

CURRICULUM VITAE

Derek LeRoith, M.D., Ph.D., F.A.C.P.

Address:

Derek LeRoith MD PhD
Director of the Metabolism Institute
Chief of the Division of Endocrinology, Diabetes and Bone Diseases
Director of the Metabolism Institute
Mt.Sinai School of Medicine
1 Gustave Levy Place-Box 1055
Atran B4-36
New York NY 10029-6574

Tel 212 241 6306

Fax 212 241 4159

derek.leroith@mssm.edu

Date of Birth: January 3, 1945

Education:

Sea Point Boy's High School,
 Cape Matriculation in 1961, with distinction in mathematics

Degrees:

1967	M.B. Ch.B (M.D. equivalent)	University of Cape Town
1973	Ph.D. Thesis	University of Cape Town
1974	F.C.P. (S.A.)	Fellow, College of Physicians of S. Africa
1975	M.R.C.P. (U.K.)	Member of the Royal College of Physicians of the United Kingdom

Postgraduate Training and Career:

1968	House Physician	Professorial, Medical and Surgical Units, Groote Schuur Hospital, University of Cape Town
1969	Resident	Department of Pediatrics, Kaplan Hospital, Rehovot, Israel (6 months)
	Family Doctor	Kibbutzim - Galil Elyon (6 months)
1970-72	Research Fellow	Ph.D. Student in Research Laboratory of Professor B.L. Pimstone, Department of Medicine, University of Cape Town

- 1972-74 Resident and Tutor
Department of Medicine, Groote Schuur Hospital,
University of Cape Town (9 months Endocrine Fellow)
- 1975 Senior Resident
The Middlesex (teaching) Hospital, London,
Departments of Medicine and Geriatrics
- 1976 Attending (6 months)
Renal Unit and Endocrine Clinics,
Meir Hospital, Kfar Saba, Israel
- 1976 Attending in Medicine and Endocrinology
Department of Medicine, Soroka Medical Center, Beersheva, Israel. Lecturer
in Medicine and Endocrinology, Soroka Health Science Center, Ben Gurion
University Medical School, Beersheva, Israel.
- 1979 Senior Lecturer in Medicine and Endocrinology,
Ben Gurion University Health Science Center, Beersheva, Israel
- 1979-83 Visiting Scientist
Diabetes Branch, National Institute of Arthritis, Diabetes, Digestive &
Kidney Diseases, National Institutes of Health, Bethesda, Maryland.
- 1983 Associate Professor of Medicine
Dept. of Medicine, Division of Endocrinology/- Metabolism, University of
Cincinnati College of Medicine, Cincinnati, Ohio Director of University of
Cincinnati Diabetes Outpatient Clinics, Cincinnati, Ohio
- 1983-86 Senior Investigator
Diabetes Branch, National Institute of Arthritis, Diabetes, Digestive & Kidney
Diseases, National Institutes of Health, Bethesda, Maryland
- 1986-98 Chief, Section of Molecular and Cellular Physiology
Diabetes Branch, National Institutes of Diabetes, Digestive & Kidney
Diseases, National Institutes of Health, Bethesda, Maryland
- 1999-2005 Chief, Diabetes Branch (known as Clinical Endocrinology Branch prior to
October 2002)
National Institutes of Diabetes, Digestive and Kidney Diseases, National
Institutes of Health, Bethesda, MD
Chief of the Division of Endocrinology, Diabetes and Bone Diseases.
Mt Sinai School of Medicine New York, NY
- 2008- Director of the Metabolism Institute, Mt Sinai School of Medicine

Memberships in Professional Societies

- 1972 Society for Endocrinology, Metabolism and Diabetes of Southern Africa
- 1974 Fellow of the College of Physicians of South Africa
- 1975 Member of the Royal College of Physicians United Kingdom

- 1977 Israel Endocrine Society
- 1978 European Association for the Study of Diabetes
- 1979 American Endocrine Society
- 1982 American Diabetes Association
- 1982 The New York Academy of Sciences
- 1983 Central Society for Clinical Research
- 1983 Fellow of American College of Physicians (FACP)
- 1986 Society for Neuroscience
- 1986 American Physiological Society
- 1986 American Society for Cell Biology
- 1988 American Society of Clinical Investigation
- 1989 American Society for Biochemistry and Molecular Biology
- 1990 American Society for Microbiology
- 1996 American Academy of Physicians

