

**CURRICULUM VITAE**

**Name:** **Barry Innis Posner, OC, MD, FRSC, FRCP(C), FACP.**

**Address:** **Professional:**

McGill University,  
Professor of Medicine and Director,  
Polypeptide Hormone Laboratory,  
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360 Wood Avenue,  
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**Date of Birth:** November 7, 1937

**Place of Birth:** Winnipeg, Manitoba, Canada

**Citizenship:** Canadian/United States

**Family Status:** Married - Beatrice M. Melmed  
Children (Aaron, Rebecca, Daniel)  
Grandchildren (Noah, Hannah, Benjamin, & Natalie)

**EDUCATION**

1954-1957 Pre-Med., University of Manitoba  
1957-1961 Medicine I-IV, University of Manitoba

**ACADEMIC DEGREES**

1961 M.D., University of Manitoba

**LICENSURE AND CERTIFICATION**

1961 Licentiate of the Medical College of Canada  
1968 Fellow, Royal College of Physicians of Canada  
1973 Member, Quebec College of Physicians and Surgeons  
1973 Member of the Federation of Medical Specialists of Quebec, Endocrinologist  
1994 Fellow, American College of Physicians

**POSTDOCTORAL TRAINING**

1961-1962 Rotating Internship, Winnipeg General Hospital  
 1962-1963 Junior Assistant Residency, Winnipeg General Hospital  
 1963-1964 Special Student in Biology, Massachusetts Institute of Technology  
 1963-1965 Research Fellow in Metabolism, New England Medical Center Hospitals  
 1965-1967 Research Associate in Metabolism, New England Medical Center  
 1967-1968 Chief Resident in Medicine, New England Medical Center Hospitals  
 1968-1970 Research Associate in Biochemistry, National Institute of Health, Bethesda, MD

## ACADEMIC APPOINTMENTS

### *University:*

1965-1968 Instructor in Medicine, Tufts School of Medicine, Boston, MA  
 1970-1975 Assistant Professor, Department of Medicine, Faculty of Medicine, McGill University, Montreal.  
 1975-1978 Associate Professor, Department of Medicine, McGill University  
 1978- Director, Polypeptide Hormone Laboratory, McGill University  
 1979- Professor, Department of Medicine, McGill University  
 1981-1996 Director, Training Program in Endocrinology and Metabolism, McGill University  
 1981- Associate Member, Dept. of Physiology, McGill University.  
 1994- Associate Member, Dept. of Chemistry, McGill University.  
 1997- Professor, Department of Anatomy and Cell Biology, McGill University

### *Hospital:*

1970-1975 Assistant Physician, Royal Victoria Hospital, Montreal  
 1975-1978 Associate Physician, Royal Victoria Hospital, Montreal  
 1978- Senior Physician, Royal Victoria Hospital, Montreal  
 1980-1996 Director, Division of Endocrinology and Metabolism  
 1996-2002 Physician-in-Chief, Jewish General Hospital, Montreal.

## HONORS AND AWARDS

1961 University of Manitoba Medical School, Gold Medalist  
 1968 Second prize at Young Investigators Competition, American College of Cardiology, San Francisco.  
 1971-1976 Medical Research Council Scholar  
 1976-1986 Chercheur Boursier du Québec  
**1977 Elected to the American Society of Clinical Investigation (ASCI).**  
 1977 Invited Guest on the occasion of a visit by Her Majesty, The Queen "Tribute to young Canadians who have achieved Excellence in Arts and Science". Ottawa, Canada.  
 1979 Medical Data Sciences Lectureship, Joint Congress on Clinical Chemistry, Montreal  
 1981 Pfizer Travelling Lecturer, Clinical Research Institute, Montreal.  
 1986 Distinguished Visiting Scientist Lecture, Winnipeg Health Sciences Center, Winnipeg  
 1986 Plenary Lecturer at International Physiological Society Meeting, Vancouver, B.C.

- 1987**            **Elected to the American Association of Physicians (AAP).**  
 1988            Third Annual Kroc Lectureship. Univ. of Washington Diabetes Centre. Seattle, WA.  
 1989            Charter Member, Canadian Institute of Academic Medicine.  
 1990            Distinguished Scientist Awardee of the Canadian Society of Clinical Investigation.  
                  Toronto, Ontario,  
**1991**            **Fellow of the Royal Society of Canada: Academy of Sciences.**  
 1991            Banting and Best Memorial Lecture. International Diabetes Federation Meeting.  
                  Washington, D.C.  
 1991            Elected to the Peripatetic Club.  
 1993            Elliott Osserman Award of the International Cancer Research Foundation for Service in  
                  Support on Cancer Research.  
 1993            Pfizer Visiting Professor, Harvard University, Boston.  
**1994**            **Joe Doupe Memorial Lecture, University of Manitoba, Winnipeg.**  
 1994            Fellow, American College of Physicians.  
 1997            Novartis (Now Eli Lilly) Lecturer of the Canadian Society of Endocrinology & Metabolism  
**1999**            **Officer of the Order of Canada.**  
 2000            David M. Kovitz Visiting Professor. Faculty of Medicine, University of Calgary.  
 2002            Recipient of the Queen's Golden Jubilee Medal.  
 2003            2<sup>nd</sup> John K. & Mary E. Davidson Lectureship and Award. Univ. of Toronto.  
**2006**            **Charter Member - Canadian Academy of Health Science**  
 2008            Robert Volpe Distinguished Service Awardee – Canadian Society of Endocrinology & Metab.

## **OFFICES HELD IN PROFESSIONAL CAPACITY**

### ***Professional Associations:***

American College of Physicians  
 American Society of Clinical Investigation  
 American Federation of Clinical Research  
 American Diabetes Association  
 American Endocrine Society  
 American Society for Cell Biology  
 American Society of Biological Chemists  
 Association of American Physicians  
 Canadian Institute of Academic Medicine - Charter Member  
 Canadian Society of Clinical Investigation  
 Canadian Society of Endocrinology and Metabolism  
 Peripatetic Club  
 Royal College of Physicians  
 Royal Society of Canada: Academy of Sciences  
 Order of Canada  
 Canadian Academy of Health Sciences

### ***McGill University:***

1978            Animal Care Committee

- 1995 Hospital Merger: Clinical Departments Work Group
- 1995 Academic Priorities: Strategic Planning Group on Development of Clinical Faculty
- 1995-1997 Board of Directors, Montreal General Hospital Research Institute

***Selection Committees:***

- 1979 Chairman of Medicine
- 1984 Director, Montreal Neurological Institute
- 1980-1983 Faculty of Medicine - Honorary Degrees Committee
- 1993-1994 Chairman, Search Committee for Director of Meakins-Christie Labs.
- 1994 Chairman, Dept. of Medicine, McGill University.
- 2004 Dean of Medicine, Advisory Committee to the Vice-Principal Academic.
- 2008 Chair, Search Committee for Director of the Meakins Christie Laboratories

***Royal Victoria Hospital:***

- 1976-1978 Radiation Safety Committee
- 1978-1981 Executive Committee of Physicians and Dentists
- 1979-1989 Laboratory Services Committee
- 1983-1990 Executive Committee, Department of Medicine
- 1987-1990 Vice-President for Research
- 1994-1996 Executive Committee, Department of Medicine

***Royal Victoria Hospital Research Institute:***

- 1981-1984 Board of Management
- 1986-1994 Research Committee
- 1986-1990 Executive Committee
- 1987-1990 Chairman, Research Committee

***Sir Mortimer B. Davis Jewish General Hospital***

- 1996-2002 Physician-in-Chief
- 1996-date Chair, Policy, Promotions & Executive Committees, Dept. of Medicine
- 1997-98 Member, Executive Committee to President of the Hospital Board
- 1996-2002 Member, Medical Advisory Committee
- 1997 Chair, Search and Selection Committees for Chiefs of Cardiology & Hematology
- 1997-2002 Member, Dean's Committee on MUHC-JGH Liaison
- 1998-1999 Chair, Search and Selection Committee for Chief of Dept. of Psychiatry
- 1998-2002 Member, Academic Advisory Committee
- 1999-2000 Member, Search and Selection Committee for Chief of Lady Davis Inst. for Research
- 1999-2000 Consultant and invited speaker, Clinical Task Force, Strategic Planning Committee
- 1999-2001 Member, Strategic Planning Steering Committee

***National:***

- 1976 Founding Member, Canadians for Health Research
- 1976-1978 Member of Executive, Canadians for Health Research
- 1976-1979 Member of Council, Canadian Society of Clinical Investigation

- 1977-1979 Member of Science Policy Committee, Canadian Society of Clinical Investigation
- 1978-1982 Member of Council, Canadian Society of Endocrinology and Metabolism
- 1979 Local Arrangements Chairman - Montreal Meeting, Can.Soc. of Clinical Investigation
- 1979-1981 Secretary of Science Policy Committee, Canadian Society of Clinical Investigation
- 1979-2000 Advisory Board (Canada), Juvenile Diabetes Research Foundation
- 1981 Program Chairman, Canadian Society of Endocrinology and Metabolism
- 1985 National Commission on Diabetes Mellitus in Canada: Report on Future Research Needs (co-author Dr. G. Hetenyi)
- 1990-1992 Juvenile Diabetes Foundation Representative, Canadian Diabetes Advisory Board (Advisory to Federal Government)
- 1993 MRC representative to Strategic Planning Subcommittee on collaboration between MRC and the Pharmaceutical Manufacturers' Association.

