

History of the Pharmacological Society of Canada 1956–2008

Jana Sawynok and Kanji Nakatsu

Abstract: The Pharmacological Society of Canada (PSC) formed in 1956 and became a constituent society of the Canadian Federation of Biological Sciences (CFBS) in 1958. Over subsequent decades, it met annually with CFBS, matured as a society, and established an identity as the voice of pharmacology in Canada. During the 1980s, it sought a larger stage and bid for, and then hosted, the XIIth International Congress of Pharmacology in Montreal in 1994. The society then participated in several joint meetings with other national pharmacology societies. In 2008, the PSC merged with the Canadian Society for Clinical Pharmacology to form the Canadian Society of Pharmacology and Therapeutics. The following article is a history of the PSC from its formation in the mid-1950s to amalgamation in 2008.

Key words: Pharmacological Society of Canada, history.

Résumé : La Société pharmacologique du Canada (SPC) s'est formée en 1956 et est devenue une société constitutive de la Fédération canadienne des sciences biologiques (FCSB) en 1958. Dans les décennies qui ont suivi, elle s'est réunie annuellement avec la FCSB, a mûri en tant que société, et s'est imposée comme identité de la voix de la pharmacologie au Canada. Au cours des années 1980, elle a cherché à jouer un rôle à plus grande échelle, et a proposé sa candidature et accueilli le XII^e Congrès international de pharmacologie à Montréal en 1994. La société a ensuite participé à plusieurs congrès conjoints avec d'autres sociétés de pharmacologie nationales. En 2008, la SPC s'est fusionnée avec la Société canadienne de pharmacologie clinique pour former la Société canadienne de pharmacologie et de thérapeutique. L'article qui suit rapporte l'histoire de la SPC de sa formation au milieu des années 1950 jusqu'à la fusion en 2008. [Traduit par la Rédaction]

Mots-clés : Société pharmacologique du Canada, histoire.

1950s: Forming a society

Pharmacology as a discipline developed during the second half of the 19th century and the early 20th century. Within Canada, the first pharmacology departments identified as such were at McGill University in Montreal in 1887 (previously the Discipline of Chemistry, Pharmacy and Materia Medica, since 1824), the University of Toronto in 1887, and the University of Western Ontario in 1914 (Marks 1994). The origins of a national pharmacology society date to the mid-1950s. On October 22, 1954, 21 pharmacologists attending the Canadian Physiological Society meeting in Toronto convened at the invitation of Professor J. Kenneth W. Ferguson (Head of Pharmacology, University of Toronto) to discuss the possible formation of a distinct society. With the growth of pharmacology in Canada, it was considered desirable to form a society interested in the “advancement and problems related to the subject in the widest sense”. Foremost amongst issues to be addressed were “teaching and research in pharmacology, relationship to other aspects of medical education and pharmacy, pharmacology in the governmental control of drugs, and pharmacology in the pharmaceutical industry”. A committee (Chair: J. Kenneth W. Ferguson, Secretary: Kenneth I. Melville) of Chairs/Heads of all established departments of pharmacology in Canadian universities (John G. Aldous, Dalhousie University; Eldon M. Boyd, Queen's University; James G. Foulks, University of British Columbia; Maurice F. Murnahan, University of Ottawa; Russel A. Waud, University of Western Ontario) with representatives from National Health and Welfare (Dr. M.G. Allmark) and industry (Dr. E. Lozinski, Charles E. Frosst & Company) was appointed to orga-

nize a “Canadian Pharmacological Society” ([Pharmacological Society of Canada Archive](#)).

Subsequent business meetings occurred at the University of Western Ontario at a “Symposium on Graduate Teaching in Pharmacology in Canada” in October, 1955 (23 present), and prior to a Canadian Physiological Society meeting at McGill University in October, 1956 (31 present). At the 1955 meeting, Dr. Waud was appointed Chairman (Dr. Ferguson had been appointed as Director of Connaught Laboratories) but the remainder of the committee continued. The main business was the relationship of the new society to the Canadian Physiological Society; some sort of affiliation needed to be arranged, and until that time, details of a constitution could not be determined. A Program Committee was established to organize a pharmacology meeting on the day before the October 1956 meeting of the Canadian Physiological Society with tentative topics of undergraduate teaching curriculum, interchange of graduate students across Canada, and experimental techniques. By the 1956 meeting, the organization of some type of Federation of Canadian Experimental Biologists — including sections on pharmacology, physiology, anatomy, biochemistry, and bacteriology — was being considered elsewhere. The Pharmacological Society of Canada (PSC) came into being with development and adoption of a constitution defining society operations in 1956, and this is considered the Founding Constitution. The PSC Standing Committee for 1956–1957 consisted of Eldon Boyd (President), Ken Melville (Vice President), Werner Kalow (Secretary-Treasurer), and Mark Nickerson, John Aldous, and M.G. Allmark (Committee Members). The first three Presidents of the PSC are

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presented in Box 1. A listing of the main PSC executive positions from 1956 to 2008 is presented in Table 1.