Administrative Responsibilities

- 1983 Chairman of the Professional Education Committee, American Diabetes Association (Cincinnati)
- 1988 President, Montgomery Chapter - American Diabetes Association
- 1990 President, Washington, D.C. Affiliate - American Diabetes Association
- 1993-1996 Annual Meeting Screening Committee, The Endocrine Society
- 1994 Board of Directors, National American Diabetes Association
- 1996-2005 Chief of the Endocrine Consult Service, Clinical Center, NIH
- 1996 President, International Society for Insulin-like Growth Factor Research
- 1998 Chairperson, Research Grant Review Panel, National American Diabetes Association.
- 1999 Chairperson, Grant Review Committee for Endocrinology, Veterans' Administration.
- 2002-present Board of Directors, Endocrine Fellows Foundation

Honors and Awards:

- 1963 Medal for Physiology
- 1966 Medal for Obstetrics and Gynecology
- 1973 Bronte Stewart Award for Ph.D. Thesis
- 1996 British Endocrine Society Transatlantic Medal
- 1996 The Herman O. Mosenthal Memorial Lecture
- 2004 The Yogesh C. Patel Memorial Lecture
- 2008 Dell Fisher Visiting Professor, UCLA

Credentialing:

1979	Visa Qualifying Examination
1980	FLEX - New York State
1980	Licensed in New York State
1981	Licensed in Maryland
1981	Licensed in Virginia
1983	Licensed in Ohio
1983	Diplomate of the American Boards of Internal Medicine
1986	Boards in Endocrinology and Metabolism

Visiting Professor Lectureships

1. The Second Annual Kroc Lectureship, May 19, 1987.
2. Jack H. Mostow, M.D. Memorial Lecture Series, November 11, 1987.
3. The Warren F. Wilhelm Lectureship, 1989, Ed Bixby Research Institute, Kansas City, MO
4. 14th Michael G. Wohl Memorial Lecture, Philadelphia County Medical Society, November 8, 1989
5. 10th Annual Lind Memorial Diabetes Lecture, Bryn Mawr, PA, March, 1990
6. The John H. Moyer Visiting Professor Lectureship, January 22-24, 1991, University of Pittsburgh, PA
7. U.S.S.R. Academy of Sciences, Moscow, Kiev, and Leningrad, Sept./Oct., 1991.
8. Dozor Visiting Professor in Medicine in the Faculty of Health Sciences, Ben Gurion University of the Negev, Beer-Sheva, Israel, November, 1993
9. Meadow Brook Lecturer. OHEP Center for Medical Education, Michigan. June 6, 2000.
10. 2000 Dean's Distinguished Lecture. Wayne State University, Detroit MI June 2000 "The Future of Diabetes Treatment and Prevention".
11. 2004 The Mackler Lecture, Montefiore NY
12. 2004 The Yogesh Patel Memorial Lecture, Montreal
13. 2005 The 6th Annual Nicholas T.Zervas Lecture, MGH, Boston
14. 2008 Dell Fisher Visiting professor, UCLA

Grant Support

1980-1981	American Diabetes Association Washington, D.C. Affiliate
1983-1984	Biomedical Research Support Grant
1987	American Diabetes Association, Washington, D.C. Affiliate.
1987	Diabetes Research and Education Foundation
1993-present	American Diabetes Association Mentor-Based Postdoctoral Fellowship Program
2008	NCI Grant on Diabetes and Breast Cancer 1R01CA128799-01A1

Books Edited

Purification of Fermentation Products ACS Symposium Series, 1984 Edited By: D. LeRoith, J. Shiloach and T.J. Leahy

Insulin, Insulin-like Growth Factors, and Their Receptors in the Central Nervous System. Edited by M. K. Raizada, M. I. Phillips, and D. LeRoith, 1987.

Molecular and Cellular Biology of Diabetes Mellitus, Vols. I,II, and III. Insulin Secretion. Edited by B. Draznin, S. Melmed, and D. LeRoith, 1988.

Molecular and Cellular Biology of Insulin-like Growth Factors and their Receptors. Edited by D. LeRoith, and M.K. Raizada, 1989.

Insulin-like Growth Factors: Molecular and Cellular Aspects. Edited by D. LeRoith, 1991. C.R.C. Press, Boca Raton, Florida.