***International:***

- 1985-1990 Medical Scientific Advisory Council, Juvenile Diabetes Federation (International)
- 1988-2004 Scientific Committee: International Symposia on Insulin Receptor and Insulin Action
- 1993-2004 Scientific Advisory Board, Israel Cancer Research Foundation
- 1994 Organizer. First International Symposium on Vanadium: Biochemistry, Physiology and Potential Use in Diabetes Therapy.
- 2002-2005 Member of Committee on Meetings and Membership, Endocrine Society of the U.S.

***Peer Review and Consulting Activities:***

- 1979-1981 Grant Review Committee on Metabolism, Medical Research Council
- 1980 Medical Science Review Board (Ad Hoc), Juvenile Diabetes Foundation (International)
- 1980 Fogarty Fellowships, National Institute of Health Committees
- 1981 Metabolism Study Section, National Institute of Health
- 1982-1985 Grants Review Committee, Canadian Diabetes Association
- 1982-1985 Medical Science Review Board, Juvenile Diabetes Foundation (International)
- 1984 Site visit: Salk Institute, National Institute of Health Committees
- 1985 Biochemical Endocrinology - Special Study Section, National Institute of Health
- 1985-1988 Endocrine Study Section, National Institute of Health
- 1986 NIH site visit: Mass. Gen. Hosp., (Protein Chem. Grp.)
- 1986 External Reviewer: Banting and Best Diabetes Center, University of Toronto
- 1990-1992 Scholarship Committee, Medical Research Council
- 1991 Review Committee of the National Research Council: Subcommittee for Protein Engineering Section of the Biotechnology Research Institute, Montreal
- 1990-1993 Grant Reviewer: Israel Cancer Research Foundation
- 1992 External Reviewer: Banting and Best Diabetes Center, University of Toronto
- 1995 Senior Scholarship Committee, Alberta Heritage Foundation for Medical Research.
- 1995 - 2003 Medical Advisory Board, Gairdner Foundation
- 2005 External Reviewer: Health Research Program at the University of Western Ontario.
- 2005 - date Consultant to Eli Lilly re Inhaled Insulin Program (Chicago Illinois).

**Editorial Board Responsibilities:**

1981-1984 Journal of Clinical Endocrinology and Metabolism, Reviewing Editor  
1985-1988 Reviewing Editor, Diabetes  
1989-date Journal of Internal Medicine, Editorial Board  
1991-date Reviewing Editor, Journal of Laboratory and Clinical Medicine  
1992-2000 Reviewing Editor, Endocrinology  
2005-... Reviewing Editor, Endocrinology  
2005-... Reviewing Editor, Diabetes/Metabolism Research & Reviews  
2008-... Editorial Board, International Journal of Endocrinology

**BOOKS EDITED**

1985 Polypeptide Hormone Receptors, Volume 4, Bernhard Ciner Institute of Immunology, University of Toronto, Toronto Ontario. Publishers Marcel Dekker Inc., New York, N.Y., 10016

**PATENTS HELD**

• **VANADIUM PEROXIDE COMPOSITIONS AS INSULIN MIMICKERS**

<u>COUNTRY</u>	<u>PATENT NUMBER</u>	<u>DATE GRANTED</u>	<u>STATUS</u>
U.S.	5,069,913	Dec. 3, 1991	Lapsed
U.S.	4,882,171	Nov. 21, 1991	Lapsed
Canada	1,277,599	Dec. 11, 1990	Lapsed
Australia	602,927	Mar. 11, 1991	Lapsed
Europe	264,278	Dec. 18, 1991	Lapsed

• **USE OF PERVANADATE AS AN INHIBITOR OF PHOSPHOTYROSINE PHOSPHATASE**

<u>COUNTRY</u>	<u>PATENT NUMBER</u>	<u>DATE GRANTED</u>	<u>STATUS</u>
U.S.	5,155,031	Oct. 13, 1992	Lapsed
Canada	Filed 5/14/91	1996	Active

• **PEROXOVANADIUM COMPOUNDS AS PROTEIN TYROSINE PHOSPHATASE (PTP) INHIBITORS: THEIR INHIBITORY EFFECTS ON ANGIOGENESIS, RESTENOSIS AND THE PRODUCTION OF ENDOTHELINS, AND THEIR STIMULATING EFFECTS ON THE IMMUNE RESPONSE**

<u>COUNTRY</u>	<u>PATENT NUMBER</u>	<u>DATE GRANTED</u>	<u>STATUS</u>
U.S.	2,280,249	August 12, 1999	Active

• **MECHANISM FOR THE INACTIVATION OF INSULIN RECEPTOR AND USES IN THE TREATMENT OF TYPE II DIABETES**

<u>COUNTRY</u>	<u>PATENT NUMBER</u>	<u>DATE GRANTED</u>	<u>STATUS</u>
Canada	2,237,791	May 15, 1998	Active
U.S.	09/312,393	May 14, 2000	Active

## SUMMARY OF GRANTS AWARDED

### A. OPERATING FUNDS

1.	<u>a. Medical Research Council of Canada</u>	<u>Dates</u>	<u>\$ CDN.</u>
	i) Insulin and insulin-like growth factors in growth development and disease.	1970-1990	1,516,024
		1990-1995	930,000
		1995-2000	897,784
	Insulin and growth factors in growth, development and disease.	2000-2005	854,075
		2006-2011	680,000
	ii) Endosomal peptide hormone receptors: routing, regulation and function. (Co-investigator: Dr. J.J.M.Bergeron). Termination of Cell Signaling: Role of the Endosomal System.	1991-1994	378,534
		1994-1997	246,411
		1997-2000	265,481
		2000-2003	322,830
	iii) Interaction of insulin and other peptide hormones with the central nervous system & cultured hepatocytes	1982-1985	100,068
	<u>b. Canadian Institutes of Health Research.</u>		
	Insulin and Growth factors in Health & Disease	2005-2010	652,775
	<u>c. MRC-University Industry Program</u>		
	i) The synthesis and assessment of peroxovanadium compounds as insulin-like agents for the therapy of diabetes mellitus. (Co-investigators: Drs.A.Shaver, G.Fantus)	1991-1993	300,000 (Industry) 173,049 (MRC)
	ii) The insulin receptor - associated phosphotyrosine phosphatase: key regulator of insulin action and therapeutic target for insulin mimetic drugs. (Co-investigator: Dr. Alan Shaver)	1996-1999	282,450 (Ind) 112,557 (MRC)
		SubTotal (MRC-CIHR)	<b><u>7,712,041</u></b>
2.	<u>National Cancer Institute</u>		
	Expression of oncogenic potential. (Principal Investigator: Dr.J.J.M.Bergeron; Co-Investigator: Dr.B.I.Posner)	1994-1999	588,720
		1999-2004	750,000
3.	<u>Canadian Diabetes Association</u>		
	i) Studies on insulin receptor internalization	1982-1989	295,320

	and kinase function in diabetic rats.		
ii)	The synthesis and assessment of peroxovanadium compounds as insulin-like agents for the therapy of diabetes mellitus.	1990	58,000
iii)	Insulin receptor kinase (IRK) substrates and signalling molecules: a proteomic approach.	2002-2004	134,982
4.	<u>National Institute of Health</u> Regulation of intracellular peptide hormone receptors. (Co-investigator: Dr.J.J.M.Bergeron)	1978-1990	1,070,235
5.	<u>Juvenile Diabetes Foundation International</u> Basis of direct insulin action in the central nervous system. Insulin action: relationship of internalization & receptor kinase activation.	1978-1985 1987-1988	165,584 40,000
6.	<u>Industry Support</u>		
i)	<u>Nordic Merrell Dow Research</u> - The synthesis and assessment assessment of peroxovanadium compounds as insulin-like agents for the therapy of Diabetes Mellitus.	1994	125,000
ii)	<u>Baxter</u> - The range and mechanism of action of peroxide(s) peroxide(s) of vanadate.	1988-1989	62,475
iii)	<u>Conjuchem Inc.</u> – Activity in vitro and in vivo of insulin-HAS conjugate (CJC-1525)	2006	37,760
	<b><u>SUBTOTAL OPERATING FUNDS:</u></b>		<b><u>\$11,040,117</u></b>
<b>B.</b>	<b><u>EQUIPMENT GRANTS</u></b>		
	<u>Medical Research Council</u> -	1981-1982	34,000
	Miscellaneous laboratory equipment	1984-1985 1989-1990 1990-1991 1992-1993	133,000 39,985 30,464 37,897
	CIHR Multi-User Equipment Grant	2001	140,806
	CIHR Multi-User Equipment Grant	2002	171,966
	CIHR Mutli-User Equipment Grant	2005	225,056
	Research Institute Royal Victoria Hospital	2000	35,595
	Dr.Louis Johnson Foundation	2002	12,882
	<b><u>SUBTOTAL EQUIPMENT GRANTS:</u></b>		<b><u>\$ 861,651</u></b>



