

# **CURRICULUM VITAE**

**MICHEL PIERS RATHBONE, M.B., Ch.B., Ph.D., FRCPC**

## **PERSONAL DATA**

Business: McMaster University  
Health Science Centre  
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Hamilton, Ontario  
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Address: Henderson General Hospital  
70 Wing, Ground Floor • Room 23  
711 Concession Street  
Hamilton, ON L8V 3C1

Citizenship: Canadian

Nationality: British

## **EDUCATIONAL BACKGROUND**

### **High School**

1956-1957 Trowbridge Boys High School  
Trowbridge, Wiltshire, U.K.

1957-1961 Lord Fitzmaurice Grammar School  
Bradford-on-Avon, Wiltshire, U.K.

### **Medical School**

1961-1966 University of Liverpool Medical School  
(Exempt 1st year of studies and 1st MB examinations on results  
of General Certificate of Education examinations)  
Liverpool, UK

1966 Awarded degrees of Bachelor of Medicine and  
Bachelor of Surgery: M.B., Ch.B.  
Liverpool, UK

## **Post Graduate Science**

- 1967-1971 Graduate Student (Full-Time)  
Department of Biochemistry  
McMaster University  
Hamilton, Ontario, Canada  
Supervisor: Dr. R.H. Hall
- 1971-1972 Graduate Studies (Part-Time)  
Department of Biochemistry  
McMaster University  
Hamilton, Ontario, Canada
- 1969 Attended the N.A.T.O. Fourth Advanced  
Study Institute in Molecular Biology  
Spetsai, Greece
- 1969-1971 National Cancer Institute of Canada Research Fellow  
Department of Biochemistry  
McMaster University  
Hamilton, Ontario, Canada

## **Post Graduate Medical**

- 1966 House Surgeon in Obstetrics and Gynecology  
Sefton General Hospital  
Liverpool, UK
- Locum Senior House Officer in Psychiatry  
Sefton General Hospital  
Liverpool, UK
- House Physician  
Sefton General Hospital  
Liverpool, UK
- 1967 House Surgeon - General Surgery Mossley  
Hill Hospital  
Liverpool, UK
- 1980-1981 Resident in Internal Medicine  
McMaster University  
Hamilton, Ontario, Canada
- 1981-1984 Neurology Residency Program  
University of Western Ontario  
London, Ontario, Canada

(Training included rotations in clinical neurology, pediatric neurology, EEG and epilepsy, neurosurgery, neuro-pathology, and neuro-oncology as well as copious exposure to neuroradiology, neuro-psychology and nuclear medicine diagnostic procedures as applied to neurological problems, courses in basic neuroscience run by the Residency Program and courses on various aspects of basic and clinical neurosciences at the annual American Academy of Neurology meetings.)

- July 1983-  
Dec 1984      Fellow in Neuro-Oncology  
                  Departments of Clinical Neurological Sciences and  
                  Radiation Oncology (O.C.T.R.F., London Clinic)  
                  University of Western Ontario  
                  London, Ontario, Canada
- 1984            Fellow of the Royal College of Physicians of Canada - FRCPC  
                  Neurology

### **HONOURS AND AWARDS**

- 1958            Awarded the Lord Fitzmaurice Grammar School prize for  
                  Academic Distinction in General Certificate of Education examinations
- 1959-1961      School Prefect, Lord Fitzmaurice Grammar School
- 1960-1961      Head Boy and Senior Prefect, Lord Fitzmaurice Grammar School
- 1959-1961      Lord Fitzmaurice Grammar School:  
                  Captain Cross Country Team  
                  Captain Athletics Team (Track and Field)  
                  Member of Kayak Team  
                  School record holder for 880 yds, 1 mile  
                  County representative in Cross Country and Track and Field at National  
                  Level
- 1961            Awarded University Scholarship by Wiltshire County Council on results of  
                  General Certificate of Education examinations (Advanced level)
- 1961-1966      Successful in all medical school examinations at first attempt  
                  Represented both Liverpool University and Wiltshire County in Track and  
                  Field and Cross Country in national competitions
- 1963            Awarded Coaching Certificate by A.A.A. of Great Britain  
                  (youngest person ever to pass these examinations)
- 1969            One of 3 Canadians to be selected for the N.A.T.O. Fourth Advanced  
                  Study Institute in Molecular Biology, Spetsai, Greece
- 1969            N.A.T.O. Scholarship to attend Fourth Advanced Study Institute in

## Molecular Biology

- 1969-1971 Research Fellowship - National Cancer Institute of Canada
- 1976 Awarded Tenure, McMaster University, Faculty of Health Sciences
- 1974-1978 Principal Investigator, Medical Research Council of Canada, Group in Developmental Neurobiology
- 1983-1984 Fellow, Health Research Personnel Development Program, Ontario Ministry of Health
- 1984 Department of Pathology, University of Western Ontario Residents Research Award
- 1984 Department of Clinical Neurosciences, Scott Amacher Memorial Award for best research by a Resident
- 1992 11th Annual Marcus Singer Symposium on Limb and Neural Regeneration. Awarded Marcus Singer Medal for research excellence.
- 1995- Visiting Professor, Universita Degli Studi "G. D'Annunzio" Chieti, Italy
- 1996-1999 Consultant Medical Director, NeoTherapeutics, Irvine, CA, USA
- 1998 Supremi Magistri, Universita Degli Studi "G. D'Annunzio" Chieti, Italy for outstanding contributions to research and high academic example.
- 2000 Consultant in Neurotrauma, Aventis Pharmaceutical Company, Bridgewater, New Jersey
- 2002 Invited Clinical Lecturer and Educator for IpokRaTes, the prestigious International Medical Education Organization, in Harlaching Hospital, Munich Germany, April 7-13, 2002

## **CURRENT STATUS AT McMASTER UNIVERSITY**

Professor Department of Medicine (Neurology), McMaster University, with specialization in neurology, neuroscience and neuropharmacology.

- 1971 to Present Faculty of Health Sciences, McMaster University
- 1985 to 1996 Consultant Neurologist to Hamilton Regional Cancer Clinic
- 1985 to Attending Neurologist, Henderson General Hospital

Present

1985 to 1991 Co-ordinator, Hamilton Regional Neuro-Oncology Program

### **MEMBERSHIP OF LEARNED SOCIETIES**

Society for Neuroscience  
International Society for Developmental Neuroscience  
American Academy of Neurology  
Canadian College of Neuro-Psycho-Pharmacology  
The Royal Society of Medicine  
Ontario Medical Association  
Hamilton Academy of Medicine  
Fellowship, Stroke Council, American Heart Association  
The Purine Club  
Royal College of Physicians and Surgeons  
International Spinal Cord Society  
National Neurotrauma Society

### **EMPLOYMENT HISTORY**

1966-1967 House Officer and Senior House Officer  
South Liverpool Hospitals  
Liverpool, UK

1967-1971 Graduate Student  
Department of Biochemistry,  
McMaster University  
Hamilton, Ontario, Canada

1971-1972 Lecturer in Biomechanics  
McMaster University, Department of Physical Education

1969-1971 Research Fellow  
National Cancer Institute of Canada

1971-1974 Lecturer  
Department of Neurosciences,  
McMaster University  
Hamilton, Ontario, Canada