On April 15, 1957, the PSC Standing Committee met in Chicago and considered charter membership (157 had been invited to join), further developments of the “Canadian Alliance of Biological Societies”, and upcoming meetings. It was noted that pharmacology was still part of physiology at several medical schools in Canada and that there was a need to foster development of distinct departments. The First Spring PSC Meeting was held at the University of Alberta in June 1957, with the program consisting of 20 scientific presentations, a business meeting, dinner, and a symposium (Clinical Assessment of Drug Toxicity). PSC assets at the time were \$118.73. The Second Annual PSC Meeting was held in Ottawa with the Canadian Physiological Society in October 1957, with the program consisting of a tour of the Food and Drug Directorate Building, a symposium (Role of Pharmacologists in Teaching Therapeutics), dinner, and a business meeting. By then, discussions on the “Canadian Alliance of Biological Societies” were well developed, and while the name had not yet been finalized, it was agreed that the PSC would be part of the alliance and would meet annually at its meeting, with the time and location to be decided by the federation. The list of PSC Charter Members was finalized in October 1957 and contained 116 names.

The Canadian Federation of Biological Societies (CFBS) was officially founded on October 11, 1957 (Bensley 1957). It comprised four member societies: the Canadian Association of Anatomists, the Canadian Biochemical Society, the Canadian Physiological Society, and the PSC. The physiological society had been active since 1935, but the other societies had formed more recently in the preceding 2 years. The purpose of the CFBS was to “bring together persons who are interested in teaching and research in biological sciences to disseminate information on results of biological research through scientific meetings and through publication, to encourage exchange of information between constituent societies, and to act for member societies when concerted action is desirable”. The CFBS was to be managed by a board on which each constituent society had two representatives. The First Annual CFBS Meeting was held at Queen’s University and the Royal Military College in Kingston June 9–11, 1958. At the PSC business meeting, a dues fee of \$5 was proposed (\$3.50 going to CFBS), CFBS board members were selected, required amendments to the constitution to align with CFBS were determined, the office of Secretary-Treasurer was split into those of a Secretary and a Treasurer, and it was recognized that a French title for the Society would be needed. The Second Annual CFBS Meeting was held June 9–10, 1959, at the University of Toronto; by then, there were 124 members of the PSC.

Box 1

EARLY PSC PRESIDENTS



President 1956-57
E.M. Boyd, MD 1932

Appointed in 1938 as Lecturer, he became Professor and Head of Pharmacology at Queen’s University and served as such until 1969. He published extensively, and is best known for his work in several areas of toxicology. (d. 1973)



President 1957-58
K. I. Melville, MD 1926

A Holmes medallist and an active Pharmacologist, he served as the Chair of Pharmacology & Therapeutics at McGill University from 1953-67. He is known best for work on adrenaline and the coronary circulation. (d. 1975)



President 1958-59
J.K.W. Ferguson, MD 1932

Appointed to Pharmacology at the University of Toronto 1938, he conducted medical aviation research for the RCAF during World War 2 years. He became Head of Pharmacology 1945-55, then Director of Connaught Laboratories 1955-72. (d. 1999)

Table 1. Pharmacological Society of Canada Presidents, Secretaries, and Treasurers from 1956 to 2008.