**TOTAL OPERATING AND EQUIPMENT GRANTS:-** **\$11,901,768**  
**C. GROUP GRANTS**

1. Genome Canada/Genome Quebec  
 Montreal Network for Pharmaco-proteomics and structural genomics.  
 Principal Investigators: John J.M.Bergeron et al. on Cell Map. 2001-2004 \$12,159,000.  
 Co-investigator: 50,000\$ / yr.
2. Canadian Institute of Health Research – Genomics Group Grant  
 Proteomics and Molecular Machines.  
 Principal Investigator: John J.M.Bergeron, Co-investigators: B. Posner (1 of 13).  
 1999 – 2002. \$1,226,214.
3. Canadian Foundation for Innovation  
 Montreal Diabetes Research Center: From Biology to Innovative Therapies.  
 Principal Investigator: Marc Prentki; Co-Investigator: Lawrence Rosenberg  
 (30 investigators constitute the research team).  
 2004 \$14,000,000.
4. Genome Canada/Quebec  
 Genomic and Proteomic Approach to Type 2 Diabetes Mellitus.  
Principal Investigator: Barry I. Posner; Co-investigator: Marc Prentki  
 (9 investigators constitute the research team).  
 2004-2007 \$16,200,000 (Posner Lab ~ 200,000/yr)

**D. PERSONAL SALARY AWARDS TO B.I. POSNER**

Medical Research Council Scholar	1971-75	100,535.
Chercheur Boursier du Quebec	1976-86	329,295.
<b><u>TOTAL PERSONAL SALARY AWARDS</u></b>	<b>1971-86</b>	<b><u>429,830.</u></b>

## TRAINEES

<b>BARRY POSNER – TRAINEES SUPERVISED</b>							
<b><u>TRAINEE</u></b>	<b><u>TYPE</u></b>	<b><u>PERIOD</u></b>	<b><u>DEGREE</u></b>	<b><u>YR</u></b>	<b><u>INSTITUTION</u></b>	<b><u>RESEARCH PROJECT</u></b>	<b><u>CURRENT POSITION</u></b>
Z. Josefsberg	PDF	77-79	MD	62	Tel Aviv Univ	Intracellular receptors for prolactin and insulin	Prof. Pediatric Endo. Tel Aviv
M. Van Houten	PDF	79-82	PhD	77	Tufts Univ.	Peptide Horm. Recs. In the CNS	Clin. Neurologist, Los Angeles
A.Verma	PDF	79-81	PhD	76	Central Drug Res. Inst. India	Intracell. Recepts for prolactin and insulin	Biochem/Mol. Biol. Mayo Clin. Rochester
M. Khan	PDF	79-81	PhD	75	Aligarh, India	Internalizn. Of insulin Assoc. Receptor	Dir., Immunoch. Phoenix Mtl.
D.M. Ruggere	PDF	80-82	MD	75	Univ. Mass	Insulin receptors on circulating red blood cells	Unknown
R. Kahn	PDF	81-83	PhD	81	Aligarh, India	Insulin receptors in clinical states	Asst. Professor Concordia Univ. Mtl.
S. Savoie	PDF	82-85	PhD	81	Univ. Mtl.	Endosomal compartments	Unknown
M. Blanchard	PDF	'86	PhD	86	Univ. Of Montpellier	Role of Type II IGF rec in anabolic resp.	Unknown
M. Uchihashi	PDF	85-86	MD	85	Kobe Univ. Japan	Internalization of EGF receptor Kinase	Physician Int. Med. Hyogo, Japan
S. Kadota	PDF	84-87	MD	76	Osaka Med. College	Insulin mimetic agents: Action of fat cells	Kyoto Univ. School of Medicine
I. Barash	PDF	86-88	PhD	86	Hebrew Univ. Jerusalem	Induction of PRL Recs in cultured hepatocytes	Volcani Centre, Inst. Of Animal Sci. Israel
N. Kenny	PDF	87-88	PhD	85	Univ. Hull England	Reg. of endosomal insulin receptor kinase	Unknown
J. Burgess	PDF	87-92	PhD	87	Univ. Manitoba	Regn/endosomal IR s	PDF:Hrt. Res. Inst. Sydney, Australia
D. Lachance	PDF	90-92	PhD	91	Univ. Mtl.	Role of pV compounds in glucose homeostasis	Regulatory Affairs, Sandoz Canada
M. Xu	PDF	91-93	PhD	90	Univ. Wyoming	Cloning & function of PTPase(s)	Clin. Res. Assoc. Upjohn, Michigan
Z. Kachra	GRAD.	87-93	PhD	93	Univ. McGill	Regulation of IGF-1 gene expression	PDF, Univ. Mtl.
A. Dorato	GRAD.	85-93	PhD	93	Univ. McGill	Kinetics of PRL receptor different cellular comp.	Editor, J.Neuro Mol. Biol.
P. Bevan	PDF	91-95	PhD	91	Univ. London	Regln of Endosomal IRK	Res. Fellow, Clin. Bioch Addenbrooke Hosp.
G. Zhang-Sun	PDF	91-95	PhD	90	Univ. Paris	Substrates for the IRK	S. Scientist IBEX

<b><u>TRAINEE</u></b>	<b><u>TYPE</u></b>	<b><u>PERIOD</u></b>	<b><u>DEGREE</u></b>	<b><u>YR</u></b>	<b><u>INSTITUTION</u></b>	<b><u>RESEARCH PROJECT</u></b>	<b><u>CURRENT POSITION</u></b>
C-R. Yang	PDF	90-96	PhD	60	Shanghai Inst.	Cloning of mammalian PTPase(s)	Retired
JO Contreres	PDF	93-97	PhD	92	INSERM, Fr.	Signaling by the IRK in endosomes	France
P. Drake	PDF	94-98	PhD	93	Univ. London	Regulation of transmembrane insulin signaling within hepatic endosomal apparatus	Postdoc Fellow & then Employee at Novo Nordisk Copenhagen
K. Mohammad-Ali	PDF	94-98	PhD	94	Univ. Paris	Adenovirus modulated transfection of signalling molecules in vivo	MBA Univ. de Montreal
C. Mounier	PDF	96-02	PhD	96	ENSAR, Fr.	Insulin regulation of gene expression	Professor, Investigator UQAM
A. Balbis	PDF	97-	PhD	95	Univ. Buenos Aires	Insulin and EGF signaling	Research Associate Polypeptide Lab
C. Band	PDF	93-00	PhD	99	Univ. McGill	IGF-1 binding proteins	Industry
Q. Chu	Grad	93-98	M.S.	98	Univ. McGill	pVs as hypoglycemic agents in normal & diabetic rats	MSc Student
C. Li	Grad	97-02	BM	92	Univ. Hunan	Identification of IRK-associated PTP(s)	PhD Student
H. Viladevall	Grad	97-00	BSc	97	McGill	Endos. Reguln. of Insulin Degradation	Med Student
M. Kong	Grad	98-02	PhD	02	Shanghai Inst.	Insulin and EGF signaling in primary rat hepatocytes	PDF
A. Parmar	PDF	02-07	PhD	02	Cambridge Univ.	Insulin Signaling: A proteomic approach	Institute of Microbiology, Munich, Germany
Ye Wang	Grad	03-07	MSc	08		Caveolae in insulin and EGF signaling	Associate, Lady Davis Institute at the JGH
Yanqing Xu	Grad	07 -	MSc				

## **PUBLICATIONS**

### **1966**

1. Posner, B.I. and B.L. Fanburg. Rapidly labeled RNA from rat heart muscle. *Circulation Res.* 19: 805-815, 1966.

### **1967**

2. Posner, B.I. and M.S. Raben. Inhibition of the oxidation of leucine by hypoglycin. *Biochem. Biophys. Acta* 136: 179-181, 1967.
3. Posner, B.I., S. Sotman and H. Antoniades. The disappearance of crystalline insulin during heart perfusion: Effect of "bound" insulin. *Vox Sanguinis* 13: 37-40, 1967.

### **1968**

4. Fanburg, B.L. and B.I. Posner. RNA synthesis in experimental cardiac hypertrophy: I. Kinetics of labeling. *Circulation Res.* 23: 123-135, 1968.
5. Posner, B.I. and B.L. Fanburg. RNA synthesis in experimental cardiac hypertrophy: II. Aspects of regulation. *Circulation Res.* 23: 137-145, 1968.
6. Posner, B.I., S. Sotman and H. Antoniades. Insulin disposition in the isolated perfused rat heart: Effect of "bound" insulin. *Diabetes* 17: 427-436, 1968.

### **1969**

7. Fanburg, B.L. and B.I. Posner. Labeling of RNA in the perfused heart. The problem of bacterial contamination. *Biochem. Biophys. Acta* 182: 577-579, 1969.

### **1971**

8. Fanburg, B.L., B.I. Posner and S. Matsushita. Ribonucleic acid metabolism in experimental cardiac hypertrophy. *In: Cardiac Hypertrophy.* Ed. Alpert, Academic Press, New Y. (1971) pp. 273-281.