1974-1977 Assistant Professor  
Department of Neurosciences,  
McMaster University  
Hamilton, Ontario, Canada

- 1974-1978 Principal Investigator  
Medical Research Council of Canada,  
Group in Developmental Neurobiology
- 1976 Awarded Tenure  
McMaster University  
Hamilton, Ontario, Canada
- 1978-1980 Associate Professor of Neurosciences  
McMaster University  
Hamilton, Ontario, Canada
- 1980-1984 Leave of absence from McMaster University to undertake further  
postgraduate training in Neurology. (My laboratory at McMaster  
was active until summer 1983 with my part time supervision)
- 1980-1981 Resident in Internal Medicine  
McMaster University  
Hamilton, Ontario, Canada
- 1981-1984 Resident in Neurology  
University of Western Ontario  
London, Ontario, Canada
- 1983-1984 Fellow, Health Research Personnel Development Program,  
Ontario Ministry of Health
- 1985-1989 Associate Professor of Neurosciences  
McMaster University  
Hamilton, Ontario, Canada
- 1989-1999 Professor, Departments of Medicine (Neurology) and Biomedical  
Sciences (Neurosciences), (Formerly Department of Neurosciences) ,  
McMaster University
- 1999- Upon disestablishment of the Department of Biomedical Sciences,  
Professor Department of Medicine (Neurology), McMaster University, with  
specialization in neurology, neuroscience and neuropharmacology.

## **GRANT AND PERSONNEL COMMITTEES**

### **External Grant Reviewer**

Canadian Institutes of Health Research (formerly the Medical Research Council),  
National Cancer Institute of Canada  
National Science Foundation (U.S.A.)  
Neuro-Oncology Foundation

Ontario Mental Health Foundation  
The Physicians' Services Incorporated Foundation  
Heart and Stroke Foundation of Canada  
Italian MURST  
Canadian Diabetes Society  
Invited member of the Grant Review Committee for Italian Ministry for Education  
University and Research (MIUR)  
Natural Sciences and Engineering Research Council of Canada (NSERC)

## **RESEARCH EXPERIENCE AND INTERESTS**

***Basic Research:*** The role of extracellular purines, related substances and other small molecules in the nervous system as regulators of cell proliferation, differentiation, apoptosis and recovery after injury.

We discovered that very low concentrations of non-adenine based purine nucleosides and nucleotides stimulate proliferation of astrocytes, microglia and brain capillary endothelial cells directly through different types of cell surface receptors and stimulated outgrowth of neurites from neurons. Purine nucleotides and nucleosides are released from neurons and other cells that are "sick" and dying. This occurs during nervous system development, in many acute and in chronic neurological disorders and in injury to the nervous system. We are investigating to what extent we can modify the response of the nervous system to injury and disease through these mechanisms. I have patented a mechanism by which purines and other small molecules can enhance recovery of brain or spinal cord function after injury and potentially prevent brain or spinal cord degeneration in certain neurological diseases. As well, I have submitted two provisional US patent applications on putative receptors for non-adenine based purines. I am now investigating the molecular neuropharmacology of these compounds in relation to recovery of brain and spinal function after injury or in disease.

Additionally I am investigating whether nerve and glial cells transplanted from the intestine into the spinal cord can improve function after spinal injury.

***Clinical Research:*** I have previously undertaken a number of clinical investigations into various problems.

Together with a former graduate student Peter Radford, I investigated the development of handedness in the population, and its relationship to athletic performance in sprinters and other athletes over the last 2500 years, including handedness and dexterity in modern Olympic champions.

I have undertaken several clinical trials better ways to diagnose and treat major problems in neuro-Oncology (cancer neurology) such as primary or metastatic brain tumours, spinal cord compression and cancer pain. For example I have:

- i) Tested the efficacy of various novel drugs in brain tumor therapy. These have been mostly multi centre trials of the drugs, and mostly in Phase II trials.

- ii) Evaluated methods of decreasing the effects of epidural spinal cord compression by metastatic tumor. Particularly, I developed an educational package to determine whether this would decrease the incidence of late reporting of this disease to physicians by patients and, if so, whether this would influence the eventual outcome.
- iii) Been involved in the development of new therapeutic approaches to secondary brain tumours.
- iv) Studied the role of various modalities in treatment of low grade primary brain tumours.

Most recently I have developed clinical trials for novel therapies in Alzheimer's Disease and spinal injury.

### **TEACHING EXPERIENCE AND INTERESTS**

I have held a variety of educational positions in the McMaster M.D. Program including tutor (Phases II, III, and Units IV and VI) as well as Discipline Co-ordinator for Biochemistry-Cell biology and Discipline Consultant for Neuro-psycho-pharmacology responsible for basic science in the Neuro subunit of Phase III, Clinical Skills Preceptor, and I was a member of the M.D. Program Education Committee. Much of my current medical teaching is in clinically-applied aspects of neurology and neuro-oncology to clerks, interns, residents and elective students. The large number of requests to do elective studies with me attests to the perceived need for, and popularity of, these electives.

In the Undergraduate Science Program I supervise final year thesis students, In the Graduate Science Program I am supervisor of three M.Sc. and one Ph.D. student and in the Postgraduate Science Program I supervise three Post-Doctoral Fellows. Previously I established the General Neurochemistry course (M.S.718) (including neuropharmacology) and taught in other graduate courses.

I have also taught biomechanics in the McMaster University undergraduate Physical Education Department.

### **CLINICAL EXPERIENCE AND INTERESTS**

I established and ran the Regional Neuro-Oncology program from its inception in 1985. However, since my research interests have led me to different areas, my clinical interests have realigned accordingly. I therefore see patients with post-traumatic problems as well as neurodegenerative disorders including dementia and memory deficits. In addition I see patients with general neurological problems in clinics in which I teach clinical neurology to residents and undergraduate medical students.

### **COURSES TAUGHT UNDERGRADUATE INCLUDING MCMASTER MD UNDER-**

## **GRADUATE PROGRAM**

- 1971-1972 Tutor in Phase III
- 1971-1973 Pharmacology Discipline Consultant for Respiratory Unit of Phase III.  
Resource Person - Neuro-Psycho-Locomotor Unit of Phase III
- 1972-1974 Phase III Tutor for Neuro-Psycho-Locomotor Unit of Phase III
- 1974 Discipline Co-ordinator for Pharmacology for Phase III.  
Pharmacology Discipline Consultant for Neuro-Psycho-Locomotor Pharmacology.  
Biochemistry Discipline Consultant for Neuro-Psycho-Locomotor Unit for Phase III
- 1975-1980 Biochemistry Discipline Consultant for Phase III
- 1974-1976 Tutor for Phase II (all units)
- 1975-1975 Resource Person: Phase III Cardiovascular-Respiratory Unit
- 1975-1976 Biochemistry and Cell Biology Resource and Support Person for Biological Sciences, Phase I
- 1975-1978 Student Advisor: 3 Students
- 1980 Co-ordinator of basic science input into Phase III Neuro-Psycho-Locomotor Unit of M.D. undergraduate program.
- 1985 to Present Student Advisor to 5 Students
- 1985-1986 Tutor and Resource Person: Unit IV (Neuro-Psycho-Locomotor) of M.D. Undergraduate Program
- 1987-1988 Clinical Skills Preceptor for Unit IV - (Neuro-Psycho-Locomotor) of M.D. Undergraduate Program
- 1987 to 1999 Formal clinical teaching sessions in Neurology - with clinical clerks, one and one-half hours each two weeks. These are supplemented by frequent informal sessions, technique demonstrations, etc. Totalling two to three hours per week.