Year	President	Secretary	Treasurer
1956–1957	E.M. Boyd	W. Kalow	W. Kalow
1957–1958	K.I. Melville	W. Kalow	W. Kalow
1958–1959	J.K.W. Ferguson	M.G. Allmark	C.I. Chappel
1959–1960	R.A. Waud	M.G. Allmark	C.I. Chappel
1960–1961	M. Nickerson	J.D. McColl	C.I. Chappel
1961–1962	G.H.W. Lucas	J.D. McColl	I.R. Innes
1962–1963	M. Murnaghan	J.D. McColl	I.R. Innes
1963–1964	W. Kalow	C.W. Nash	I.R. Innes
1964–1965	C.W. Gowdy	C.W. Nash	A. Beaulnes
1965–1966	E.A. Sellers	C.W. Nash	A. Beaulnes
1966–1967	J.M. Parker	W.C. Stewart	A. Beaulnes
1967–1968	C.W. Nash	W.C. Stewart	G.E. Johnson
1968–1969	A. Beaulnes	W.C. Stewart	G.E. Johnson
1969–1970	I.R. Innes	P.E. Dresel	M.C. Sutter
1970–1971	J.A. Aldous	P.E. Dresel	M.C. Sutter
1971–1972	E.E. Daniel	P.E. Dresel	M.C. Sutter
1972–1973	J.B. Armstrong	J.T. Hamilton	C. Marchand
1973–1974	G.L. Plaa	J.T. Hamilton	C. Marchand
1974–1975	C.I. Chappel	G. van Petten	C. Marchand
1975–1976	P.E. Dresel	G. van Petten	D. Echobichon
1976–1977	P.E. Dresel	G. van Petten	D. Echobichon
1977–1978	G.E. Johnson	G. Bellward	D. Echobichon
1978–1979	G.E. Johnson	G. Bellward	G. Frank
1979–1980	G. van Petten	G. Bellward	G. Frank
1980–1981	J.H. McNeill	R. Capek	G. Frank
1981–1982	D. Johnson	R. Capek	J. Downie
1982–1983	D. Johnson	R. Capek	J. Downie
1983–1984	G. Marks	S. Katz	J. Downie
1984–1985	G. Marks	S. Katz	S. Roth
1985–1986	R. Capek	S. Katz	S. Roth
1986–1987	R. Capek	M.C. Sutter	S. Roth
1987–1988	G. Bellward	M.C. Sutter	R. Reiffenstein
1988–1989	G. Bellward	C.C.Y. Pang	R. Reiffenstein
1989–1990	C. Triggle	C.C.Y. Pang	R. Reiffenstein
1990–1991	C. Triggle	C.C.Y. Pang	R. Reiffenstein
1991–1992	F. LaBella	C.C.Y. Pang	R. Reiffenstein
1992–1993	F. LaBella	J. Sawynok	R. Reiffenstein
1993–1994	D. Cook	J. Sawynok	R. Reiffenstein
1994–1995	D. Cook	J. Sawynok	M. Hirst
1995–1996	C.C.Y. Pang	J. Sawynok	M. Hirst
1996–1997	C.C.Y. Pang	B. Bennett	M. Hirst
1997–1998	K. Jhamandas	B. Bennett	M. Hirst
1998–1999	K. Jhamandas	B. Bennett	M. Hirst
1999–2000	J. Sawynok	J. Rylett	J. Hammond
2000–2001	J. Sawynok	J. Rylett	J. Hammond
2001–2002	S. Clanachan	J. Rylett	J. Hammond
2002–2003	S. Clanachan	J. Rylett	J. Hammond
2003–2004	J.R. McNeill	F. Parkinson	J. Hammond
2004–2005	J.R. McNeill	F. Parkinson	J. Hammond
2005–2006	K. Nakatsu	F. Parkinson	J. Hammond
2006–2007	K. Nakatsu	D. Maurice	J. Wallace
2007–2008	J. Hammond	D. Maurice	J. Wallace

1960s: Growth of pharmacology

The 1960s witnessed prominent developments that led to the growth of pharmacology in Canada. Notably, the Medical Research Council (MRC) became an autonomous body from the National Research Council (NRC) in 1960, and this provided a means for further development of biomedical sciences. In addition, the creation of a National Health Program provided an impetus for expansion of medical facilities throughout the

country. Since formation of the PSC, independent departments of pharmacology were established at the University of Manitoba (1954), Université de Montréal (1959), University of Alberta (1961), Université de Laval (1962), Université de Sherbrooke (1968), and University of Saskatchewan (1973). At newer medical schools, pharmacology was part of a Basic Medical Sciences Division at Memorial University (1969), part of transdisciplinary teaching at the University of Calgary (1970), and integrated in a novel medical education program at McMaster University (1968–1970) (Marks 1994).

The PSC Constitution adopted in 1960 formally aligned the society with CFBS and recognized the French name of the society — La Société (de) Pharmacologique du Canada — and is shown in Box 2. A translation of the PSC Constitution and By-Laws was available in a parallel English and French format by 1963 and was then formally adopted in 1965. In 1968, CFBS produced a compact booklet containing the overarching constitution for CFBS and collated constitutions for each of its member societies, with English and French versions on the front and back covers with respective texts proceeding throughout.

Throughout the 1960s, the PSC continued to meet with CFBS at an annual meeting in June (Box 3). Each year, the PSC organized a symposium (PSC Half-Day), held Council meetings, annual business (general) meetings, and a Society dinner. Meetings of Council often were spread over two sessions, and business meetings were attended by 20–40 PSC members. New categories of membership (Emeritus, Associate, Honorary) were introduced, and by the end of the decade, there were close to 200 PSC members.

In 1960, the PSC formed a publication committee to address the formation of a pharmacology journal to serve as the official society journal. The following year, it proposed a separation of the *Canadian Journal of Biochemistry and Physiology* into a *Canadian Journal of Biochemistry* and a *Canadian Journal of Physiology and Pharmacology* (CJPP). This did not occur immediately because a critical mass of publications was needed before a split would be feasible, but this soon transpired. At the start of 1964, CJPP was established as a monthly peer-review journal published by the NRC. Dr. J. Stevenson, primarily active in the Physiological Society but also a PSC Charter Member, served as the first Editor of CJPP and guided the journal through its early years. The PSC requested a Pharmacology Co-Editor, but the volume of pharmacology papers did not justify this initially, and discipline interests were served by Associate Editors (3 of 12 were pharmacologists).