Molecular Biology and Physiology of Insulin-Like Growth Factors. Edited by Mohan K. Raizada and Derek LeRoith. Advances in Experimental Medicine and Biology, Vol. 293, 1991.

The Role of Insulin-Like Growth Factors in the Nervous System. Edited by M.K. Raizada, and D. LeRoith. Annals of the New York Academy of Sciences, Vol. 692, 1993.

Current Directions in Insulin-Like Growth Factor Research. Edited by D. LeRoith and M.K. Raizada. Advances in Experimental Medicine and Biology, Vol. 343, 1993.

Molecular Biology of Diabetes. Volumes 1 & 2. Edited by B. Draznin and D. LeRoith. Humana Press, Totowa, N.J., 1994.

Growth Factors and Cytokines in Health and Disease. Edited by C. Bondy and D. LeRoith. JAI Press, Greenwich, Conn., 1996.

Frontiers in Endocrinology. Edited by D. LeRoith. The role of insulin-like growth factors in ovarian physiology. Ares-Serono Symposia Publications, Rome, Italy, 1996.

Diabetes Mellitus. A Fundamental and Clinical Text. Edited by D. LeRoith, J.M. Olefsky, and S.I. Taylor. Lippincott-Raven Publishers, Hagerstown, MD, 1996.

Advances in Molecular and Cellular Endocrinology (Yearly series) JAI Press Inc Editor D. LeRoith

Reviews in Endocrine and Metabolic Disorders (Quarterly Series) Kluwer Press. Editor-in-Chief D. Le Roith 2000-

Diabetes Mellitus. A Fundamental and Clinical Text. Second Edition. Editors D. Le Roith, J.M. Olefsky and S.I. Taylor. Lippincott Publishers. Second Edition. 2000

LeRoith, D., Zumkeller, W., Baxter, R., eds. Insulin-like Growth Factors, Landes Bioscience, Georgetown, TX and Kluwer Academic, New York, NY, 2003.

Diabetes Mellitus. A Fundamental and Clinical Text. Third Edition. Editors D. LeRoith, S.I. Taylor, and J.M. Olefsky. Lippincott Publishers. Third Edition. 2004.

Controversies in Treating Diabetes: Clinical and Research Aspects Editors D. LeRoith and A.I. Vinik. Humana Press 2008.

Editorial Board

1987	Endocrinology
1990	Regulatory Peptides
1990	Biological Signals
1993	Receptor
1993	Experimental Cell Research
1994	The Journal of Clinical Endocrinology & Metabolism
1994	The Journal of Clinical Investigation
1995	American Journal of Physiology
1996	Cytokine & Growth Factor Reviews
1997	Journal of Biological Chemistry
1997	Editor of Growth Regulation
1998	The Aging Male
1998	Editor, Growth Hormone & IGF Research
2000	Diabetes/Metabolism Research and Reviews
2003	Metabolic Syndrome and Related Disorders
2004	Reviews in Endocrine and Metabolic Disorders
2005	Endocrine Clinics of North America
2008	Associate Editor Endocrinology

REVIEW COMMITTEES

Veterans Administration Merit Review Committee for Endocrinology
1996-2000 (Chair 1999-2000)

American Diabetes Association Research Grant Review Committee
1997-1999 (Chair 1998-1999)

PUBLICATIONS

1. LeRoith, D., and Pimstone, B.L.: Bone metabolism and composition in the protein deprived rat. *Clin. Sci.* 44:305-319, 1973.
2. LeRoith D., and Pimstone, B.L.: The use of simultaneously administered ⁴⁷Ca in the study of calcium kinetics in the rat. *Horm. and Metab. Res.* 5(2):118, 1973.
3. LeRoith, D. and Pimstone, B.L.: Bone densitometry of the femoral midshaft in the protein deprived rat.. *S. Afr. Med. J.* 47:72-74, 1973.
4. LeRoith, D. Vinik, A.I., and Jackson, W.P.U.: Recovering on rewarming after hypothermic hyperglycaemia. *S. Afr. Med. J.* 48:1617-1619, 1974.
5. LeRoith, D. Vinik, A.I., Epstein, S., Baron, P., Olkenitsky, M.N., and Pimstone, B.L.: Somatostatin and serum gastrin in normal subjects and in patients with pernicious anaemia, chronic liver and renal disease. *S. Afr. Med. J.* 49:1601-1604, 1975.
6. Pimstone, B.L. LeRoith, D., Epstein, S., and Kronheim, S.: Disappearance rates of plasma growth hormone after intravenous somatostatin in renal and liver disease. *J. Clin. Endocrinol. Metab.* 41:393-395, 1975.