## **GRADUATE COURSES**

- 1974 Lecturer in M.S.717-"Neuromuscular Function in Health and

Disease"

- 1974-1980 Organizer and Lecturer in M.S.718 - "General Neurochemistry"
- 1979-1980 Lecturer in M.S.714 - "Principles of Neurobiology and their Application to Health Research"
- 1985-1986 Lecturer in M.S.603 - "Human Physiology"
- 1988 Lecturer in M.S.718 "General Neurochemistry"

### **POST GRADUATE AND POST-PROFESSIONAL EDUCATION: INCLUDING RESIDENCY PROGRAM**

- 1974-1975 Lecturer in Pharmacology to Ophthalmology Residents Training Program, McMaster University Hamilton, Ontario, Canada
- 1976 Lecturer in Neuropharmacology Laboratory Medicine Technician Program
- 1976-1980 Presented Rounds to Pediatric and Psychiatry residents on various neurochemistry and neuro-pharmacology topics.
- 1985-Pres. Supervised 13 internal medicine residents, 2 emergency medicine1 rehabilitation medicine resident, 1 psychiatry resident and 1 family practice resident rotating through Neurology.

### **Regular and ad hoc neurology teaching sessions for clerks, interns and residents**

"Academic Half-Day" for residents on "Migraine Headaches" St. Joseph's Hospital, Hamilton, Ontario, Canada. March 4, 1987

"Academic Half-Day" in Internal Medicine on Acute Spinal Cord Compression". McMaster University Health Science Centre, Hamilton, Ontario, Canada. May 10, 1989.

### **Regional Oncology Rounds**

"Brain Tumors - Quo Vadis?", presented by Dr. M.P. Rathbone and Dr. A.C. Whitton, Hamilton, Ontario, Canada. November 5, 1987

"The Astrocyte as a Pet", Hamilton, Ontario, Canada. March 2, 1989

"The Loneliness of the Long-Distant Neuro-Oncologist", Hamilton, Ontario, Canada. May 17, 1990

"Localization of Brain Function", Hamilton Regional Cancer Centre. Hamilton, Ontario, Canada

January 13, 1994

### **Hamilton Civic Hospitals, Department of Psychiatry Grand Rounds.**

"Anti-Psychotic Drug Therapy in a Patient with Parkinson's". Presented by Dr. C.L. Iachelli, Dr. M.P. Rathbone and S. Fedak, Hamilton, Ontario. December 11, 1987

"Severe Orthostatic Hypotension (Possible Shy-Drager Disorder) Associated with Parkinson's Disorder and Depression", presented by Dr. Iachelli and Dr. Rathbone. Hamilton, Ontario. June 17, 1988

"It's Friday, It's 5:00 PM, What about a Myelogram?", presented by Dr. M.P. Rathbone, Dr. A. Neville and Dr. B. Yemen, Hamilton, Ontario, Canada. February 17, 1994

### **Regional Neuroscience Rounds**

"A New Light on Brain Tumor Therapy - Some Time-Reversed Reflections", McMaster Medical Centre, Hamilton, Ontario, Canada. June 18, 1986

"Purinergic Stimulation of Astrocyte Proliferation", McMaster Medical Centre, Hamilton, Ontario, Canada. March 7, 1990

"Enhancing Recovery After Spinal Injury-from Bench to Bedside", Hamilton General Hospital, Hamilton, Ontario, Canada. February 20, 2003.

### **Grand Rounds in Geriatric Medicine**

"Subdural Hematoma", McMaster-Chedoke Hospitals, Hamilton, Ontario, Canada. May 28, 1986

"Slow Strokes aren't Strokes", McMaster-Chedoke Hospital, Hamilton, Ontario, Canada. September 25, 1985

"Neuro-Protection and Neuronal Recover", McMaster University-Hamilton, Ontario, Canada. December 6, 1995

### **Grand Rounds in Medicine**

"Randomized Trials in Individual Patients: A New Consultation Service" - (with G. Guyatt and D. Sackett), Hamilton General Hospital, Hamilton, Ontario, Canada. September 12, 1986

"Isaac's Syndrome", (with Dr. A. McComas), Henderson General Hospital, Hamilton, Ontario, Canada. March 12, 1987

"Dolores' Complaint - The Most Common Problem", Henderson General Hospital, Hamilton, Ontario, Canada. May 27, 1988

"The Exciting Tale of Eve's Apple, or What Really Killed the Dinosaurs", Henderson General Hospital, Hamilton, Ontario, Canada. July 21, 1989.

"Migraines - Whose Headache is it?", Henderson General Hospital, Hamilton, Ontario, Canada. May 1, 1992

"Curses, Cannibals and Cows", Henderson General Hospital, Hamilton, Ontario, Canada. June 23, 1995

"Fish is good for your brain", Henderson General Hospital, Hamilton, Ontario, Canada. March 14, 1997

### **Grand Rounds in Ophthalmology**

"Optic Nerve Gliomas", Hamilton General Hospital, Hamilton, Ontario, Canada. April 28, 1986

### **Resident Rounds in Rehabilitation Medicine**

"Stroke Syndromes", Henderson General Hospital, Hamilton, Ontario, Canada. September 23, 1986

"Pathogenesis and Classification of Intracranial Tumors", Henderson General Hospital, Hamilton, Ontario, Canada. December 14, 1988

### **General Practice Educational Rounds**

"Post TIA Management", Henderson General Hospital, Hamilton, Ontario, Canada. November 23, 1993

### **McMaster University and Hamilton Health Sciences Physical Medicine and Rehabilitation Grand Rounds**

"Novel Approaches to the Treatment of Spinal Injury" HHS-Chedoke Site, Hamilton, Ontario, Canada. May 15, 2002

### **University of Western Ontario, Department of Pharmacology and Toxicology**

"Novel Strategies to improve recovery after spinal injury", London, Ontario, Canada. March 22, 2002.

### **LECTURES TO SCIENTIFIC SOCIETIES AND INSTITUTIONS SINCE 1980**

"Putative neurotrophic factors - novel neuromodulators?" Bilingual Seminar Exchange Series. (1) University of Montreal, (2) Institut de Recherches Clinique, Montreal and (3) Laval University, Quebec City, Quebec. February 26-28, 1980.

"Are factors with neurotrophic-like activity really trophic factors?" (With R. Carlone and M. Ganagarajah). Annual Mid- Western Regional Developmental Biology Conference, Chicago, Illinois. May 8, 1980.

"Alterations in the function of central dopamine systems following prenatal antipsychotic administration". (With N.R. Plach and M.J. Davenport - presented by N.R. Plach). Presented at the 3rd Annual meeting of the Canadian Federation of Biological Sciences, St. John's, Newfoundland. June 8-13, 1980.

Lectures on neurological examination to Occupational Therapy Department, University of Western Ontario. 1982-84.