At the international level, pharmacology as a discipline developed into an independent entity in the 1960s. The PSC had nominated a representative to attend an international meeting — where pharmacology was a subsection of the International Union of Physiologists — which had convened in Stockholm in 1961. The International Union of Pharmacology (IUPHAR) became an independent organization in 1966, and the PSC immediately approached the organization seeking member status. Mark Nickerson, who had represented the PSC at earlier international meetings and served on council, was elected Treasurer of IUPHAR and served in that capacity from 1966 to 1972. Ed Daniel was selected as the next PSC IUPHAR delegate. IUPHAR meetings occurred at 3-year intervals (this changed to 4-year intervals in 1990), and delegates were expected to attend meetings and report back on international developments. Even during the 1960s, Canada was potentially interested in hosting an IUPHAR meeting and considered making a bid to host the 1972 IUPHAR meeting in Toronto but did not proceed.

Box 2 PHARMACOLOGICAL SOCIETY OF CANADA CONSTITUTION (as amended on June 8, 1960)

- The society shall be named in English "The Pharmacological Society of Canada; and in French "La Société Pharmacologique du Canada", and shall operate as a "Member Society" in the Canadian Federation of Biological Sciences.
 - The object of the Society shall be to promote the advancement of the science of pharmacology in its widest sense.
 - The management of the affairs of the Society shall be vested in a Council consisting of the Past-President, President, Vice-President, Secretary, Treasurer, and three (3) additional Council Members. This Council shall be responsible for the general management of the Society during the intervals between meetings. The Council shall arrange time, place and programme of all meetings of the Society.
 - Membership.** Any person who has conducted research and published meritorious papers in pharmacology in the widest sense or engaged in teaching in these fields shall be eligible for election to membership.
 - Election to Membership.** Applications for membership shall be sent to the Secretary at least three (3) months before the Annual Meeting. The application must contain evidence of eligibility of the applicant and the names of two sponsors who are members of the Society. The Secretary shall submit these applications to the Council who will prepare a list containing the names of those approved. This list shall be sent to the membership at least two (2) weeks before the Annual Meeting, at which time a vote will be taken upon the application. Any ordinary member unable to attend this Meeting may vote by sending his ballot paper, properly marked in a sealed envelope bearing his signature, to the Secretary prior to the Meeting. One adverse vote in six of the total votes shall exclude the candidate from election on that occasion.
 - Dues.** The annual assessment for each succeeding year shall be determined by majority vote at the Annual Meetings, upon recommendation of the Council, and shall be due in advance at the time of the Annual Meeting. A member, three (3) years in arrears, shall forfeit his membership.
 - Election of Members of the Council.** Election shall be held annually. The President shall normally hold office for one year, and shall be succeeded by the Vice-President. The Secretary and Treasurer shall be elected annually, but may hold office for three (3) successive terms. One (1) of the three (3) ordinary members of the Council shall retire annually. There shall be a Nominating Committee consisting of three (3) members elected at the Annual Meeting. Two (2) months before the Annual Meeting, the Nominating Committee shall submit to the Secretary at least two (2) nominees for each vacancy on the Council, except that only one (1) nominee shall be required for the position of Secretary or Treasurer when the incumbent is asked to stand for re-election. These nominations shall be sent to all members of the Society at least six (6) weeks before the Annual Meeting. Additional nominations signed by at least five (5) members may be submitted to the Secretary, at least three (3) weeks prior to the Annual Meeting. Two (2) weeks before the Meeting, ballots shall be sent out by the Secretary. Members unable to attend the Meeting may mail to the Secretary their ballots which shall be recorded together with the ballots cast at the Annual Meeting.
 - Quorum.** For the transaction of business at any Annual Meeting, twelve (12) members shall form a quorum.
 - Amendments.** Amendments to the Constitution may be submitted in writing signed by five (5) members of the Society to the Secretary at least six (6) weeks before the Annual Meeting. The proposed amendment shall be considered by the Council and the Council shall recommend action at the next Annual Meeting of the Society. For approval, a majority of two-thirds of those voting will be necessary.
 - Meetings.** The Annual Meeting of the Society shall be held in conjunction with the Canadian Federation of Biological Societies, but additional meetings may be held at the discretion of the Council. Notice of the Annual or any special meeting shall be mailed to all members at least six (6) weeks before it is held.
 - By-Law No. 1.** The Council shall elect at its Annual Meeting two (2) representatives to the Board of the Canadian Federation of Biological Societies.
- By-Law No. 2.** The Society shall pay for the annual dues of each member to the Canadian Federation of Biological Societies an annual levy, as determined by the Federation Board, in order to defray the costs of the Federation.

Box 3 EARLY CFBS MEETINGS



The first CFBS meeting took place at Queen's University and the Royal Military College in Kingston, Ontario in 1958. Throughout the 1960s and beyond, meetings took place at universities and institutions across Canada. This supported universities at a slow time of the academic year, and provided reasonable accommodation venues for attendees.