7. LeRoith, D., and Keeton, F.R.: Isolated partial deficiency of adrenocorticotrophic hormone. *S. Afr. Med. J.* 49:1754-1756, 1976.
8. Epstein, S., LeRoith, D., and Rabkin, R.: The effect of different preparations of human growth hormones on plasma renin activity in normal males. *J. Clin. Endocrinol. Metab.* 42:390, 1976.
9. Pimstone, B.L., Epstein, S., Hamilton, S.M., LeRoith, D., and Hendricks, S.: Metabolic clearance and plasma half disappearance time of exogenous gonadotrophin releasing hormone in liver disease and chronic renal failure. *J. Clin. Endocrinol. Metab.* 44:356-360, 1977.
10. Botha, J.L., Vinik, A.I., LeRoith, D., Child, P.T., and Jackson, W.P.U.: The effects of somatostatin on hormonal and metabolic responses in chronic pancreatitis. *S. Afr. Med. J.* 51:872-875, 1977.
11. Epstein, S., Zylsmit, R.V., LeRoith, D., Vinik, A.I., and Pimstone, B.L.: Effects of TRH on prolactin, plasma renin activity, water and electrolyte excretion in normal males. *Horm. and Metab. Res.* 9:495-498, 1977.
12. Bernheim, J., Shapiro, M., Spitz, I.M., Shapiro, J., and LeRoith, D.: Elevation des taux de parathormone (PTH) serique en cas d'hyperprolactinemia. *La Nouvelle Pres. Med.* 6:4143, 1977.
13. Danovitch, G.M., LeRoith, D., and Glick, S.M.: Demeclocycline in the syndrome of inappropriate ADH secretion. *Israel J. Med. Sci.* 14:852-856, 1978.
14. LeRoith, D. and Myers, B.D.: Sodium handling and the renin angiotensin -aldosterone system in adult polycystic kidney disease. *Cardiovas. Med.* 3:1215-1211, 1978.
15. Luboshitzky, R., Lavie, P., Sok, Y., Shen Orr, D., Glick, S.M., LeRoith, D., and Barzilai, D.: Antidiuretic hormone secretions and urine flow in aged catheterized patients. *T.I.T. J. of Life Sci.* 8:99-104, 1978.
16. Mahler, D., Hauben, D., LeRoith, D., and Glick, S.M.: Radioimmunoassay of ADH in burn shock period. *Burns* 5:269-273, 1979.
17. Spitz, I.M., Zylber, E., Jersky, J., and LeRoith, D.: Atropine suppression of basal and metoclopramide-induced human pancreatic polypeptide secretion in man. *Metabolism*, 28:527-530, 1979.
18. Zylber, E., LeRoith, D., Jersky, J., and Spitz, I.M.: Metoclopramide induced human pancreatic polypeptide secretion in normal subjects and maturity onset diabetics. In: *Nutrition and the Diabetic Child*. Z. Laron and M. Karp, editors. In series: *Pediatric and Adolescent Endocrinology*, pp.356-360, 1979.
19. Brenner, H., Tovi, F., Sidi, J., Zirkin, H., and LeRoith, D.: Medullary carcinoma of the thyroid. *Israel J. Med. Sci.* 15:151-155, 1979.
20. LeRoith, D., Burshell, A.C., Ilia, R., and Glick, S.M.: Short metacarpal in the patient with idiopathic hypoparathyroidism. *Israel J. Med. Sci.* 15:460-461, 1979.
21. LeRoith, D., Bark, H., and Glick, S.M.: Somatostatin and antidiuretic hormone secretion in dogs. *Horm. Metab. Res.* 11(2):177-178, 1979.
22. Spitz, I.M., Cohen, H., Almaliach, U., and LeRoith, D.: Impaired prolactin response to TRH in isolated gonadotropin deficiency and exaggerated response in seminiferous tubule failure. *J. Clin. Endocrinol. Metab.* 48:941-945, 1979.
23. LeRoith, D., Potashnik, G., and Glick, S.M.: Bromocriptine in hyperprolactinemic amenorrhea: A possible early effect on ovarian steroidogenesis. *Internat. J. of Fertil.* 24:145-147, 1979.
24. LeRoith, D., Shapiro, M.S., Gurman, A., and Spitz, I.M.: Hypothalamic pituitary function in