"Prolonged CT enhancement after surgical removal of glial tumor mimicing recurrent tumor." OCFTRF Conference, Lake Couchiching, Ontario. September, 1983.

Lecture "Synaptic biochemistry" to Clinical Neurosciences residents in Basic Science Lecture Series, Clinical Neurological Sciences Department, University of Western Ontario. 1983.

"Experimental studies of the role of nerve-muscle interactions in the pathogenesis of avian hereditary muscular dystrophy." The 47th Annual Meeting of the Ontario Association of Pathologists, Hamilton, Ontario. September 20-22, 1984.

"A growth factor from chick brains" (with Dr. R. Carlone) presented by Dr. R.L. Carlone. The 5th Biennial Regeneration Forum, Michigan State University, East Lansing, Michigan. June 6-8, 1985.

"Physiology of Pain". The Cancer Pain Symposium, Continuing Medical Education Day, Orillia, Ontario. October 9, 1985.

"Cancer Pain Syndromes". The Cancer Pain Symposium, Continuing Medical Education Day, Orillia, Ontario. October, 1985.

"Brain-derived growth factors" presented by M.P. Rathbone and R.L. Carlone. The McMaster-Western Clinical Neurosciences Meeting, McMaster University, Ontario. October 18, 1985.

"Stroke syndromes" Vith Hamilton Postgraduate Course in Emergency Medicine at The Hamilton Academy of Medicine, Hamilton, Ontario. April 23, 1986.

"Epidural spinal cord compression" Medical Grand Rounds. Joseph Brant Hospital, Hamilton, Ontario. June 12, 1986.

"The Possible role of computers in Phototherapy of brain tumors". Invited seminar. Department of Computing and Information Science, University of Guelph, Guelph, Ontario. October 22, 1986.

"Frontiers in Neuro-oncology - Brain cancer from a clinical perspective". McMaster Bio-Psych Society, McMaster University, Hamilton, Ontario. November 20, 1986.

"Physiology of Pain" and "Selected Cancer Pain Syndromes". 5th Annual Northern Ontario Oncology Symposium, Sudbury, Ontario. November 28, 1986.

"The present and future role of computers and robotics in the diagnosis and treatment of brain tumors". Invited speaker, The Department of Systems Design Engineering, University of

Waterloo, Ontario. February 26, 1987.

Rathbone, M.P. (Advisor) "Facts on cancer of the central nervous system". Booklet produced by Canadian Cancer Society. April, 1987.

"Biochemistry of a neurotrophic factor". McMaster Neurosciences Day, McMaster Medical Centre, Hamilton, Ontario. April 28, 1987.

"Brain-derived growth factors". Department of Neurosciences Research Day, McMaster University, Hamilton, Ontario. April 30, 1987.

"Stroke syndromes" Invited Speaker. Physiotherapy Department, Hamilton Civic Hospitals, Hamilton, Ontario. Friday, May 8, 1987.

"Future trends in brain tumor management". Day in Neuroscience Nursing -I, Mohawk College, Ontario. May 26, 1987.

"A unique brain-derived growth factor". (presented by J.-K.Kim). Presented at the 6th Biennial Regeneration Forum, Ohio State University, Columbus, Ohio. June 26-27, 1987.

"A unique growth factor from chick brain". Nerve Growth Workshop, Canterbury Hills, Ontario. September 24, 1987.

"The big squeeze - Epidural spinal cord compression by metastatic tumor". M.P. Rathbone and M. Levine. Clinical Trials in Oncology. The Ontario Cancer Treatment and Research Foundation, Hamilton Regional Cancer Centre. Hamilton, Ontario. October 8, 1987.

"A unique cell growth-promoting factor". Symposium - "Biology and Brain: Approaches to Neuropsychiatric Disorders". McMaster University, October 23, 1987

"Brain tumors". Brain Tumor Support Group Meeting. Lakeview Lodge, Henderson General Hospital. November 4, 1987.

"What's new in brain tumors?". Brain Tumor Support Group Meeting. Lakeview Lodge, Henderson General Hospital. January 26, 1988.

"Neuronal growth factors". Lecture Series in Graduate Course MS#718, General Neurochemistry. M.P. Rathbone and M.D. Coughlin. McMaster University. March, 1988.

"The big squeeze - Epidural spinal cord compression by metastatic tumor". The Brain and Behaviour Research Program Seminar Series McMaster University. Hamilton, Ontario. June 13, 1988.

"Brain tumors from A to Z". Brain Tumor Support Group Meeting. Lakeview Lodge, Henderson General Hospital. September 17, 1988.

"Regeneration and repair in the central nervous system". 4th Regional Conference, Operating Room Nurses Association of Hamilton and District. Vineland, Ontario. October 22, 1988.

"Growth factors and regeneration in the nervous system". Ontario March of Dimes First National Conference on the Late Effects of Poliomyelitis. Toronto, Ontario. November 3, 1988.

"Growth factors and regeneration of the nervous system". Graduate Student Seminar, McMaster Medical Centre, Hamilton, Ontario. February 17, 1989.

"Prognostic factors in metastatic cord compression and their implications for future research". J. Kestle, M.P. Rathbone, M. Levine (presented by J. Kestle). Annual Meeting of the American Association of Neurological Surgeons. Washington, D.C. April 2-6, 1989.

"Acute spinal cord compression". Academic Half-Day in Internal Medicine. McMaster University, Hamilton, Ontario. May 10, 1989.

"Cancer research". Canadian Cancer Society, Hamilton Mountain Unit. Hamilton, Ontario. November 1, 1989.

"Repair and growth in the central nervous system: Surgical Implications". 11th National Operating Room Nurses Conference. Operating Room Nurses' Association of Canada. Toronto, Ontario. April 2-6, 1990.

"Purinergetic stimulation of cell proliferation." Seminar. Department of Biomedical Sciences. McMaster University, Hamilton, Ontario. May 14, 1990.

"Hamilton Regional Neuro-Oncology Program: The first five years". Regional Oncology Rounds. The Ontario Cancer Treatment and Research Foundation, Hamilton Regional Cancer Centre. May 17, 1990.

"Astroglial growth factors in normal human brain and brain tumors: Comparison with embryonic brain." 4th Canadian Neuro-Oncology Meeting, Winnipeg, Manitoba. June 1-3, 1990.

"Purine nucleosides and nucleotides stimulate proliferation of serum starved astrocytes in tissue culture." 4th Canadian Neuro-Oncology Meeting, Winnipeg, Manitoba. June 1-3, 1990.

"Purinergetic stimulation of astrocyte proliferation by picomolar concentrations of adenine and guanine nucleosides and nucleotides." 13th Annual Meeting of Canadian College of Neuropsychopharmacology (CCNP), Banff, Alberta. June 3-6, 1990.

"Are extracellular purine nucleosides and nucleotides angiogenic?" Experimental and Clinical Thromboembolism Group. Hamilton Civic Hospitals Research Centre, Hamilton, Ontario. September 6, 1990.

"Astroglial growth factors in normal embryonic and adult brain and brain tumors." 9th Annual Marcus Singer Symposium on Development, Regeneration and Neuroanatomy. Ithaca, N.Y. October 25-26, 1990.

"Epidural spinal cord compression by urological cancers" Urology Association, Halton-Peel Region, Joseph Brant Hospital, Burlington, Ontario. November 27, 1990.