1970s: A mature discipline

Pharmacology as a distinct discipline was now established in most medical schools in Canada. As the PSC matured, it became more aware of its identity as a repository of expertise within the country and sought venues for the expression of this. In 1972, a Social Policy Committee was formed; its initial goals were to respond to the Le Dain Commission on Non-Medical Use of Drugs, to make recommendations on pesticides and antibiotic use in animal feed, and to address the state of clinical pharmacology in Canadian medical science. By 1975, a Science Policy Committee (initially to review MRC practices and make recommendations) and an Education Policy Committee (initially to consider the optimal content of Pharmacology courses) also had been formed.

Table 2. Pharmacological Society of Canada awards and recipients from 1978 to 2008.

Award	Inauguration	Sponsor
Senior Scientist Award	1978, M. Nickerson	Upjohn 1978–1994 Ciba Geigy 1995–1996 Novartis 1997–2000 Alta-Pharm International 2001–2005 Merck Frosst 2006 Pfizer Canada 2007–2008
Junior Scientist Award	1987, Ken Renton	Merck Frosst 1987–2008
Post-Doctoral Fellow Award	1996, O. Clément-Chomienne	Bio-Méga/Boehringer Ingelheim 1996
Student Presentation Awards	1977 Oral Award, P. Boksa 1985 Poster Award, S. Fournier	Pharmacological Society of Canada Oral Award named Dresel Award in 1988 Poster Award named Reiffenstein Award in 1996 Pharmacological Society of Canada
CJPP Publication Award	1977, T.P. Kenakin, D.A. Cook	Pharmacological Society of Canada
Senior Scientist Awardees		
1978 M. Nickerson	1986 G. Marks	1994 B. Schimmer
1979 Y. Israel	1987 I. Bihler	1995 W. Lautt
1980 P. Seeman	1988 E. Daniel	1996 C. van Breemen
1981 W. Kalow	1989 J. Trifaró	1997 A. Cuello
1982 F. LaBella	1990 K. Lederis	1998 R. Quirion
1983 J. McNeill	1991 N. Dhalla	1999 M. Hollenberg
1984 G. Drummond	1992 D. Regoli	2000 T. Allen
1985 H. Kalant	1993 K. Jhamandas	2001 M. Radomski
Junior Scientist Awardees		
1987 K. Renton	1993 G. Lopaschuk	1998 F. Parkinson
1988 J. Sawynok	1994 J. Wallace	1999 R. Schulz
1990 M. Karmazyn	1995 T. Massey	2000 G. Zamponi
1991 S. Cole	1996 S. Howlett	2001 S. Ferguson
1992 J. Huizinga	1997 B. Bennett	2002 D. Maurice
		2003 P. Light 2004 N. Vergnolle 2005 W. Lingyun 2008 C. Sinal (1989, 2006–2007 no award)

These committees would become more active during the 1980s when terms of reference and the fates of reports became more defined. For example, the Education Policy Committee addressed pharmacology objectives for the undifferentiated physician and distributed these to heads of departments of pharmacology in Canada and the United States. The Social Policy Committee addressed employment opportunities for pharmacology graduates and explored creation of a visitation program for graduate students in industry. Science Policy was largely served via PSC representation on the CFBS committee because science advocacy was a major *raison d'être* of CFBS. Finally, an expertise list was created in 1975 and made available to membership, institutions, and organizations and was considered a valuable resource.

In the early 1970s, a Constitution Committee was formed to address revisions needed to update the workings of the PSC and to reflect changing times. Matters addressed were society objectives, society committees, election procedures, opening of associate membership to graduate students, delineation of rights and restrictions of associate members, executive duties, signing authority, and term of the president. Proposals underwent several iterations before recommendations were finally approved and adopted. This 1974 version of the constitution would serve the PSC for the next decade.

By the late 1970s, several awards and recognitions were created by the PSC. A Senior Scientist Award, supported by Upjohn, was created in 1977 and first awarded in 1978. The award was “to stimulate and recognize research in the field of pharmacology and toxicology in Canada” and consisted of \$1000, an engraved plaque, and an oration delivered by the recipient at the annual meeting. The inaugural recipient of this award was Mark Nickerson, a giant in Canadian pharmacology, who also represented the country at the international level (Box 4). A complete list of Senior Scientist Award recipients for 1978–2008, together with sponsors over time (Upjohn sponsored the award until 1994, at which time

other companies assumed sponsorship) is included in Table 2. The list includes many accomplished pharmacologists. Prominent among these was Ed Daniel, who along with Mark Nickerson came to Canada from the United States as a result of post-war political events and would contribute to development of several departments across the country (Box 5).