- Cushing's Disease. *J. Endocrinol. Invest.* 2:379-383, 1979.
25. Danovitz, G., LeRoith, D., Sobel, R., Sikuler, E., and Strauss, R.: Amyloid goiter in familial Mediterranean fever. *Clin. Endocrinol.* 11:595-601, 1979.
 26. LeRoith, D., Shapiro, M.D., Jabotinsky, K., and Spitz, I.M.: Prolactin nonresponsiveness to arginine in diabetes mellitus. *Horm. and Metab. Res.* 11:583-584, 1979.
 27. LeRoith, D., Danovitz, G., Trestian, S., and Spitz, I.M.: Dissociation of prolactin response to TRH and metoclopramide in chronic renal failure. *J. Clin. Endocrinol. Metab.* 49:815-817, 1979.
 28. Spitz, I.M., Trestian, S., Cohen, H., Arnon, N., and LeRoith, D.: Failure of metoclopramide to influence LH, FSH, and TSH secretion and their responses to releasing hormones. *Acta Endocrinol.* 92:640-647, 1979.
 29. Lavie, P., Luboshitzky, R., Kleinhouse, N., Shen Orr, D., Barzilai, D., Glick, S.M., LeRoith, D., and Levy, J.: Rhythms in urine flow are not correlated with rhythmic secretion of ADH in hyperhydrated normal subjects. *Horm. Metab. Res.* 12:66-70, 1980.
 30. LeRoith, D., Danovitz, G., Trestian, S., and Spitz, I.M.: Dissociation of pituitary glycoproteins response to releasing hormones in chronic renal failure. *Acta Endocrinol.* 93:277-282, 1980.
 31. Hauben, D.J., LeRoith, D., Glick, S.M., and Mahler, D.: Nonoliguric vasopressin oversecretion in severely burned patients. *Israel J. Med. Sci.* 16:101-105, 1980.
 32. LeRoith, D., Broitman, D., Sukenik, S., and Glick, S.M.: Isolated ACTH deficiency and primary hypothyroidism: Volume-dependent elevation of antidiuretic hormone secretion in the presence of hyponatremia. *Israel J. Med. Sci.* 16:440-443, 1980.
 33. LeRoith, D., Farkash, Y., Bar Ziev, J., and Spitz, I.M.: Hypothalamic-pituitary function in the Bardet-Biedl Syndrome. *Israel J. Med. Sci.* 16: 514-518, 1980.
 34. Spitz, I.M., LeRoith, D., Trestian, S., Ebert, R., and Creutzfeldt, W.: Effect of acid on GIP secretion in man. In: *Entero-Insular Axis*, Editor, Creutzfeldt, W. In: *Frontiers in Hormone Research*, volume 7, S. Karger AG (Basel), pp. 173-180, 1980.
 35. LeRoith, D., Sobel, R., and Glick, S.M.: The effect of clomiphene citrate on pubertal gynecomastia. *Acta Endocrinol.* 95:177-180, 1980.
 36. LeRoith, D., Shapiro, M., Luboshitzky, R., and Spitz, I.M.: The hypothalamic-pituitary axis in diabetes mellitus. *Horm. Metab. Res.* 12:608-610, 1980.
 37. Spitz, I.M., LeRoith, D., Livshin, Y., Zylber-Haram E., Trestian, S., Laufer, N., Ron, M., Palti, Z., and Shenker, J.: Exaggerated Prl response to TRH and metoclopramide in primary testicular failure. *Fertil. Steril.* 34:573-580, 1980.
 38. LeRoith, D., Spitz, I.M., Ebert, R., Liel, Y., Odes, S., and Creutzfeldt, W.: Acid-induced GIP secretion in man. *J. Clin. Endocrinol. Metab.* 51:1385-1389, 1980.
 39. Bark, H., Le Roith, D., Nyska, M., and Glick, S.M.: Elevations in plasma ADH levels during Peep in the dog: The mechanism involved. *Am. J. Physiol.* 239:E474-E481, 1980.
 40. LeRoith, D., Potashnik, G., Dunn, J., and Spitz, I.M.: The exaggerated prolactin response to TRH and metoclopramide in 1,2-dibromo-3-chloro-propane-induced Azoospermia. *J. Clin. Endocrinol. Metab.* 52:38-41, 1981.
 41. Spitz, I.M., Halperin, Y., Shilo, S., LeRoith, D., Zylber-Haram, E., Laufer, N., and Schenker, J.: Clomiphene effects the exaggerated Prl response to TRH and metoclopramide occurring in primary testicular failure. *J. Clin. Endocrinol. Metab.* 52:289-293, 1981.
 42. Spitz, I.M., LeRoith, D., Hirsch, H., Carayon, L.P., Pekonen, F., Liel, Y., Sobel, R., Chorier, Z., and Weintraub, B.: Dissociation of biologic and receptor binding activity in a large molecular weight human TSH. *New Engl. J. Med.* 304:278-282, 1981.

