B. Ultraviolet irradiation of bacteria under anaerobic conditions: Implications for Prephanerozoic evolution. Doctor of Philosophy. Boston University.
- Thorington, G. U. The algal and bacterial symbionts of *Hydra viridis*: Metabolic relations and transmission through the host sexual cycle. Doctor of Philosophy. Boston University.
- 1982 Gong-Collins, E. J. Isolation and characterization of a new strain of *Bacillus megaterium* and a new species of *Pseudomonas* from the microbial mats at Laguna Figueroa, Baja California del Norte Mexico. Master of Arts. Boston University. (Published: Gong-Collins, E. and D. L. Read, 1985, A new strain of *Arthrobacter* isolated from a laminated microbial mat, **Microbios** 42: 45-57)
- Gong-Collins, E., 1986, A euryhalic, manganese- and iron-oxidizing *Bacillus megaterium* from a microbial mat at Laguna Figueroa, Baja California, Mexico, **Microbios** 48: 109-126.)
- 1983 Sharifi, E. Was the legume-*Rhizobium* symbiosis originally parasitic? A review. Master of Arts. Boston University. (Published: Sharifi, E., 1984, Parasitic origins of nitrogen-fixing *Rhizobium*legume symbioses: A review of the evidence. **BioSystems** 16: 269-289.)
- 1984 Brown, S. W. Organisms which persist in desiccated microbial mat from the Laguna Figueroa, Baja California, Mexico. Master of Arts. Boston University. (Published: Brown, S., L. Margulis, S. Ibarra and D. Siqueiros, 1985, Desiccation resistance and contamination as mechanisms of Gaia, **BioSystems** 17: 337-360.)
- Dyer, B. D. Protoctists from the microbial communities of Baja California, Mexico. Doctor of Philosophy. Boston University. Fracek, S. P., Jr. Tubulin-like proteins of *Spirochaeta bajacaliforniensis*, a new species from a microbial mat community at Laguna Figueroa, Baja California del Norte, Mexico. Doctor of Philosophy. Boston University. (Published: Fracek, S. P.,

- Jr. and J. F. Stolz, 1985, *Spirochaeta bajacaliforniensis* sp. n. from a microbial mat community at Laguna Figueroa, Baja California Norte, Mexico, **Archives of Microbiology** 142: 317-325.)
- Mehos, D. C. Symbioticism as a biological principle: Ivan Wallin's theory of organic evolution. Master of Arts (History Department). Boston University. (second reader)
- Stolz, J. F. The effects of catastrophic inundation, (1977-1983), on the composition and ultrastructure of a stratified microbial mat community, Laguna Figueroa, Baja California, Mexico. Doctor of Philosophy. Boston University.
- 1985** Obar, R. Purification of tubulin-like proteins from a spirochete. Doctor of Philosophy (Chemistry). Boston University. (second reader) (Published: Obar, R. and J. Green, 1985, Molecular archaeology of the mitochondrial genome, **Journal of Molecular Evolution** 22: 243-251.)
- 1986** Moynihan, B. E. *Chlorella desiccata* sp. n.; a new *Chlorella* forming desiccation-resistant cysts. Master of Arts. Boston University.
- 1987** Bermudes, D. G. Distribution and immunocytochemical localization of tubulin-like proteins in spirochetes. Doctor of Philosophy. Boston University.
- 1988** Fleischaker, G. R. Autopoiesis: System logic and origins of life. Doctor of Philosophy (University Professors Program, philosophy of biology). Boston University.
- 1989** Stricker, J. A. Evidence for centrin- and tektin-like proteins in *Spirochaeta halophila*. Master of Arts. Boston University.
- Tzertzinis, G. Immunochemical characterization and partial amino acid sequence of tubulin-like protein from *Spirochaeta bajacaliforniensis*. Doctor of Philosophy. Boston University. (second reader)
- 1990** Enzien, M. V. Microbial mats: Early diagenesis and studies of live and fossil organisms. Doctor of Philosophy. Boston University.
- Kang, J. K. Cyanobacteria, algae and fungi of the Black Zone at Bailey Island, Maine: Composition, ecology and comments on cyanobacterial systematics. Master of Science. University of Massachusetts, Amherst. (Reader, committee member)
- 1991** Mas-Castellà, J. Acumulación de poli-b-hidroxialcanoatos por bacterias: Distribución en la naturaleza y biotecnología. Doctor of Philosophy. Universidad de Barcelona. (Reader and member of tribunal)
- 1992** Ashen, J. B. Ultrastructure of new microbial mat and termite spirochetes and the symbiotic origin of undulipodia. Master of Science. University of Massachusetts, Amherst.
- Hinkle, G. J. Symbiosis and organelle origins: Undulipodia and the origin of eukaryotes. Doctor of Philosophy. Boston University.
- 1993** Olendzenski, L. The cyst-forming ciliate *Pseudocohnilembus pusillus*: Growth and encystment in response to salinity, pH, desiccation and food depletion. Master of Science. University of Massachusetts, Amherst.
- 1995** Antequera, V. P. Análisis comparativo de la organización genómica de la familia Chromatiaceae. Revisión de la actual clasificación. Doctor of Philosophy. Autonomous University of Barcelona. (Reader, member of tribunal).
- 1996** Teal, T. H. Spirochetes and a new bicosoecid, *Acronema sippewissettensis*, from anoxic salt marsh habitats: Morphological studies. Master of Science. University of Massachusetts, Amherst.
- 1997** Kolnicki, R. Karyotypic fissioning and lemur evolution. Master of Science. University of Massachusetts, Amherst. (Second reader, member of committee)
- 1998** D'Ambrosio i Palau, U. Evolutionary and structural study of *Caduceia versatilis* sp. nov. ("Rubberneckia") and *Snyderella tabogae*: Parabasalids (amitochondriate protists) in the dry wood-eating termite *Cryptotermes cavifrons*. Master of Science. University of Massachusetts, Amherst.
- 1999** Dolan, M. Amitochondriate protists: Symbiotic trichomonads of dry-wood-eating termites. Doctor of Science. University of Massachusetts, Amherst.
- Jorgensen, J. Z. Isolation and cultivation of spore-forming filamentous bacteria from *Porcellio scaber*. Master of Science. University of Massachusetts, Amherst.
- 2000** Navarrete, Antoni. Caracterización ecofisiológica y bioquímica de los tapetes microbianos del delta del Ebro. Doctor of Biological Sciences. University of Barcelona, Spain. (Reader, member of tribunal).
- 2002** Melnitsky, Hannah. Termite hindgut symbionts: Clues to early eukaryotic evolution. Honors thesis, Bachelor of Science. University of Massachusetts, Amherst.
- 2003** Bateman, Kenneth. (in progress). Master of Science. University of Massachusetts, Amherst. (Second reader, member of committee).

2004 Werle, Sean F. The biology, ecology and cytogenetics of the genus *Axarus* (Diptera: Chironomidae) in the Connecticut River. Doctor of Science. University of Massachusetts, Amherst. (Reader and member of committee). Student Theses in progress
Dunthorn, Micah. Bromeliad ciliates. Doctor of Sciences. University of Massachusetts, Amherst.
Scofield, Bruce. Biological cycles and geocosmic sciences: Astrology as natural history maligned. Doctor of Sciences. University of Massachusetts, Amherst.
Stephens, Elizabeth. Symbiotic bacteria on termite protists and *Spirochaeta-Thermoplasma* co-cultures. Doctor of Sciences. University of Massachusetts, Amherst.