Additional awards were created over time. With graduate students eligible for Associate Membership, a Graduate Student Oral Presentation Award was created and first awarded in 1977 (Table 2). When poster presentations were introduced, an additional recognition was created and first awarded in 1985. These two student awards went on to become named awards in honor of prominent PSC contributors, Peter Dresel and Rod Reiffenstein (Box 6). A Junior Scientist Award, recognizing excellence within the first 10 years of faculty appointment, was established (supported by Merck-Frosst) with Ken Renton being the first recipient in 1987 (Box 7). A Post-Doctoral Award would be created in 1996 (Table 2).

By the end of the 1970s, listings of those conducting PSC business had expanded noticeably — they now included Past President, President, Vice President, Secretary, Treasurer, Council Members, Science, Social and Education Policy Committees members, Upjohn Award Committee members, CJPP Award Committee members, Pharmacology Half-Day Program Committee members, the Nominating Committee, Scrutineers, and the PSC representative on the CFBS Science Policy Committee — and could include 30 members. The decade had also seen personal computers introduced into science and administration, and the PSC Membership List was available as a printout of labels. This greatly facilitated communication with members and was a welcome development as the PSC had grown to a little over 300 members. In addition, the expertise list could now be updated at regular intervals.

Box 4

**PHARMACOLOGICAL SOCIETY OF CANADA
1978 UPJOHN SENIOR SCIENTIST AWARD**

Mark Nickerson, MD, PhD
**Head, Pharmacology, University of Manitoba 1954-1967
Head, Pharmacology, McGill University 1967-1975**

Mark Nickerson (b. 1916, Minnesota) was one of the most influential pharmacologists of his time. He obtained his PhD in Embryology from Johns Hopkins University in 1944, then joined Louis Goodman at the University of Utah. The first edition of Goodman and Gilman's "The Pharmacological Basis of Therapeutics" had been published in 1941, and he soon became converted to Pharmacology. He then completed his MD in 1950. His discovery of irreversible receptor antagonists led to the concept of spare receptors, a fundamental contribution to pharmacology, and to this day it remains a prominent feature of receptor theory. The discovery earned him the American Society for Pharmacology and Experimental Therapeutics (ASPET) Abel Award in 1949, and secured him an academic position at the University of Michigan at Ann Arbor. However, he was fired from his tenured position for refusing to testify against friends and colleagues on un-American activities during the McCarthy era. Canada offered him an academic home and he became Professor and Chair of Pharmacology at the University of Manitoba in 1954. This enterprise began as a room in Physiology, and ended up as an entire new building dedicated to Pharmacology by the late-1960s. He left Manitoba in 1967 to become Chair of the Department of Pharmacology at McGill University and oversaw considerable expansion during his term (to 1975). Dr. Nickerson served as President of the PSC from 1960-61, the Canadian Federation of Biological Societies from 1971-72, and ASPET from 1975-76; he was the only North American to serve as President of both the PSC and ASPET. He also contributed internationally, serving as Member of the IUPHAR Executive Council from 1965-77 and Treasurer from 1966-72. Dr. Nickerson was honored with many academic and other awards throughout his distinguished career. Many departments across Canada would be populated by faculty who had come from the departments he chaired over two decades. In his later years, he was appointed Emeritus Professor at McGill University, and maintained interests in research. He died in 1998. A Mark Nickerson Memorial Award Lecture was established to honor his many and prominent contributions to Pharmacology. (Cuello 1998)

Box 5

PHARMACOLOGY IN CANADA - A PROMINENT CONTRIBUTOR

Edwin E. Daniel, PhD
**PSC President 1971-72, PSC Upjohn Award 1988
Head, Department of Pharmacology, University of Alberta 1961-1972**

Edwin (Ed) Daniel (b. 1925) was drafted into the US Army (Infantry) after high school; following the war (and the loss of a foot), he resumed studies and obtained his PhD in 1952. During the 1950s, due to his political views, his post-doctoral award was withdrawn, and he was told he "could not expect to get a job in the US". He moved to Canada, to a position at the University of British Columbia in 1951, and throughout the next decade, he and James G. Foulks essentially constituted the Department of Pharmacology. It was there that he developed an interest in education relating to pharmacology, particularly laboratory-based instruction, and developed the "autonomic unknown" exercise which would become a standard feature of such instruction. He also developed a drug literature evaluation exercise, and a particular interest in medical education. From 1961-1972, he was Head of the Department of Pharmacology at the University of Alberta, and built a strong and diverse department. Many faculty and graduate students from that department would go on to become Heads of Departments of Pharmacology throughout Canada (G. Marks, K. Jhamandas, C. Triggler), prominent contributors to the PSC, and leaders in other fields. He served as President of the PSC from 1971-72. In 1975, he moved to McMaster University in Hamilton to a setting that was innovating in medical education by using problem-based learning instead of didactic teaching. By 1978, he had developed an interdisciplinary Smooth Muscle Research Group program, a program that would go on to have a major impact on research in Canada. He received the PSC Senior Scientist Upjohn Award in 1988. He retired in 1995, but continued with research and teaching activities, subsequently returning to the University of Alberta as Adjunct Professor. A more detailed account of his contributions to Canadian Pharmacology appears in a Special Issue of CIPP - A Tribute to Ed Daniel. (Daniel 2005)