"Purinerbic mechanisms in regenerative responses." Marcus Singer Symposium for Regeneration and Limb Development. Woods Hole, Massachusetts. December 6-7, 1991.

"Extracellular purines as signals of cellular events following neuronal degeneration." Winter Conference on Neural Plasticity. St. Lucia, Caribbean. February 22-29, 1992.

"The protein that wasn't and the little molecule that could - Purinergic stimulation of cell division and differentiation in the nervous system." Department of Neurobiology and Anatomy, University of Rochester, Rochester, New York. March, 10, 1992.

"Neuro-oncology pain services". 1st Annual Invitational Forum on "The Alleviation of Suffering and Relief of Pain". Hamilton General Hospital, Hamilton, Ontario. November 25, 1992.

"Purinergic stimulation of cell division and differentiation". Department of Biomedical Sciences Seminar Series. McMaster University, Hamilton, Ontario. December 7, 1992.

"Say 'NO' to Parkinson's Disease - new insights into why brain cells die." Parkinson Foundation of Canada, Hamilton Chapter., Hamilton, Ontario. October 23, 1993.

"GTP and guanosine stimulate outgrowth of neurites from hippocampal neurons in vitro." Annual Department of Biomedical Sciences Research Day, Hamilton, Ontario. February 9, 1994.

"Purinergic mechanisms in glia-neuronal interactions after brain injury and in neurodegenerative disorders." Workshop on "Deterioration, Stability, and Regeneration of the Brain During Normal Aging". Madrid, Spain. February 27 - March 2, 1994.

"Guanosine and GTP stimulate neurite outgrowth from PC12 pheochromocytoma cells and from hippocampal neurons through different mechanisms." 5th International Symposium on Adenosine and Adenine Nucleotides. Philadelphia, Pennsylvania. May 9-13, 1994.

"Trophic actions of extracellular purines and pyrimidines on neurons." Purines '96. Milan, Italy. July 6-9, 1996.

"Neurotransmitters & your memory". Faculty of Health Sciences Open House-*MacFest*, Hamilton, Ontario. October 19, 1996.

"The trophic effects of purines and purinergic signalling in the pathological reactions of astrocytes." Satellite Symposium on Alzheimer's Disease and Related Disorders, XVI World Congress of Neurology, Buenos Aires-Argentina, September 14-19, 1997.

"The neurotrophic effects of extracellular purines: Physiology, pathology and pharmacology". The Department of Biomedical Sciences Seminar Series, McMaster University. February 23rd. 1998.

"An overview of the neurotrophic effects of non-adenine based purines." 6th International

Symposium on Adenine and Adenine Nucleotides: New Frontiers For The Third Millenium. Ferrara, Italy. May 19-24, 1998.

“NEOTROPHIN™ (AIT-082, leteprinin potassium), a potential therapeutic agent for stroke, has both neuroprotective and neurorestorative effects.” Seventh Annual Conference on Ischemic Stroke: Advances in Novel Therapeutic Development, Washington D.C. November 19-20, 1998.

“Traumatic Brain Injury”. Ontario Trial Lawyers Association, Hamilton Round Table, Hamilton, ON September 19, 2000.

“Novel Approaches to Enhancing Central Nervous System Function After Injury”. Invited keynote speaker at the University of Chieti Brain Research Day, Chieti, Italy March 13, 2001.

“Mild Head Injury and Post-Traumatic Stress Disorder”. Ontario Psychological Association Annual Meeting , Toronto, ON February 15, 2002

“How Do You Utilize Medical Evidence Effectively?” The Hamilton Medical Legal Society Spring Symposium IV, Niagara-on-the Lake, Ontario April 19-20, 2002

“A Miracle in the Making -New Hope in Spinal Research” Hamilton Health Sciences Foundation Seminar Series, HHS-Hamilton General Hospital, Hamilton, ON Canada May 15, 2002.

“Recent Breakthrough in Stem Cell Research and a Vision for the Future.” 2nd Annual Spinal Cord Conference, Discharge and Beyond, Burlington, ON September 13, 2002

“Traumatic Brain Injury and Post-Traumatic Stress Disorder.” Chronic Pain and Brain Injury Claim Symposium:Insight Information Company Toronto, ON, September 26, 2002.

“A Brain Map for Beginners”. The Myth of the Minor Brain Injury, Ontario Trial Lawyers Association 2002 Fall Conference, October 25, 2002.

“Stem Cells.” Special Session to the STAO 2002 Conference, Toronto, ON November 7, 2002.

“Multi-Modal Treatment of Adult-Onset PTS.” OPA (Conference, Toronto, ON February, 21, 2003.

“Demonstrative Evidence for the Traumatic Brain Injury.” Admissibility of Forensic and Demonstrative Evidence for Insurance Claims Conference:Insight Information Company, Toronto, ON March 27, 2003.

“Spinal Cord Injury Care-Can Function Be Restored”. Educational Session OMA Section on Physical Medicine & Rehabilitation, Hamilton Ontario April 25, 2003

“The Best Brain Evidence-Proving the Mild to Moderate Brain Injury”. Ontario Trial Lawyers Association, 2003 Spring Conference, OTLA Medical School-Evidence to Win With, Toronto, ON May 30, 2003.

“The Use of Enteric Glia to Enhance Nerve Regeneration”. The Glaucoma Foundation, Tenth Annual Think Tank: Tissue Engineering in Glaucoma, Boston MA, September 19-20, 2003.

“Enteric glia promote functional recovery of CTM reflex after dorsal root transection” and

“Guanosine promotes remyelination and functional recovery in chronic spinal injury” International Spinal Cord Society, 42<sup>nd</sup> Annual Scientific Meeting, Beijing, China, October 15-18, 2003

“Approaches to improve recovery following Spinal Cord Injury”. Lecture to the University of Beijing, Beijing China October 20, 2003.

“Improving Conduction and Function: The Role of Ion Channel Modulation”. Advances in the Restoration of the Spinal Cord, CME Inc., Educational Symposium in conjunction with the National Neurotrauma Society, Aventis Pharmaceuticals, Biloxi, MI, November 7, 2003.

“Spinal Cord Research- Advances about to happen”. Presentation to the Puslinch Optimists, Puslinch ON, March 23, 2004.

“Neuroimaging in TBI cases. Trial Lawyers Association of B.C., Medical & Legal Issues in Brain Injury, Vancouver B.C., April 1-2, 2005.

“Spinal Cord Research-Advances about to happen”. Presentator at the Multiple Sclerosis Recovery Roundtable, Copetown, ON April 2, 2005.

“The neurobiology of guanosine” Presentator at the First Joint Italian-German Purine Club Meeting , G. D’Annunzio University of Chieti-Pescara Chieti Italy on September 19, 2005.

“Governance under the new regulations state taht examiners are subject to regulatory college regulation and requirements under the insurance act-Could this potentially mean higher risk of being sued regarding standard of care?” The Hamilton Medical-Legal Society, Spring Symposium VII, Niagara Falls, ON., March 31-April 1, 2006.