43. LeRoith, D., Liel, Y., Caine, M., and Spitz, I.M.: The prolactin response to TRH is intact in the human male castrate. *Acta Endocrinol.* 96:163-167,1981.
44. LeRoith, D., Liel, Y., Sack, J., Livshin, Y., Laufer, N., Schenker, J., and Spitz, I.M.: The TSH response to TRH is exaggerated in primary testicular failure and intact in the male castrate. *Acta Endocrinol* 97:103-208, 1981.
45. Spitz, I.M. Halperin, Y., Zylber-Haran, E., Shilo, S., LeRoith, D., Liel, Y., Livshin, Y., Laufer, N., and Schenker, J.: Prolactin response to metoclopramide and chlorpromazine in primary testicular failure and isolated gonadotropin deficiency. *Clin. Endocrinol.* 14:375-380, 1981.
46. LeRoith, D., Bark, H., Nyska, M., and Glick, S.M.: The effect of abdominal pressure on plasma antidiuretic hormone levels in the dog. *J. Surg. Res.* 32(1):65-69, 1982.
47. Gardus, D., LeRoith, D., Karplus, M., Zmora, E., Grief, M., and Bar-Ziev, J.: Congenital hyperparathyroidism and rickets: Secondary to maternal hypoparathyroidism and vitamin D deficiency. *Israel J. of Med. Sci.* 17:705-708, 1981.
48. Spitz, I.M., Novis, B.H., Ebert, E., Trestian, S., LeRoith, D., and Creutzfeldt, W.: Betazole-Induced G.I.P. secretion is not mediated by gastric HCL. *Metabolism* 31:380-383, 1982.
49. Rabinowitz, S., Cohen, R., and LeRoith, D.: Anxiety and hirsutism. *Psychological Reports* 53:827-830, 1983.
50. LeRoith, D., Shiloach, J., Roth, J., and Lesniak, M.A.: The evolutionary origins of vertebrate hormones: Insulin in unicellular organisms. *Proc. Natl. Acad. Sci. USA* 77:6184-6188, 1980.
51. LeRoith, D., Lesniak, M.A., and Roth, J.: Insulin in insects and annelids. *Diabetes* 30:70-76, 1981.
52. LeRoith, D., Shiloach, J., Roth, J. and Lesniak, M.A.: Insulin or a closely related molecule is native to E.coli. *J. Biol. Chem.* 256:6533-6536, 1981.
53. LeRoith, D., Shiloach, J., Roth, J., Liotta, A.S., Krieger, D.T., Lewis, M., and Pert, C.B.: Evolutionary origins of vertebrate hormones: Material very similar to adrenocorticotrophic hormone, beta-endorphin and dynorphin in protozoa. *Trans. Assoc. Am. Phys.* 94:54-60, 1981.
54. Roth, J., LeRoith, D., Shiloach, J., Rosenzweig, J.L., Lesniak, M.A., and Havrankova, J.: The evolutionary origins of hormones, neurotransmitters, and other extracellular chemical messengers: Implications for mammalian biology. *N. Engl. J. Med.* 306:523-527, 1982.
55. LeRoith, D., Liotta, A.S., Roth, J., Shiloach, J., Lewis, M.E., Pert, C.B. and Krieger, D.T. Corticotropin and β -endorphin-like materials are native to unicellular organisms. *Proc. Natl. Acad. Sci. U.S.A.*, 79:2086-2090, 1982.
56. Berelowitz, M., LeRoith, D., Von Schenk, H., Newgard, C., Szabo, M., Frohman, L.A., Shiloach, J., and Roth, J. Somatostatin-like immunoreactivity and biological activity is native to tetrahymena pyriformis, a ciliated protozoan. *Endocrinology* 110:1939-1944, 1982.
57. LeRoith, D., Shiloach, J., and Roth, J.: Is there an earlier phylogenetic precursor that is common to both the nervous and endocrine systems?: *Peptides* 3:211-215,1982.
58. LeRoith, D., Shiloach, J., Berelowitz, M., Frohman, L.A., Liotta, A.S., Krieger, D.T., and Roth, J., Are messenger molecules in microbes the ancestors of the vertebrate hormones and tissue factors? *Fed. Proc.* 42:2602-2607, 1983.
59. Rosenzweig, J.L., LeRoith, D., Lesniak, M.A., MacIntyre, I., Sawyer W.H., and Roth, J. Two distinct insulins in the guinea pig: the broad relevance of these findings to evolution of peptide hormones. *Fed. Proc.* 42(9):2608-14, 1983.