Box 6

TRAINEE PRESENTATION AWARDS

Associate Membership in the PSC was created as a category in the mid-1960s, and students were able to join as Associate Members in 1974. A Graduate Student Award was created by 1977. The award consisted of \$100 and a certificate of recognition. Posters were introduced as an additional presentation format in the 1980s, and an additional award was created by 1985 (awards now \$200). The Oral Award became the Dresel Award in 1988, in honor of Peter Dresel who served as Secretary and the first PSC President to serve a 2-year term. The Poster Award became the Reiffenstein Award in 1996 in honor of Rod Reiffenstein who served as PSC Treasurer for 7 years.

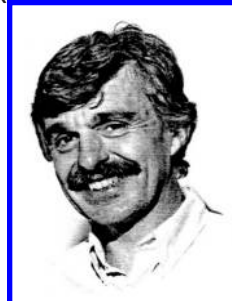


Peter Dresel (b. 1925) immigrated to the United States in the 1930s. During World War 2, he spent 3 years with the US Army. He completed his PhD in 1952 at the University of Rochester, moved to Emory University, then worked in industry in Cincinnati. In 1956, he joined the University of Manitoba and moved up the academic ranks to become Professor. He became Head of the Department of Pharmacology at Dalhousie University, Halifax in 1976 and built a strong academic department during the early 1980s. His research interests were in cardiovascular pharmacology. He was a Charter Member of the PSC, and served as Secretary from 1970-72, and then as President from 1975-77. He died unexpectedly in 1987.



Rod Reiffenstein (b. 1938) grew up in Montreal, and obtained a BSc (Hons) in Physiology from McGill University in 1959, and then a PhD in Pharmacology at the University of Manitoba in 1965. He was appointed Assistant Professor of Pharmacology at the University of Alberta in 1965, and became Professor in 1983. His research areas included neuropharmacology, especially in the central nervous system. He collaborated with Sheldon Roth, and trained several graduate students (Chris Triggler, Kanji Nakatsu) who would become prominent contributors to the PSC. He was Treasurer of the PSC from 1987-94, and provided excellent fiscal management during the IUPHAR meeting years. He died at the end of 1994.

Box 7

MERCK FROSST JUNIOR SCIENTIST AWARD


The Junior Scientist Award supported by Merck-Frosst was created to recognize excellence in research within the first 10 years of obtaining a PhD degree, and was first offered in 1987. The award consisted initially of a medal and \$1000; from 1990 onwards, an oration was delivered at the annual meeting.

The first recipient was Ken Renton in 1987. Ken received his PhD in Pharmacology from McGill University in 1975, and joined the Department of Pharmacology at Dalhousie University as Assistant Professor in 1977. He became Professor in 1986, and then Head of the Department for 1987-1995. His research focused on drug metabolism. A complete list of award recipients is included in Table 2.

1980s: Changing times

A significant development early in the 1980s was the branching out of clinical pharmacologists to form a society more reflective of human pharmacology and therapeutic research. A steering committee was formed and an organizational meeting held in October 1979 at the Annual Meeting of the Canadian Society for Clinical Investigation (CSCI). The Canadian Society of Clinical Pharmacology (CSCP) was informally founded at that time (President: Dr. Dick Ogilvie, Secretary-Treasurer: Dr. Stuart Macleod, Councilors: Drs. Bill Mahon, Fred Aoki, and George Carruthers) and then formally established and incorporated in 1983. Going forward, the CSCP would meet annually with the CSCI. Nevertheless, the PSC and CSCP planned to remain associated and perhaps participate in joint future meetings; this would come to pass at the 1994 International Congress of Pharmacology.

Additional societies with overlap in PSC membership — such as the Canadian Association for Neuroscience and the Canadian College of Neuropsychopharmacology — formed around these years as well. In time, the formation of specialized societies who held their own meetings would impact on and erode participation in generalized meetings such as the annual CFBS scientific meeting. In addition, further societies, representing diverse interests, were joining CFBS (by 1990, many additional societies had joined, in-

cluding those representing botany, zoology, and entomology) creating new challenges for the Federation. Changes to the meeting format — such as shorter meetings, a focus on symposia with an emphasis on quality, the addition of poster presentation formats — were introduced to revitalize CFBS meetings. Towards the end of the decade, the Canadian Physiological Society, which had been a founding constituent member, voted at an annual meeting to withdraw from CFBS, but a mail ballot of its membership-at-large voted to remain within the Federation. During the early 1990s, attendance at CFBS meetings decreased noticeably and it was apparent that CFBS was losing its vitality and vigor.