### **1972**

9. Posner, B.I. and M. Flavin, Jr. Cystathionine- $\alpha$ -synthase: Studies of hydrogen exchange reactions. *J. Biol. Chem.* 247: 6402-6411, 1972.
10. Posner, B.I. and M. Flavin Jr. Cystathionine- $\alpha$ -synthase: The nature of the intramolecular proton shifts in the elimination reaction. *J. Biol. Chem.* 247: 6412-6419, 1972.

11. Posner, B.I. Cystathionine- $\alpha$ -synthase of salmonella: Studies of the replacement reaction. *Biochem. Biophys. Acta* 276: 277-283, 1972.

### **1973**

12. Posner, B.I., L. Mierzwinski and E.L. Fallen. Studies on amino acid levels and transport in the mechanically stressed rat heart. *J. Molec. Cellular Cardiol.* 5: 221-233, 1973.
13. Posner, B.I. Studies on the nature of insulin metabolizing enzymes in the human placenta. *Diabetes* 22: 552-563, 1973.
14. Kelly, P.A., B. I. Posner, T. Tsushima, R.P.C. Shiu and H.G. Friesen. Tissue distribution and ontogeny of growth hormone and prolactin receptors. In: *Advances in Human Growth Hormone Research*. Ed. S. Raiti, DHEW Publications No. (NIH) 74-612. (1973) pp. 567-584.

### **1974**

15. Posner, B.I. Insulin receptors in human and animal placental tissue. *Diabetes* 23: 209-217, 1974.
16. Posner, B.I., P.A. Kelly, R.P.C. Shiu and H.G. Friesen. Studies of insulin, growth hormone and prolactin binding: Species variation and characterization. *Endocrinology* 95: 521-531, 1974.
17. Kelly, P.A., B.I. Posner, T. Tsushima and H.G. Friesen. Studies of insulin, growth hormone and prolactin binding: Ontogenesis, effects of sex and pregnancy. *Endocrinology* 95: 532-539, 1974.
18. Posner, B.I., P.A. Kelly and H.G. Friesen. Induction of a lactogenic receptor in rat liver: Influence of estrogen and the pituitary. *Proc. Natl. Acad. Sci. (USA)* 71: 2407-2410, 1974.

### **1975**

19. Kelly, P.A., B.I. Posner and H.G. Friesen. Effects of hypophysectomy, ovariectomy and cycloheximide on specific binding sites for lactogenic hormones. *Endocrinology* 97: 1408-1415, 1975.
20. Posner, B.I., P.A. Kelly and H.G. Friesen. Prolactin receptors in rat liver: Possible induction by prolactin. *Science* 187: 57-59, 1975.
21. Posner, B.I. Insulin - placental interaction. In: *Early diabetes in early life. Proceedings of Third International Symposium*, eds. R.A. Camerini-Davalos and H.S. Cole. Academic Press, New York (1975) pp. 257-271.
22. Posner, B.I. Polypeptide hormone receptors: Characteristics and applications. *Can. J. Physiol. Pharmacol.* 53: 689-703, 1975.

## **1976**

23. Posner, B.I. Characterization and modulation of growth hormone and prolactin binding in mouse liver. *Endocrinology* 98: 645-654, 1976.
24. Posner, B.I. and H.J. Guyda. A human placental radioreceptor assay for insulin and insulin-like substance. *In: Hormones in human plasma*, ed. H.N. Antoniades. Academic Press, New York, (1976) pp. 247-253.
25. Posner, B.I. Regulation of lactogen specific binding sites in rat liver: Studies on the role of lactogens and sex steroids. *Endocrinology* 99: 1168-1177, 1976.

## **1977**

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## **1998**

239. Drake, P.G. and B.I. Posner. Insulin receptor-associated protein tyrosine phosphatase(s): role in insulin action. In "Insulin Action" (Guest Editors: A.K.Srivastava and B.I.Posner). *Molecular and Cellular Biochemistry* 182: 79-89, 1998.
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243. Olivier, M., B-J.Romero-Gallo, C. Matte, J. Blanchette, B.I.Posner, M. Tremblay and R. Faure. Modulation of interferon- $\gamma$ -induced macrophage activation by phosphotyrosine phosphatases inhibition effect on murine leishmaniasis progression. *J. Biol. Chem.* 273:13944-13949, 1998.
244. Orlando, R.A., K. Rader, F. Authier, H. Yamazaki, B.I. Posner, J.J.M.Bergeron and M.G. Farquhar. Megalin is an endocytic receptor for insulin. *J. Am. Soc Nephrol.* 9:1759-1766, 1998.
245. Posner, B.I., P.G. Drake and J.J.M.Bergeron. Insulin signaling: the role of endosomes. In *Canadian Journal of Diabetes Care.* (Editor I.G.Fantus) 22:Supp 3:S32-S40, 1998.
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## **1999**

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248. Lavoie, L., C. J. Band, M. Kong, J.J.M. Bergeron and B.I. Posner. Regulation of glycogen synthase in rat hepatocytes: evidence for multiple signaling pathways. *J.Biol.Chem.* 274:28279-85, 1999.
249. Band, C. J., C. Mounier and B.I. Posner. EGF and insulin-induced DNA synthesis in primary rat hepatocytes is PI 3-kinase dependent and dissociated from proto-oncogene induction. *Endocrinology* 140:5626-5634, 1999.
250. Doillon, C.J., R.L.Faure, B.I.Posner and P.E.Savard. Peroxovanadium compounds as inhibitors of angiogenesis. *Angiogenesis* 3:361-369, 1999.

## **2000**

251. Drake, P.G., A.Balbis, J.Wu, J.J.M. Bergeron and B.I.Posner. Association of phosphatidylinositol 3-kinase with the insulin receptor: compartmentation in rat liver. *Am J Physiol Endo & Met.* 279:E266-E274, 2000.
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255. Posner, B.I. The insulin receptor kinase: modulation and therapeutic implications. *Emerging Therapeutic Targets.* 4(4): 541-549, 2000.
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257. Balbis, A., G. Baquiran, J.J.M.Bergeron and B.I. Posner. Compartmentalization and insulin-induced translocation of IRSs, PI3-kinase and Akt/PKB in rat liver. *Endocrinology* 141: 4041-4049, 2000.
258. Kong, M., C. Mounier, J. Wu and B.I. Posner. EGF-induced PI 3-kinase activation and DNA synthesis: Identification of Gab2 as a major mediator in rat hepatocytes. *J.Biol.Chem* 275: 36035 – 36042, 2000.
259. Lavoie, C., E. Chevet, L. Roy, N.K.Tonks, A. Fazel, B.I. Posner, J. Paiement and J.J.M.Bergeron. Tyrosine phosphorylation of p97 regulates transitional endoplasmic reticulum assembly. *PNAS* 97: 13637 – 13642, 2000.

### **2001**

260. Mounier, C., L. Lavoie, V. Dumas, K. Mohammad-Ali, J. Wu, A. Nantel, J.J.M.Bergeron, D.Y. Thomas, and B.I. Posner. Specific inhibition by hGRB10 $\zeta$  of insulin-induced glycogen synthase activation: evidence for a novel signaling pathway. *Mol. Cell. Endo.* 173:15-27, 2001.
261. Posner, B. Regulation of the insulin receptor kinase: the key role of the endosomal system. *Canadian Journal of Diabetes Care* 25: Suppl.2, pp. 6-11, 2001.

### **2002**

262. Germinario, R.J., S.P. Colby-Germinario, B.I.Posner and K. Nahm. Different forms of Vanadate on sugar transport in insulin and non-target cells. *J. Biomedicine and Biotech.* 2:1-9, 2002.

### **2003**

263. Kong, M., C. Mounier, V. Dumas and B.I. Posner. EGF-induced mitogenesis in rat hepatocytes: Key role for src family kinases via phosphorylation of Gab 2. *J. Biol.Chem.* 278: 5837-5844, 2003.
264. Kong, M., C. Mounier, A. Balbis, G. Baquiran and B.I. Posner. Gab2 Tyrosine Phosphorylation by a PH-Domain Independent Mechanism: Role in EGF-induced Mitogenesis. *Molec. Endoc.* 17 (May): 935-944, 2003.
265. Posner, Barry I. Regulation of insulin receptor kinase activity by endosomal processes: Possible areas for therapeutic intervention. *In: Current Opinion in Investigational Drugs* 4(4):430-434, 2003.

### **2004**

266. Mounier, C., and B.I. Posner. Peptide Hormones and Growth Factors: Cellular Signaling Mechanisms. *Encyclopedia of Endocrine Diseases* (Elsevier Inc.) 3: 532-539, 2004.
267. Balbis, A., Baquiran, G., Dumas, V., and B. I. Posner. Effect of inhibiting vacuolar acidification on insulin signaling in hepatocytes. *J. Biol. Chem.* 279: 12777-12785, 2004.

268. Balbis, A., G.Baquiran, and B.I.Posner. Effect of Insulin on Caveolin-enriched Membrane Domains in Rat Liver. *J.Biol. Chem.* 279: 39348 – 39357, 2004.