## **CONTINUING MEDICAL EDUCATION AND ADMINISTRATIVE**

Design Measurement and Evaluation, Courses 721 and 730. McMaster University, Graduate Studies in Health Sciences, Hamilton, Ontario, Canada. 1984

"Management of Cancer Pain". Postgraduate Course, Memorial Sloan-Kettering Cancer Centre, New York City, NY, USA. November 14-16, 1985

"Leadership Skills". Padgett/Thompson Seminar, Toronto, Ontario, Canada. October 28, 1987

"Influencing Difficult People" Workshop. McMaster University, Continuing Education, Hamilton, Ontario, Canada. November 13, 1987

"Management Skills for Supervisors" Padgett/Thompson Seminar. Toronto, Ontario, Canada. November 16, 1987

"Drugs and the Chronic Headache Patient: Use, Misuse and Abuse" Sunnybrook Hospital, University of Toronto Clinic, Toronto, Ontario, Canada. January 16, 1988

"Setting and Achieving Goals" Career Track Seminar. Hamilton, Ontario, Canada. January 28, 1988

"Conflict Management" Workshop, McMaster University, Continuing Education. Hamilton, Ontario, Canada. March 11, 1988

"Morning in Headaches" Program, McMaster University, Continuing Education. Hamilton, Ontario, Canada. March 3, 1993

"Premium Performance PCR" Symposium, Hospital for Sick Children, Toronto, Ontario, Canada. June 10, 1997

"Fifth International Geneva/Springfield Alzheimer Symposium" Geneva, FR April 15-18, 1998

"International Symposium of Nucleosides and Nucleotides - Purines 2000" Madrid, Spain. August 9 - 13, 2000

"Cardiovascular disease in women" - Half day educational course sponsored by Faculty of Health Sciences, McMaster University, Hamilton Ontario April 20, 2001

"Academic Morning in Nuerosciences"- Half day educational course sponsored by Faculty of Health Sciences, McMaster University, Hamilton, Ontario March 29, 2002.

"Spring Neurology Update"-full day educational course sponsored by Berlex, Janssen-Ortho, Niagara-on the-Lake, Ontario May 25, 2002.

"Reducing Risks: Reducing Risks in Clinical Practice"-Office-related medico-legal Problems and The Art of Delegation-Symposium presented by The Canadian Medcial Protective Association Risk Management Services Toronto, Ontario January 21, 2003.

### **Continuing Medical Education**

- |      |   |
|------|---|
| 1985 | Lecturer on (i) Pain Physiology and Anatomy and (ii) Cancer Pain Syndromes at CME Days, Orillia, Ontario, Canada. October 9, 1985   |
| 1986 | "Strokes", Invited Speaker, McMaster Emergency Medicine Course. April 23, 1986  |
| 1986 | Lecturer on (i) Pain Physiology and Anatomy and (ii) Cancer Pain Syndromes at CME Days, Sudbury, Ontario, Canada. November 28, 1986 |

- 1987 Chairman of Organizing Committee and participant in CME Day in Neuroscience. April 22, 1987
- 1987 Tutorial Leader: CME Day, "Advances in Family Medicine - TIA and Stroke". May 13, 1987
- 1988 Organizer of UWO-McMaster Annual Day in Neuroscience. October 26, 1988
- 1989 Guest Speaker: "Brain Tumors", Academic Session on Brain Tumors, Lincoln County Academy of Medicine, St. Catharines, Ontario, Canada. April 8, 1989
- 1989 Lecturer, Graduate Student Seminar Series. "Growth Factors and Regeneration of the Nervous System", McMaster Medical Centre, Hamilton, Ontario, Canada. February 17, 1989
- 1990 "What's New in TIA". Lecture given to Continuing Medical Education Day in Neurology. McMaster University, Hamilton, Ontario, Canada. November 7, 1990
- 1990 "Epidural Spinal Cord Compression and Urological Cancers". Urology Association, Halton-Peel Region, Joseph Brant Hospital, Burlington, Ontario, Canada. November 27, 1990
- 1991 "Migraines - Whose Headache Is It?", Lecture given for Janssen Pharmaceutica, St. Catharines, Ontario, Canada. April 17, 1991
- 1991 "Migraines - Whose Headache Is It?", Lecture given for Janssen Pharmaceutica, Port Dover, Ontario, Canada. May 28, 1991
- 1991 "Migraines - Whose Headache Is It?", Lecture given for Janssen Pharmaceutica, St. Catharines, Ontario, Canada. October 4, 1991
- 1991 "Migraines - Whose Headache Is It?", Lecture given for Janssen Pharmaceutica, Burlington, Ontario, Canada. November 27, 1991
- 1992 "Migraines: New Concepts in the Pathogenesis and Management of Headache", Lecture given for Janssen Pharmaceutica, Welland, Ontario, Canada. May 6, 1992
- 1992 "Migraines: New Concepts in the Pathogenesis and Management of Headache", Lecture given for Janssen Pharmaceutica, Parry Sound, Ontario, Canada. May 27, 1992

### **Nursing Education**

- |                 |   |
|-----------------|---|
| 1985 to Present | Weekly in-service sessions on Neuro- Oncology problems to the oncology nurses.<br><br>Ad hoc in-service teaching sessions by request in neurology and neuro-oncology from nursing staff.  |
| 1986            | Invited lecturer on Brain Tumors to the Oncology Nursing Interest Group (Hamilton Chapter). Hamilton, Ontario, Canada. November 13, 1986  |
| 1987            | Invited lecturer on Brain Tumors to the Canadian Association of Neuroscience and Nurses Meeting, Hamilton, Ontario, Canada. February 26, 1987<br><br>"Future Treatment and Research in Neuro-Oncology", Speaker at Day in Neuroscience Nursing 1, Hamilton, Ontario, Canada. May 26, 1987 |
| 1988            | "Regeneration of Repair in the Central Nervous System", Speaker at Operating Room Nurses Association, 4th Regional Conference, Prudhommes Landing, Vineland, Canada. October 22, 1988   |
| 1994            | Invited speaker to "Critically Speaking '94" conference. "Brain Tumours", Henderson Hospital, Hamilton, Ontario, Canada. October 20, 1994   |

## **SUPERVISORSHIPS**

- |               |   |
|---------------|---|
| Masters       | I have graduated 4 M.Sc students.   |
| Doctoral      | I have graduated 3 Ph.D students.   |
| Post-Doctoral | I have supervised 14 Post-Doctoral Fellows.   |
| Professional  | I have supervised 14 Residents and one Clinical Scholar in Neuro-Oncology and 103 electives since 1985. |

### Supervisory Committees (Since 1971)

Graduate Student Supervisory Committee  
M.Sc. and Ph.D. Thesis and Oral Defence Committee  
Ph.D. Comprehensive Examining Committee (since 1985)

## **PATENTS**

1. United States Patent (5,447,939). Carbon monoxide dependent guanylyl cyclase modifiers and methods of use. Glasky; Alvin J. (12231 Pevero, Tustin, CA 92680); Rathbone; Michel P. (40 Spadina Avenue, Hamilton, Ontario, CA). Filed: July 25, 1994.

AIT-082 and related compounds activate production of carbon monoxide through increasing activity of hemoxygenase. This is the basis of other patents on the use of these compounds as trophic agents. Subsequent patents (#2, 3 and 4) discuss also more of the applications and the role of neurotrophic factor release from cells under the influence of these compounds.