60. LeRoith, D., Shiloach, J., and Roth, J.: Coexistence of multiple neuroactive substances in single neurons: Do recent evolutionary studies provide a rational interpretation In: Coexistence of Neuroactive Substances. Chan-Palay, V. and Palay, S.L. (Eds.). John Wiley and Sons (New York); 411-421, 1983.
61. Schwabe, C., LeRoith, D., Thompson, R.P., Shiloach, J., and Roth, J.: Relaxin extracted from protozoa (*T. Pyriformis*): Molecular and immunological properties. *J. Biol. Chem.* 258:2778-2781, 1983.
62. LeRoith, D., Hendricks, S.A., Lesniak, M.A., Rishi, S., Becker, K.L., Havrankova, J., Rosenzweig, J.L. Brownstein, M.J., and Roth, J. Insulin in Brain and Other Extrapaneatic Tissues of Vertebrates and Nonvertebrates. In: *Advances in Metabolic Disorders*, Vol. 10, Chapter 11, pp.303-340, 1983. Szabo, A.J., Luft, R., and Levine, R. (Eds.), Academic Press, Inc. N.Y.
63. Lesniak, M.A., Hendricks, S.A., LeRoith, D., Young, S., Rosenzweig, J.L., Havrankova, J., Brownstein, M.J., Rishi, S., Becker, K.L., and Roth, J.: Insulin receptors and insulin in brain and other extrapancreatic tissues of vertebrates and nonvertebrates. *Proceedings of the XIth Congress of the International Diabetes Federation Excerpta Medica* pp. 213-322, 1983.
64. Roth, J. and LeRoith, D.: Intercellular Communication: The evolution of scientific concepts and of messenger molecules. In: *Medicine, Science, and Society: Symposia Celebrating The Harvard Medical School Bicentennial*, p. 425-447, John Wiley Med. Publishers, 1984.
65. Roth, J. and LeRoith, D.: Evolutionary origins of intercellular communication: Implications for human biology. In: *Receptors and the Upper G.I. tract*, p. 1-10, Eds. B.I. Hirschowitz and J.G. Spenner, Adis Press, 1983.
66. LeRoith, D. and Roth, J. Vertebrate hormones and neuropeptides in microbes: evolutionary origins of intercellular communication. In: *Frontiers in Neuro-endocrinology*, Vol. 8:1-25, Eds. L. Martini and W.F. Ganong. Raven Press, 1984.
67. Roth, J., LeRoith, D., Shiloach, J., and Rubinovitz, C.: Intercellular communication: An attempt at a unifying hypothesis. *Clin. Res* 31:354-363, 1983.
68. Deftos, L., LeRoith, D., Shiloach, J., and Roth, J.: Salmon calcitonin-like immunoactivity in extracts of *Tetrahymena pyriformis*. *Horm. Metab. Res.* 17:82-85, 1985.
69. Shiloach, J., Rubinovitz, C., and LeRoith, D. Extraction of insulin-related material and other peptide hormones from *Tetrahymena pyriformis*. In: *Recovery and Purification Processes for Fermentation Products*. Amer. Chem. Society Symposium Series 271, pp. 175-192, Eds. D. LeRoith, J. Shiloach, and T. Leahy, 1985.
70. LeRoith, D. Phylogenetic conservation of hormone-related peptides: immunocytochemical and physicochemical studies in non-vertebrates and unicellular organisms. In: *Immunolabelling for Electron Microscopy*, pp. 305-332, Eds. J.M. Polak and I.M. Varndell, Elsevier Press, 1984.
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