## **2005**

269. Parmar, A., A. Balbis, G. Baquiran, and B.I.Posner. Impact of EGF on Endosomal Rafts: A Proteomic Approach. Proceedings of 12<sup>th</sup> International Congress on Second Messengers and Phosphoproteins (Editors: M. B. Anand-Srivastava, M. Tremblay, and A.K. Srivastava) Montreal Canada, August 3-7, 2004. (Medimond, via Mazerati, Bologna Italy).
270. Ho, J., E. Cocolakis, V.M.Dumas, B.I.Posner, S.A.Laporte and J.-J.Lebrun. The G protein-coupled receptor kinase-2 is a TGF $\beta$ -inducible antagonist of TGF $\beta$  signal transduction. *EMBO J.* 24:3247-58, 2005.

## **2006**

271. Li, C.H., G. Baquiran, M.Tremblay, A. Fazel, J. J.M. Bergeron, and B.I.Posner. IRK-associated PTPs in Hepatocyte Endosomes: Assessing the Role of PTP1B. *Endocrinology* 147: 912-18, 2006.
272. Mounier, C., Dumas, V., and B.I. Posner. Regulation of Hepatic Insulin-like Growth Factor-Binding Protein-1 (IGFBP-1) Gene Expression by Insulin: Central Role for mTOR Independent of Foxo Proteins. *Endocrinology* 147: 2383- 2391, 2006.
273. Mounier, C. and B.I.Posner. Transcriptional regulation by insulin: from the receptor to the gene. *Can J Physiol Pharmacol.* 84(7):713-724, 2006.

## **2007**

274. Balbis, A., A. Parmar, Y.Wang, G.Baquiran, and B.I.Posner. Compartmentalization of Signaling Competent EGFR in Endosomes. *Endocrinology* 148: 2944-2954, 2007.
275. Sladek, R. G.Rocheleau, J.Rung, C.Dina et al. A Genome Wide Association Study Identifies Novel Susceptibility Loci for Type 2 Diabetes Mellitus. *Nature* 445:881-885, 2007.
276. Fedjaev, M. S.Trudel, N. Tjon-A-Pan, A. Parmar et al. Quantitative Analysis of a Proteome by N-terminal Stable-isotope Labelling of Tryptic Peptides. *Rapid Commun. Mass Spectrom.* 21:2671-2679, 2007.

## **2008**

277. Wang, Ye, B.I. Posner and A.Balbis. Compartmentalization of Epidermal Growth Factor Receptors in Rat Liver Plasma Membrane (a).

## **PROFESSIONAL INVITATIONS** (outside McGill University)

### **1974**

June Symposium on Puberty and Development, Tel-Aviv University. "The Ontogenesis and Regulation of Polypeptide Hormone Receptors."

Sept. Seminar, McMaster University, Hamilton, Ontario. "The Ontogenesis and Regulation of Polypeptide Hormone Receptors."

Dec. Third International Symposium on Early Diabetes, Funchal, Madeira. "Insulin-placental Interactions."

Lecturer. Connaught Medical Laboratories Ltd., Willowdale, Ontario. "Serum Growth Factors and Their Relation to Serum Insulin-like Activity."

### **1975**

Jan. Symposium on Hormone Receptors sponsored by Canadian Society for Clinical Investigation, Winnipeg. "Characterization, Regulation and Application of Receptors for Growth Hormone and Prolactin."

May Symposium on the regulation of target cell receptors for peptide hormones sponsored by the American Society of Clinical Investigation. Atlantic City, New Jersey. "Regulation of Growth Hormone and Prolactin Receptors in vivo."

Visiting Professor. New York University Medical College, New York. "Insulin-like Activity and the Placenta."

Oct. Eighth Canadian Workshop on Diabetes Mellitus, Mont Gabriel. "Insulin, ILA and the Placenta."

### **1976**

July Symposium on New Methods in Immunoassay and Saturation Analysis. Annual Meeting of the Canadian Society of Clinical Chemists, Ottawa. "Tissue Receptors in Saturation Analysis Procedures."

Symposium on Growth Hormone and Lactogens. 5th International Congress of Endocrinology, Hamburg, Germany. "Receptor Studies: New implications for biological activity."

Sept. Symposium on Hormonal Control of Fetal Development, Paris, France. "Insulin, ILA and the Placenta."

Nov. Seminar, Medical Sciences Building, University of Toronto. "Insulin Receptors: Characteristics and Regulation."

Seminar. Recent Advances in Neurosciences, Montreal Neurological Institute. "Hormone Receptors: Characteristics."

## **1977**

Feb. Lecturer. Clinical Research Institute of Montreal. "Hormone Receptors."

Apr. Visiting Professor, Hôpital des Enfants Malades, Paris, France. "Purification and Characterization of Insulin-like Activity from Human Plasma."

Visiting Professor, Hôpital des Enfants Malades, Paris, France ".Characterization, Regulation and Localization of Polypeptide Hormone Receptors."

June Medical Grand Rounds, Vancouver General Hospital, Vancouver, B.C. "Ketoacidosis: Pathogenesis, diagnosis and treatment."

Seminar. Vancouver General Hospital, Vancouver, B.C. "Polypeptide Hormone Receptors: Characterization, regulation and localization."

Sept. Seminar Workshop on Somatomedins and Related Growth Factors. National Institutes of Health. "Partial Purification and Characterization of ILAs."

Oct. Seminar. Dept. of Biology, Concordia University. "Insulin-like Activity in Human Plasma."

Dec. Seminar, Laboratory of Molecular Endocrinology, Laval, Quebec. "Localization and Regulation of Polypeptide Hormone Receptors."

## **1978**

Jan. Symposium, Annual Meeting of Royal College of Physicians and Surgeons, Vancouver "Polypeptide Hormone Receptors."

Feb. Lecturer, Clinical Research Institute of Montreal. "Polypeptide Hormone Receptors."

Mar. Lecturer, Recent Advances in Neuroendocrinology, Montreal. "Polypeptide Hormone Receptors."

- July Seminar, Dept. of Medicine and Biological Sciences. University of Chicago, Chicago, Illinois. "Intracellular Polypeptide Hormone Receptors: Characteristics and Significance."
- Nov. Seminar, Dept. of Biochem. Univ. of Montreal. "Intracellular Polypeptide Hormone Receptors: Characteristics and Significance."
- Seminar, Dept. of Pharmacology, Univ. of Montreal. "Intracellular Polypeptide Hormone Receptors: Characteristics and Significance."
- Symposium. 13th Brazilian Congress of Endocrinology, Brasilia, Brazil. "Intracellular Polypeptide Hormone Receptors: Characteristics and Significance."

### **1979**

- Feb. Peripatetic Club, Montreal. "Intracellular Polypeptide Hormone Receptors: Characteristics and Significance."
- May International Symposium on Isotopic and Nonisotopic Ligand Assay. Toronto. "The Pituitary: Mode of Hormone Action."
- June MDS lecturer to Joint Congress of Clinical Chemistry, Montreal. "The Insulin Receptor in Diabetes Mellitus."
- Sept. 10<sup>th</sup> Congress of the International Diabetes Federation. Symposium, Vienna. "Intracellular Insulin and Insulin Receptors."
- Seminar, Hôpital des Enfants Malades, Paris, France. "Intracellular Receptors and Internalization."
- Seminar. Unité de Recherches sur le Contrôle Hormonal des Activit Cellulaires, INSERM-U. 162. Hôpital Debrousse, Lyon, France. "Intracellular Receptors and Internalization."
- Oct. Presentation. National Conference on Diabetes Current Status and Future Directions. Reston, Virginia. "Intracellular Receptors and Internalization."
- Nov. Workshop Lecture. Breast Cancer Task Force. Workshop on Polypeptide Hormone Receptors in Normal and Malignant Breast Tissue. Bethesda, MD., November 1979. "Internalization of Prolactin."

### **1980**

- Feb. Symposium Lecture. International Endocrine Society, Melbourne, Australia. "Prolactin Receptors: Location and Regulation."



- Mar. Lecture. The Evaluation and Management of Obese Diabetics. Can. Diabetes Association Meeting, Calgary, Alberta. "The Insulin Receptor: Characteristics and Physiologic Role."
- Apr. Seminar, Cornell University Medical School. "The Localization and Internalization of Receptors and Ligands."
- Seminar. Mt. Sinai Medical School. "The Localization and Internalization of Receptors and Ligands."
- Seminar, Dalhousie University, Halifax. "Polypeptide Hormone Receptors: Characteristics and Significance."
- Aug. Lecturer, Laurentian Hormone Conference, Mont Tremblant. "Polypeptide Hormones: Intracellular Receptors and Internalization."
- Sept. 1<sup>st</sup> International Symposium on Insulin Receptors, Rome. "Insulin: Intracellular Receptors and Internalization."
- Oct.. Visiting Professor. Columbia University, Department of Medicine, New York. "Polypeptide Hormones: Intracellular Receptors and Internalization."
- Nov. Symposium on Plasma and Cellular Modulatory Proteins, Center for Blood Research, Boston, Massachusetts. "Insulin-like Growth Factors: Structure and Function."