2. United States Patent (5,801,184). Carbon monoxide dependent guanylyl cyclase modifiers and methods of use. Glasky; Alvin J. (12231 Pevero, Tustin, CA 92680); Rathbone; Michel P. (40 Spadina Avenue, Hamilton, Ontario, CA). Filed: June 8, 1995.
3. United States Patent (6,350,752) Carbon monoxide dependent guanylyl cyclase modifiers and methods of use. Glasky; Alvin J. (12231 Pevero, Tustin, CA 92680); Rathbone; Michel P. (40 Spadina Avenue, Hamilton, Ontario, CA). Filed: June 19, 1997
4. United States Patent (6,338,963). Use of carbon monoxide dependent guanylyl cyclase modifiers to stimulate neuritogenesis. Glasky; Alvin J. (Tustin, CA); Rathbone; Michel P. (Hamilton, CA), NeoTherapeutics, Inc. (Irvine, CA). Filed: October 19, 1999
5. United States Patent Method of treating demyelinating diseases or conditions. Smith; C.P.; Petty, M.; Rathbone, M.; Rampe, D. Submitted February 15, 2001.

The use of a combined sodium-potassium channel blocking agent to improve conduction in areas of demyelination in conditions that include spinal cord injury, multiple sclerosis, and other neurological disorders, including painful disorders.

6. United States Provisional Patent Application. Purine nucleosides as anti-apoptotic agents. Francesco Caciagli, Renata Ciccarelli, Patrizia Di Iorio, Sonya Kleywegt, Eva S. Werstiuk, Michel P. Rathbone, Eva Vertes. Filed September 3, 2002.

We discovered that non-adenine based purines, such as guanosine and inosine, are effective in reducing apoptosis in central nervous system and peripheral nervous system tissues caused by a variety stimuli, including staurosporine, combined oxygen and glucose deprivation, beta amyloid and prion peptide.

7. United States Provisional Patent Application. The use of purified enteric glia from the small intestine to promote functional regeneration and/or connection in the central nervous system. Shucui Jiang, Michel P. Rathbone, Jian Wang, Pamela Middlemiss, Mohammad Imtiaz Khan. Filed October 10, 2002.

We discovered that enteric glia isolated from the enteric nervous system and transplanted into spinal cord enhanced regenerative outgrowth of nerve fibres through the central nervous system and that these regenerated fibres made functional connections.

## **PUBLICATIONS**

1. Rathbone, M.P., Hall, R.H. Metabolism and biological effects of N<sup>6</sup>-( $\Delta^2$ -isopentenyl) adenosine on a cell line derived from circulating leukocytes of a patient with chronic myelogenous leukemia. *Cancer Res.* 32:1647-1670 (1972).
2. Rathbone, M.P., Hall, R.H. Concerning the presence of the cytokinin N<sup>6</sup>-( $\Delta^2$ -isopentenyl)-adenosine, in cultures of *Corynebacterium fascians*. *Planta (Berl.)* 108:93-102 (1972).
3. Rathbone, M.P., Beresford, B., and Yacoob, C. Characterization of a factor from nerve tissue that prevents post-denervation loss of cholinesterase in cultured muscle. *Excerpta Medica International Congress Series #360, "Recent Advances in Myology", Proc. Third Int. Congress on Muscle Diseases, Amsterdam (1974).*
4. Recklies, A., Rathbone, M.P., and Hall, R.H. Stimulation of nerve fiber growth from cultured sympathetic explants. *Can. J. Physiol. Pharm.* 52:840-851 (1974).
5. Rathbone, M.P., Stewart, P.A., and Vetrano, F. Dystrophic spinal cord transplants induce abnormal thymidine kinase activity in normal muscles. *Science* 189:1106-1107 (1975).
6. Beresford, B., Rathbone, M.P., and Logan, D.M. Evidence for a selective stimulation of myosin synthesis following muscle denervation. *Exp. Neurol.* 52:177-188 (1976).
7. Coughlin, M.D. and Rathbone, M.P. Factors involved in the stimulation of parasympathetic nerve outgrowth. *Devel. Biol.* 61:131-139 (1977).
8. Liversage, R.A., Rathbone, M.P. and McLaughlin, H.M.G. Changes in cyclic GMP levels during forelimb regeneration in adult *Notophthalmus viridescens*. *J. Exp. Zool.* 200:169-175 (1977).
9. Semenuk, M., Vickers, J.D., Rathbone, M.P., and Brain, M.C. SPUR cells: The effect of cholesterol-loading of red blood cells (RBC) on membrane-bound protein kinase (PKase). *Clinical Research* 25:695A (1977).
10. Stewart, P.A., Werstiuk, E.S., Vickers, J.D., and Rathbone, M.P. Elevated cholesterol levels in tissues of chicken embryos with hereditary myotonic muscular dystrophy. *Exp. Neurol.* 57:475-485 (1977).
11. Beresford, B., Le Lievre, C., and Rathbone, M.P. Chimera studies of the origin and formation of the pectoral muscle in the avian embryo. *J. Exp. Zool.* 205:321-326 (1978).
12. Brain, M.C., Kohn, I., McComas, A.J., Missirlis, Y.F., Rathbone, M.P. and Vickers, J.D. Red-cell stability in Duchenne's syndromes. *New Engl. J. of Med.* 298:403 (1978).
13. Cho, A., Logan, D.M., and Rathbone, M.P. Nerve trophic effects: An in vitro assay for factors involved in regulation of protein synthesis in regenerating amphibian limbs. *J. Exp. Zool.* 206:347-354 (1978).
14. Missirlis, Y.F., Kohn, I., Vickers, J.D., Rathbone, M.P., Chiu, D.H., and Brain, M.C.

Alterations in erythrocyte membrane material properties: A marker of the membrane abnormality in human and chicken muscular dystrophies. In: *Erythrocyte Membranes: Recent Clinical and Experimental Advances*, pp. 189-200, Alan R. Liss, Inc., New York, N.Y. (1978).