## **1981**

- Feb. Gordon Research Conference on Prolactin, Ventura, California. "Intracellular Prolactin Receptors: Origin and Regulation."
- Mar. Banting and Best Diabetes Centre, University of Toronto. "Polypeptide Hormones: Intracellular Receptors and Internalization."
- Apr.. Pfizer Traveling Lecturer. Clinical Research Institute, Montreal. "Intracellular Receptors and Internalization."
- May Lecture, Advances in Endocrinology, American College of Physicians Endocrinology Course, Toronto. "Intracellular Receptors and Internalization."
- June Serono Symposium on Endocrines and the liver. Istituto Superiore di Sanite. Rome. "Biochemical and Morphological Studies of Intracellular Receptors and Prolactin Internalization."

Seventh American Peptide Symposium, Madison, Wisconsin. "Studies on the Internalization of Peptide Hormones in Vivo."

- Oct. Third International Meeting on Human Prolactin. Athens, Greece. "Prolactin Receptors: Characteristics, Localization, and Regulation."
- Nov. Symposium on Modulation of Cellular Senescence by Medium Components, Gerontological Society of America, Toronto. "Insulin-like Growth Factors: Characterization and Function."
- Dec. Lecturer, Foothills Hospital, Calgary, Alberta. "Diagnosis and Management of Insulinoma."  
Calgary General Hospital, Calgary, Alberta. "Diagnosis and Management of Insulinoma."  
Seminar. University of Calgary, Calgary, Alberta. "Polypeptide Hormones: Intracellular receptors and internalization."

## **1982**

- Apr. Symposium American Federation of Biolog. Scientists, New Orleans. "Internalization of Polypeptide Hormones in Vivo: Intracellular Pathways."
- Aug. Gordon Res. Conf. on Hormone Action, Kimball Union Academy. "Internalization of Polypeptide Hormones."  
Seventh Annual Queen's University Symposium on Gene Expression. "Hormone Synthesis and Action."
- Oct. Pediatric Travel Club, Montreal Children's Hospital. "Hormone Receptors and Action."  
New York Diabetes Association, 10th Anniversary, New York University Medical Center. Mechanism and Significance of Insulin Internalization in Target Cells.
- Nov. Symposium on Insulin Action, Eleventh Intern. Diabetes Feder., Nairobi, Kenya. "Mechanism and Significance of Peptide Hormone Internalization."  
International Symposium on Hormone Receptors in Growth and Reproduction, Bombay, India. "Mechanism of Internalization of Prolactin and Other Polypeptide Hormone Receptor Complexes."
- Dec. Seminar, Dept. of Physiology and Biophysics, University of Illinois, Chicago. "Polypeptide Hormone Internalization: Mechanism and significance."

## **1983**

- Mar. Visiting Professor, Division of Endocrinology and Metabolism, Univ. of Colorado Health Sciences Center, Denver, March 13-15. "Pathways and Processing of Internalized Insulin.
- Apr. Medical Grand Rounds. McMaster University, Department of Medicine, Hamilton, Ontario. "Insulinoma."
- Seminar in Division of Endocrinology, McMaster University, Dept. of Medicine, Hamilton, Ont. "Mechanism of Hormone Action."
- Seminar in the Department of Neurosciences, McMaster University Medical School, Hamilton, Ont. "Polypeptide Hormone Interactions with the CNS."
- May Invited Lecturer for Centennial of University of Manitoba Medical School, Winnipeg, Manitoba.. "Polypeptide Hormone Receptors in Hormone Action."
- June Symposium on Growth Hormone Receptors and Their Regulation, at the XIV Acta Endocrinologica Congress, Stockholm, Sweden. "Growth Hormone and Lactogen Receptors: Intracellular distribution and internalization."

## **1984**

- June Symposium on Comparison of Type I and Type II Diabetes: Similarities and Dissimilarities in Etiology, Pathogenesis and Complications, University of Toronto. "Endocytosis of Insulin and Other Peptide Hormones."
- Symposium on Recent Progress in Molecular Mechanisms of Hormone Action in Health and Disease. Montreal. "The Endosomes of Rat Liver: Preparation and Characteristics."
- July Chairman, Seventh International Congress of Endocrinology. Quebec City. "Symposium on Insulin-like Growth Factors."
- Lecturer. Flying Physicians Association Inc. Montreal. "Pathogenesis and Treatment of Diabetic Ketoacidosis."
- Sept. Lecture on the occasion of the 50th Anniversary of the Sir Mortimer B. David, Jewish General Hospital. "Diabetes Mellitus: The nature of the adult onset (Type II) form."
- Oct. Lecture at International Conference on Research and Therapeutic Issues in Diabetes. University of Virginia Diabetes Research and Training Center. "Mechanisms of Hormone and Receptor Internalization."

## **1985**

- Apr. Medical Student Workshop IV sponsored by Juvenile Diabetes Foundation. University of Pennsylvania, Philadelphia. "The Internalization of Insulin: Is it required for action?"
- June Seminar. University of Massachusetts Medical School. Division of Endocrinology and Metabolism. Worcester, MA. "Insulin Internalization and Action: Are they related?"
- Aug. Lecture to 39<sup>th</sup> International Congress of Esthetics and Cosmetology. Montreal. "Endocrine Influences on Beauty."
- Seminar. The University of Vermont. Department of Medicine. Burlington, Vermont. "The Internalization of Insulin and its Receptor: Is this Related to Hormone Action?"
- Sept. Workshop on Physiology and Pathophysiology of the Insulin Receptor: An Overview in 1985. 12<sup>th</sup> International Diabetes Federation Congress, Madrid, Spain. "Internalization of Insulin-receptor Complexes and Receptor Activation."
- Oct. Workshop on Molecular and Cellular Aspects of Reproduction. National Institutes of Health. Bethesda, MD. "Intracellular Trafficking of Proteins."
- Nov. Symposium. Research Frontiers of Diabetes Mellitus: A Symposium for Canadian Medical Students. University of Toronto. (Hart House). "Turning on the Cell."

## **1986**

- Feb. Distinguished Visiting Scientist Lecture. University of Manitoba Medical School. "Insulin Action: Role of Internalization."
- Grand Rounds. Winnipeg Health Sciences Center, Winnipeg, Manitoba. "Metabolic Abnormalities in Diabetes Mellitus."
- Mar. Seminar. George Washington University Medical School, Washington, D.C. "Insulin Action: Role of Internalization."
- Lecture. Scottish Nutrition Society, University of Glasgow, Glasgow, Scotland. "Insulin Receptors in the Central Nervous System."
- May Grand Rounds. Ottawa General Hospital. Diabetic "Ketoacidosis."
- Seminar. University of Ottawa. "Mechanism of Insulin Action."
- Seminar. Sandoz Pharmaceutical Group. Montreal (Dorval Hilton). "Mechanism of Hormone Action."

- July Plenary Lecture. International Union of Physiological Sciences Meeting. Vanc, B.C. "Endocytosis: Mechanism and significance."
- Oct. Symposium. Canadian Diabetes Association Workshop for Medical Students. Univ. of Alberta, Edmonton. "Mechanism of Insulin Action."
- Nov. Third International Symposium on Insulin Receptors. Madrid, Spain. "Studies on the Internalization of Insulin Receptor Kinase."
- Seminar as Visiting Professor. University of Western Ontario and St. Joseph's Hospital, London, Ontario. "Cellular Physiology of Insulin Action."
- Grand Rounds. University of Western Ontario and St. Joseph's Hospital, London, Ontario. "Fasting Hypoglycemia: Assessment and management."
- Grand Rounds. University of Western Ontario and Victoria Hospital, London, Ontario. "Type II Diabetes Mellitus: Pathogenesis and treatment."
- Grand Rounds. University of Western Ontario and the University Hospital, London, Ontario, "Nutritional and Hormonal Basis of Type II Diabetes."
- Dec. Guest Lecturer. First Annual General Scientific Meeting of the Julia McFarlane Diabetes Research Unit. Calgary. "Perspectives in Diabetes Research."

## **1987**

- Jan. Symposium. Functional Aspects of Insulin and Insulin-related Peptides: Implications for the central nervous system. University of Florida, Gainesville. "Internalization of Receptors: Role in Insulin Action."
- Feb. Seminar. Rockefeller University - Sloane-Kettering, New York. "Internalization of Insulin: Mechanism and Significance."
- Mar. Symposium on Insulin Action and Diabetes. Julia McFarlane Diabetes Research Unit, University of Calgary. "Internalization of Insulin Receptors: Mechanism and Significance."
- May Grand Rounds. New York University Medical School and V.A. Hospital. "Diabetes Mellitus and Insulin Action: A Perspective."
- Sept. Seminar. California Biotechnology Inc. Mountain View, CA. "Peroxide(s) of Vanadate: Potent Mimickers of Insulin Action."

Oct. Bat-Sheva Seminar on Molecular Approaches to Hormone Action. Weizmann Institute. Israel. "The Insulin Receptor: Internalization and Activation."

## **1988**

Feb. Seminar. Department of Biology, State University of Buffalo (SUNY). "Insulin Action: A Possible Role for Intracellular Receptors."