15. Vickers, J.D., McComas, A.J. and Rathbone, M.P. Alterations of membrane phosphorylation in erythrocyte membranes from patients with Duchenne muscular dystrophy. *Can. J. Neurol. Sci.* 5:437-442 (1978).
16. Vickers, J.D., Rathbone, M.P., and Roses, A.D. Alterations of erythrocyte ghost protein phosphorylation in the Duchenne and myotonic muscular dystrophies. *Biochemical Medicine* 20:434-439 (1978).
17. Werstiuk, E., Nixon, B., and Rathbone, M. Altered lipo-protein composition and elevated serum lipids in chicken embryos with hereditary muscular dystrophy. *Neurosci. Lett.* 8:151-158 (1978).
18. Vickers, J.D., McComas, A.J. and Rathbone, M.P. Myotonic muscular dystrophy: Abnormal temperature response of membrane phosphorylation in erythrocyte membranes. *Neurology* 29:791-796 (1979).
19. Rathbone, M.P. and Stewart, P.A. The role of the neural tube in pathogenesis of muscular dystrophy in chickens: Studies using transplantation chimaeras. *Ann. of New York Acad. Sci. Muscular dystrophy and other inherited diseases of skeletal muscle in animals.* *Ann. N.Y. Acad. Sci.* 317:594-610 (1979).
20. Rathbone, M.P., Vickers, J.D., Ganagarajah, M., Brown, J.A., and Logan, D.M. Neural regulation of cholinesterase in newt skeletal muscle. I. Distribution and characterization of the enzyme species. *J. Exp. Zool.* 210:435-450 (1979).
21. Rathbone, M.P., Vickers, J.D., Ganagarajah, M., Brown, J.A. and Logan, D.M. Neural regulation of cholinesterase in newt skeletal muscle. II. Effects of denervation and culture in vitro. *J. Exp. Zool.* 210:451-462 (1979).
22. Rathbone, M.P., Vickers, J.D., and Logan, D.M. Neural regulation of cholinesterase in newt skeletal muscle. III: Regulation in vitro by proteins from chick embryo brains. *J. Exp. Zool.* 210:463-472 (1979).
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24. Vickers, J.D., and Rathbone, M.P. The effect of membrane cholesterol depletion upon erythrocyte membrane-bound enzymes. *Can. J. Biochem.* 57:1144-1152 (1979).
25. Rathbone, M.P. Avian chimaeras and the study of neuromuscular development. *Trends in Neuroscience.* Feb. (1980) (pp. 36-38). (By invitation, for special issue on chimaeras and development).

26. Rathbone, M.P., Carlone, R.L., Van der Jagt, R.H.C., and Ganagarajah, M. Putative neurotrophic factors in brain tissue - novel neuromodulators? In *Recent Advances in Canadian Neuropsychopharmacology*. 2nd Annual Meeting, CCNP, Hamilton, pp. 68-83 (1979).
27. Rathbone, M.P., Petri, J., Choo, A.F., Logan, D.M., Carlone, R.L., and Foret, J.E. Norepinephrine and cyclic AMP independent growth stimulation in newt limb blastemata. *Nature* 283:387-388 (1980).
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31. Kuhn, D.E., Logan, D.M., and Rathbone, M.P. Altered acetylcholinesterase isozyme patterns in mice with hereditary muscular dystrophy. *J. Exp. Zool.* 216:213-223 (1981).
32. Werstiuk, E.S., Rathbone, M.P., and Grof, P. Phloretin-sensitive lithium transport in erythrocytes of affectively ill patients: intra-individual reproducibility. *Prog. Neuro-Psychopharmacology* 5:503-506 (1981)
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36. Werstiuk, E.S., Rathbone, M.P. and Grof, P. Erythrocyte lithium transport in bipolar affective disorders. The effect of membrane transport inhibitors. *Neuropsychobiol.* 12:86-92 (1984).
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39. Werstiuk, E.S., Rathbone, M.P., and Grof, P. Erythrocyte lithium efflux in bipolar patients and control subjects: The question of reproducibility. *Psychiatry Research* 13:175-185, (1984).
40. Carlone, R.L. and Rathbone, M.P. Partial purification of a low-molecular weight growth factor from chicken brain. *J. Cellular Physiol.* 124:467-473 (1985).
41. Cairncross, J.G., Pexman, J.H.W. and Rathbone, M.P. Post-surgical contrast enhancement mimicking residual brain tumor. *Can. J. Neurol. Sci.* 12:75 (1985).
42. Carlone, R.L., Kim, J.-K. and Rathbone, M.P. Purification of a chick brain-derived growth factor by reversed-phase high-performance liquid chromatography. *J. Neurosci.* 7: 2163-2167 (1987).
43. Cairncross, J.G., Eisenhauer, E.A., Macdonald, D.R., Rathbone, M.P., Moore, M.J., Sawka, C.A., MacCormick, R.E. and Kerr, I.G. (1990) Phase II study of trimetrexate in recurrent anaplastic glioma. *Can. J. Neurol. Sci.* 17:21-23.
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46. Werstiuk, E.S., Rathbone, M.P. and Grof, P. (1994) Erythrocyte lithium transport in bipolar affective disorders. The effect of membrane transport inhibitors. *Neuropsychobiology* 12:86-92.
47. Rathbone, M.P., Middlemiss, P.J., Kim, J.-K., Gysbers, J.W., DeForge, S.P., Hughes, D.W. and Smith, R.W. (1992) Adenosine and its nucleotides stimulate proliferation of chick astroblasts and human astrocytoma cells. *Neurosci. Res.* 13:1-17.
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- Maestro, R.F. (1992) Purine nucleosides and nucleotides stimulate proliferation of a wide range of cell types. *In Vitro Cell. Dev. Biol.* 28A:529-536.
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metastasis. *Cancer* 78:1470-1476.

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## **BOOK CHAPTERS**

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## **ABSTRACTS**

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## **ADMINISTRATIVE RESPONSIBILITIES**

### **Department**

- 1980  
Jan-Feb Given administrative responsibilities for Department of Neurosciences during the Chairman's (G. Brown) prolonged visit to Australia.
- 1988 Organizing Committee Chairman, Annual U.W.O. McMaster Day in Neurosciences.

### **Faculty**

- 1976 Member of Search Committee for Acting Co-ordinator of Pharmacology Program, McMaster University
- 1975-1976 Member of Search Committee for Chairman of Neurosciences, McMaster University.
- 1977-1978 Member of Health Sciences Faculty Executive Committee
- 1977-1979 Member of the M.D. Education Committee.
- 1977-1980 Member of Council of the Faculty of Health Sciences.
- 1978-1979 Member of the 10th Anniversary McMaster Health Sciences Open House Committee and Sub-Committee

### **University**

- 1975 Organizing Secretary of the 1st National Muscular Dystrophy Association of Canada Workshop (attended by 65 scientists and clinicians from across Canada). Held at McMaster University, November 1975.
- 1981 Organized the 3rd International Forum on Regeneration (held at McMaster University and attended by 100 regeneration scientists from 4 continents).
- 1985 to  
1991 Co-ordinator, Hamilton Regional Neuro-Oncology Program

### **Hospital**

- 1985 to  
1991 Member of the Hamilton Civic Hospitals Palliative Care Committee.

## **COMMUNITY SERVICE AND PERSONAL INTERESTS**

- 1963-1974 Coached 10 international and Olympic athletes in Britain and

Canada in various track and field events.

- 1966 Wrote article on the biomechanics and physiology of steeplechasing for the British Journal of Steeplechasing.
- 1969-1974 Executive member and Coaching Development Co-ordinator of Southwestern Ontario Track and Field Association and Ontario Track and Field Association. (During this period I played a major role in developing the coaching program that has evolved into the Coaching Association of Canada training and certification program for a variety of sports).
- 1972-1974 Member of the Board of Directors of the Canadian Track and Field Association. In this capacity I played a role in establishing the current professional national coaching and administrative programs.
- 1973- Private Pilot with night endorsement (1974) and Class 1 instrument rating (1978).
- 1978-1990 Medical Advisor, Burlington Chapter, Muscular Dystrophy Association of Canada.
- 1985-1997 Member of Board of Directors of the Neuro-Oncology Foundation.
- 1988-1998 Member of Rotary Club of Hamilton Mountain.
- 1998-2001 Member of the Board of Directors of the Ontario Neurotrauma Foundation.
- 2003- Member of the Board of Directors of the Hamilton-Medical Legal Society