Mar. Seminar. Department of Physiology and Biophysics, University of Iowa. "The Internalization of Insulin Receptor Complexes: Role in Transmembrane Signalling and Hormone Action."

Apr. The Third Annual Kroc Lectureship. University of Washington Diabetes Center. Seattle, WA. "Insulin and Growth Factor Action: Role of intracellular signalling."

June Symposium on Insulin and Obesity. The University of Buckingham, England. "Insulin Action: A novel and potent insulin mimetic agent."

Aug. Symposium on Peptide Hormones, Growth Factors and Internalization. Fourth International Congress of Cell Biology. Montreal. "Insulin Receptor Internalization and Kinase Activation: A role in hormone action."

Oct. Symposium on The Action of Insulin and Related Growth Factors in Diabetes Mellitus. Joslin Diabetes Center and Harvard Medical School (Celebration of Joslin's 90th Anniversary) "Internalization of Insulin and EGF Receptors: A Possible Role in Transmembrane Signalling"

## **1989**

Jan. Symposium on the Molecular and Cellular Aspects of Insulin, IGFs and Their Receptors: Implications for the CNS. University of Florida at Gainesville "Insulin and Growth Factor Action: Relation of Internalization to Receptor Kinase Activation."

May Endocrine Grand Rounds, Massachusetts General Hospital. "Receptor Kinases: Is there a role for activation and internalization in hormone action."

June Peter J. Laurie Memorial Lecture, Juvenile Diabetes Foundation Canada. Toronto, Ontario. "Insulin Action: New approaches for understanding and treating diabetes."

July Seminar. Marion Laboratories, Kansas City, Kansas. "Peroxovanadium Compounds as Insulin-like Agents for the Therapy of Diabetes Mellitus."

Sept. Neonatal Biology Group Mini-Symposium. Hotel l'Esterel, Montreal, Quebec. "The Internalization and Activation of Receptor Kinases: A possible role in hormone and growth factor action."

Oct. Seminar. Sandoz Pharmaceuticals, East Hanover, New Jersey. "Peroxovanadium Compounds as Insulin-like Agents for the Therapy of Diabetes Mellitus."

### **1990**

Mar. Seminar. Joslin Diabetes Centre, Boston, Massachusetts. Tyrosine Receptor Kinases: Activation and internalization.

Immunology of Diabetes and Lessons (10<sup>th</sup> International Workshop) and Lessons from Animal Diabetes (Third International Workshop). Jerusalem, Israel. "Receptor Kinase Activation and Internalization."

July Symposium on Pathophysiology and Treatment of Diabetes Mellitus. Montpellier, France. "Peroxovanadium Compounds as Insulin - Mimetic Agents."

Sept. Distinguished Scientist Award Lecture of the Canadian Society of Clinical Investigation. Toronto, Ontario. "Insulin and Other Receptor Kinases: Regulation and function."

### **1991**

Jan. Pfizer Lecturer at the Institut de Recherches Cliniques de Montreal. "Receptor Kinases: Regulation and function."

May Distinguished Visiting Professor, University of Manitoba Medical School.. "The Insulin Receptor: Key to Insulin Action."

Ninth Annual Meeting Syndicat Professionnel des Médecins Endocrinologues du Québec, Montebello, Quebec. "Insulin Receptor Function: Regulation and Therapeutic Implications."

June Third Banting and Best Memorial Lecture at the 14<sup>th</sup> International Diabetes Federation. Washington, D.C. "Regulation of Insulin Function: Mechanisms and Therapeutic Implications."

Nov. Lecture to Czechoslovakian Association of Diabetes. Prague, Czechoslovakia. "Type II Diabetes Mellitus."

Lecture to Third Department of Internal Medicine, Charles University. Prague, Czechoslovakia. "The Mechanism of Peptide Hormone Action."

Lecture to Czechoslovak Institute of Endocrinology. Charles University, Prague, Czechoslovakia. "The Mechanism of Insulin Receptor Regulation: New Approaches to the Treatment of Diabetes Mellitus."

## **1992**

Mar. Lecture. Peripatetic Club. Clinical Research Institute of Montreal. "The Peroxovanadium Compounds: New Insulin Mimetic Agents."

May Symposium Lecture. American Society for Cell Biology Summer Conference. Airlie, Virginia. "Hormone Receptor Internalization: Roles in Regulating Hormone Action."

Lecture at Hypertension Colloquium. Victoria, B.C. "Insulin Resistance and High Blood Pressure."

June Nordic-Merrell Dow Research Symposium. Montreal. "New Approaches to the Treatment of Diabetes Mellitus."

Nov. Lecture to Foundation Board of the Faculty of Medicine. McGill University. "Insulin Action: New Approaches to the Treatment of Diabetes Mellitus."

Dec. Lecture. Göteborg University, Göteborg, Sweden. "Insulin Action: Mechanisms and Therapeutic Implications."

## **1993**

May Chairman and Speaker in Symposium on Cell Signalling. American Association of Physicians. "Peroxovanadium Compounds: A New Class of Potent Phosphotyrosine Phosphatase Inhibitors Which are Insulin Mimetics."

Lecture and Presentation (with Dr. A. Shaver). Marion-Merrell Dow Research Laboratories. Cincinnati, Ohio. "Peroxovanadium Compounds: A New Class of Potent Phosphotyrosine Phosphatase Inhibitors which are Insulin Mimetics."

July Lecture. Hôpital Necker, Enfants Malades, Paris. "The Production of IGF-I and IGF-BP by Adult Rat Liver: Regulatory Mechanisms."

Lecture. Hôpital Necker, Enfants Malades, Paris. "Insulin Receptor Function: Regulation and Therapeutic Implications."

Nov. Pfizer Visiting Professor, Harvard Medical School. Endocrine Grand Rounds. Brigham and Women's Hospital. Harvard Medical School. "Regulation of Insulin Receptor Function: Therapeutic Implications."



Longwood Area Diabetes/Metabolism Seminar. Joslin Diabetes Center. "Internalization of Receptor Tyrosine Kinases: A Role in Transmembrane Signalling."

Endocrine Grand Rounds. Beth Israel Hospital. "The Peroxovanadium Compounds: A New Class of Insulin - Like Hypoglycemic Agents."

## **1994**

Mar. Visiting Professor. Conjoint Training Program in Endocrinology and Metabolism. Medical Grand Rounds. Ottawa Civic Hospital. "Insulin Resistance and action: New Developments and Therapeutic Implications."

Visiting Professor. Special Research Seminar. Univ. of Ottawa. "The Role of the Internalization of Receptor Tyrosine Kinases in the Regulation of Hormone Action."

Visiting Professor. Conjoint Training Program in Endocrinology and Metabolism. Medical Grand Rounds. Queen's University, Kingston. "Insulin Resistance and Action: New Developments and Therapeutic Implications."

Visiting Professor. Special Research Seminar. Queen's University, Kingston. "The Role of the Internalization of Receptor Tyrosine Kinases in the Regulation of Hormone Action."

Aug. Joe Doupe Memorial Lecture. University of Manitoba Medical School. "Diabetes and Insulin: Old and New Observations."

Oct. Seminar. University of Iowa Medical School. "The Insulin Receptor Kinase: Regulation and Therapeutic Target".

Nov. Seminar with Dr. A. Shaver. Concordia University, Dept. of Chemistry. "The Insulin Mimetic Properties of Peroxovanadium Complexes".

## **1995**

Feb. Seminar. Metabolex Corporation; San Francisco. "The Peroxovanadium Compounds: Mechanism of Action and Therapeutic Application".

Distinguished Lectureship. Lady Davis Research Institute, Montreal. "The Mechanism of Cell Signalling by the Receptor Tyrosine Kinases".

Mar. Lecture. Novo Nordisk Pharmaceutical Company, Copenhagen, Denmark. "The Insulin Receptor Kinase: Regulation and Therapeutic Implications".

- Lecture. Sigma Xi Society. McGill University, Montreal. "The Peroxovanadium Compounds: Possible Insulin Replacements".
- May Grand Rounds. University of Sherbrooke Hospital Center. Sherbrooke, Quebec. "The Insulin Receptor Kinase: Regulation and Therapeutic Implications".
- Research Seminar. Program in Cell Biology. University of Sherbrooke Medical School. "The Receptor Tyrosine Kinases: Role of Internalization in Cell Signalling".
- June Symposium Lecture. Endocrine Society. Washington, D.C. "The Role of Compartmentalization in the Regulation of Cell Signalling".
- Oct. Seminar. Roche Pharmaceutical Company, Nutley, New Jersey. "The Insulin Receptor Kinase: Regulation of Function and Therapeutic Significance".
- Symposium Lecture. Société Québécoise de Biochimie Clinique. Hotel Chantecler, Ste. Adele, Québec. "The Biochemical and Physiologic Mechanisms Underlying Insulin Resistance".
- Seminar. Dartmouth College, Chemistry Dept. Hanover, New Hampshire. "The Insulin Mimetic Properties of Peroxovanadium Complexes".

## **1996**

- Feb. Lecture. Cedars-Sinai Medical Center, Los Angeles, CA. "The Insulin Receptor Kinase: Regulation of Therapeutic Modulation".
- Mar. Lecture. 35th Medical Class Reunion, Tucson, AZ. "Diabetes Mellitus: Past and Future Perspectives".
- May Symposium. Vth International Symposium on Insulin Receptors and Insulin Action: Molecular and Clinical Aspects. Copenhagen, Denmark. "Regulation of Insulin Receptor Kinase Function: Therapeutic Implications".
- Seminar. Frontiers of Modern Endocrinology Research Seminar Series. Jefferson Medical College, Philadelphia, Pennsylvania. "Compartmentalized Signal Transduction by Receptor Tyrosine Kinases".
- Sept. Seminar. Samuel Lunenfeld Research Institute, Mount Sinai Hospital, Toronto, Ontario. "Mechanism of action of vanadate and pervanadate to increase glucose transport in muscle cells".

Oct. Symposium. 75th Anniversary Celebrating the Discovery of Insulin: An International Research Symposium on Diabetes Focusing on Beta-Cell Function and Insulin Action. Toronto, Ontario. "Insulin Action (Molecular Signaling and Down Stream Effects)".

## **1997**

Jan. Seminar. Signal Transduction Laboratories, University of Alberta, Edmonton, Alberta. "The Regulation of Insulin Receptor Function: Role of Compartmentalization in Mediating Signal Transduction".

Mar. Seminar. Université de Montréal. "The Insulin Mimetic Properties of Peroxovanadium compounds".

July Lecture. Dept. of Medicine, University of Barcelona, Spain. "Insulin Receptor Function – Mechanisms of Regulation and Therapeutic Implications."

Sept. Inaugural Lecture: Diabetes Research and Treatment Centre. St. Boniface Hospital Research Centre, University of Manitoba Medical School. "Insulin Receptor Function – Mechanisms of Regulation and Therapeutic Implications."

Sept. Novartis Lecture – Royal College of Physicians and Surgeons of Canada & CSCI. Vancouver, B.C. "Insulin Receptor Function – Mechanisms of Regulation and Therapeutic Implications."

Oct. Symposium Lecture. Canadian Diabetes Association Professional Conference, London, Ont. "Peptide Hormone Cell Signaling: Inside is as good as outside".

Symposium Speaker. 34<sup>th</sup> Annual André Aisenstadt Clinical Day. The Sir Mortimer B. Davis – Jewish General Hospital, Montreal, Quebec. "Recent Advances in our Understanding of Diabetes Mellitus"

Nov. Symposium Lecture. Fifth Chemical Congress of North America. Cancun, Mexico. Symposium on Chemistry, Biochemistry and Therapeutic Applications of Vanadium Compounds. "Mechanism of Action of Peroxovanadium Compounds".

## **1998**

Feb. Lecture. Annual Meeting of the Canadian Institute of Academic Medicine. Toronto, On. "The Future of the Clinical Scientist in Canada".

March Lecture. UCLA Medical School – Signal Transduction Affinity Group, Los Angeles, California. "Regulation of the Insulin Receptor Kinase: Mechanisms and Therapeutic Implications".

- May Presentation. VII International Symposium on Insulin Receptors & Insulin Action: Molecular and Clinical Aspects. Jerusalem, Israel. "Regulation of the Insulin Receptor Kinase: The Role of Endosomal Processes."
- Sept. Symposium Lecture. Canadian Society for Clinical Investigation. Toronto, Ontario. "Academic Medicine: An Exciting Career Choice"
- Oct. Symposium Speaker. Annual Symposium of the Diabetes-Endocrinology Center of Western New York. "Insulin Action and the Mechanism of Insulin Resistance"
- Nov. Presentation to the Standing Committee on Finance, Pre-Budget Health Consultations, Montreal, Quebec. "Exodus of Talent – poor funding of medical research".
- Nov. Seminar. Abbott Laboratories, Illinois. "The Regulation of IRK Activity: Role of the Endosomal System"
- Dec. Grand Rounds. Centre de Recherche du Centre Hospitalier Universitaire Laval, St. Foy, Quebec. "The Pathogenesis of Non Insulin Dependant Diabetes Mellitus (IDDM): The Role of Insulin Resistance"
- Seminar. Centre de Recherche du Centre Hospitalier Universitaire Laval, St. Foy, Quebec. "The Insulin Receptor Kinase: Regulation and Function"
- Lecture. Lady Davis Institute for Medical Research; Jewish General Hospital, Montreal, Quebec. "Insulin Receptor Kinase: The Regulation and Function".

## **1999**

- Jan. Grand Rounds. McGill University Health Center Combined Endocrine Rounds, Montreal, Quebec. "Insulin Action and Insulin Resistance".
- March Seminar. International Business Communications 3<sup>rd</sup> International Symposium on Insulin Resistance. Washington, DC. "Regulation of Insulin Receptor Kinase: Key Role of Associate Phosphotyrosine Phosphatase".
- May Seminar. McGill Cancer Research Group. Montreal, Quebec. "The Role of Phosphotyrosine Phosphatases in Cell Signaling: Lessons from the Study of Insulin Signaling".
- June Symposium. International Conference on Diabetes and Cardiovascular Disease. Winnipeg, Manitoba. "The Mechanisms of Insulin Action".

## **2000**

- March Lecture. Physiology Department, McGill University. “The Insulin Receptor Kinase: Regulation of Function”.
- March Seminar. Montreal Children’s Hospital Research Institute Seminar series. “Regulation of the Insulin Receptor Kinase: Mechanisms and Therapeutic Implications.”
- April Lecture. “Non-Insulin Dependent Diabetes Mellitus: Something Old and Something New”. 2000 David M. Kovitz Visiting Professor. Faculty of Medicine, University of Calgary.
- June Chair of Symposium “Phosphatases in Signaling Pathways” Endocrine Society 82<sup>nd</sup> Annual Meeting, June 21-24, 2000. Toronto, Ontario.
- Sept. Seminar on “Regulation of the Insulin Receptor Kinase: Therapeutic Implications”. Signal Transduction Group, Novo-Nordisk Pharmaceutical Company, Sept. 11, 2000. Bagsvaerd, Denmark.  
Seminar on “Characterization of the IRK-associated PTP(s)” . Signal Transduction Group, Novo-Nordisk Pharmaceutical Company, Sept. 11, 2000. Bagsvaerd, Denmark.
- Speaker. “The Peroxovanadium Compounds: Mechanism of Action and Significance for Understanding Insulin Action” in Symposium. The Insulinomimetic Effects of Metals Ions: Potential Therapy for Diabetes Mellitus. Sept. 14-16, 2000 Sitges, Spain.
- Seminar on “The Insulin Receptor Kinase: Regulation and Therapeutic Implications”. Department of Physiology, University of Toronto, Sept. 27, 2000.
- Oct. Seminar “The Insulin Receptor Kinase: Regulation and Therapeutic Implications”. Faculty of Medicine, University of Montreal. October 5, 2000. Montreal.
- Speaker “Tyrosine Phosphorylation, an Ever More Complicated Story” Canadian Diabetes Association Annual Meeting. October 11-14, 2000. Halifax, Nova Scotia.

## **2002**

- Jan. Speaker “NIDDM: A Proteomic Approach to Pathogenesis”. Caprion Pharmaceutical Corp. January 11, 2002. St. Laurent, Quebec.
- Mar. Speaker “Thinking about Sugar” Medical Grand Rounds. McGill University Health Center, Royal Victoria Hospital. March 27, 2002. Montreal, Quebec.
- Apr. Speaker “Insulin action: The key roles of insulin receptor kinase (IRK) activation and internalisation in effecting signalling.” Canadian Working Group on Insulin Resistance. Fairmount Chateau Lake Louise, April 25-28, 2002. Lake Louise, Alberta.

May Speaker “Cell Signalling: The Inside Story.” Signal Transduction Research Group Annual Retreat. May 8-10, 2002. University of Alberta.

Oct. 2<sup>nd</sup> John K. & Mary E. Davidson Lectureship and Award. “Insulin Signalling: The Inside Story”. October 15 & 16, University of Toronto, Toronto, ON.

Nov. Moderator, J. Allyn Taylor International Prize in Medicine Symposium. Nov. 5-6, 2002. Robarts Research Institute, London, Ontario.

### **2003**

June Invited Lecture, CFBS Annual Meeting “Diabetes and Atherosclerosis”, June 11-15, 2003. Ottawa, Ontario.

Nov. R.M. Bala Memorial Lecture, “Diabetes Mellitus and Insulin Signaling”, Nov. 12, 2003, Univ. of Saskatchewan, Saskatoon, SK.

### **2004**

Aug. Symposium Chair and Speaker, “Cellular Signaling in Time and Space.” 12<sup>th</sup> International Conference on 2nd Messengers & Phosphoproteins, August 4, 2004, Montreal, QC.

### **2006**

Oct. Invited Lecture, “Internalization of Insulin and EGF receptor tyrosine kinases: Comparative Studies” Dept. of Cell Biology, Univ. of Alberta, Edmonton Alberta.

### **2007**

Mar. Invited Lecture, “Role of the Endosomal System in Peptide Hormone/Growth Factor Signaling”. Dept. of Biology, Univ. of Quebec in Montreal