During the 1970s, CJPP Editors had continued to be physiologists (Frank MacIntosh in 1968, Kris Krnjevic in 1972, John Phillis in 1978). Pharmacology interests were served by an increasing number of Associate Editors, and a PSC Council Member representative would report on CJPP at annual meetings. Challenges included the perceived quality of articles (Canadians were not sending their best science, and this would later manifest as a concern that MRC was not recognizing the quality of the journal) and publication delays (long review times, slow publication processes). A CJPP Award was established in 1977 to encourage and recognize pharmacological articles in the journal. In 1980, joint Pharmacology and Physiology Co-Editors finally were appointed (Gerry S. Marks, Jack Kraicer). There were now over 30 Associate Editors representing the two disciplines. New metrics became available, and CJPP reports contained journal standings in the physiological and pharmacological literature and impact factors — these indicated a ranking within the top 30%–40% of journals in relevant disciplines. In 1987, Khem Jhamandas (pharmacology) and Harold Atwood (physiology) assumed the role of Co-Editors of CJPP. Subsequent respective pharmacology/toxicology and physiology/nutrition Co-Editors were Jim Brien and Joe Davidson in 1993 and Kanji Nakatsu and Susan Jacobs-Kaufman in 1998.

During the 1980s, granting agencies were formulating policies to recognize and foster the participation of women in science. The first woman to serve the PSC was a Council Member in the mid-1970s, Betty Sasyniuk. The first female to serve as President of the PSC was Gail Bellward in 1987–1989; she had previously served as Secretary from 1977 to 1980 and became Vice President in 1985 (Box 8). She was followed in these multiple roles by Cathy Pang (Secretary 1988–1992, President 1995–1997) and Jana Sawynok (Secretary 1992–1996, President 1999–2001). Two others served as PSC Secretary, Jane Rylett from 1999 to 2003 and Fiona Parkinson from 2003 to 2006. Over the years, there have been three female Senior Scientist awardees (2000 Teresa Allen, 2003 Jane Rylett, 2008 Susan Cole) and five female Junior Scientist awardees (1988 Jana Sawynok, 1991 Susan Cole, 1996 Susan Howlett, 1998 Fiona Parkinson, 2004 Natalie Vergnolle). Notably, Susan Cole received both the Junior and Senior Scientist Awards.

At the beginning of the 1980s, the PSC had over 300 members and was eligible for two voting delegates at IUPHAR. The NRC had assumed the role of coordinating international bodies, and a 10-member Canadian National Congress Committee — CNC-IUPHAR — was established to serve PSC relations with the international body. The PSC was now in a better position to make a bid to host an IUPHAR meeting in Canada. A bid to host the 1990 meeting in Vancouver was presented at the 1984 IUPHAR meeting in London, UK, but while Canada presented a strong proposal, it was not successful, as the 1990 venue would be in continental Europe (Amsterdam) after the 1987 meeting in Australia (Sydney). A renewed bid was developed for the 1993–1994 meeting (the interval between meetings was changing) to be held in Montreal, and this was fully supported by CSCP and the ASPET. The Canadian bid was approved for 1994 at the Sydney IUPHAR meeting in 1987. There was now significant work to be done.

Box 8

FEMALE PSC PRESIDENTS



Gail Bellward, PhD 1966
University of British Columbia
PSC Secretary 1977–1980
PSC President 1987–1989



Cathy Pang, PhD 1977
University of British Columbia
PSC Secretary 1988–1992
PSC President 1995–1997



Jana Sawynok, PhD 1977
Dalhousie University
PSC Secretary 1992–1996
PSC President 1999–2001

1990s: A broader arena

By 1989, IUPHAR Congress Committee chairs had been elected — Chair: Gerry Marks, Vice Chair: Radan Capek, Secretary: Patrick du Souich, Finance and Treasurer: Anthony Ford-Hutchison, Scientific Program: Brian Collier, Exhibitors: Sid Katz, Satellite Symposia: Ken Renton. A NRC representative (L. Forget) and Local Organizing Committee chair (M. Côté) were soon added. Both the CSCP and the Society of Toxicology Canada were invited to participate in planning. Incorporation of the PSC was initiated in 1990 to facilitate financial arrangements between the PSC, NRC, and IUPHAR. This involved rewriting the Constitution and By-Laws and application to Corporate Affairs Canada. Incorporation required a permanent address for the PSC rather than the Office of the Secretary, which moved around the country; the Pharmacology Department at Queen's University agreed to serve this purpose, and the Queen's Archive agreed to house past documents. To encourage participation in the Congress, the PSC offered to sponsor travel awards for participants from third world countries (administered by IUPHAR) and for graduate student members of the PSC (who were Associate Members). The PSC also instituted a levy of \$45 per year for 3 years prior to the conference (1991–1994) to support up-front PSC contributions to the Congress. The PSC planned to conduct all Society events (Council and Business Meetings, Scientist Award presentations, with the student competition occurring at a single dedicated session) at the July 1994 IUPHAR meeting and would not participate in the 1994 CFBS meeting in June (also in Montreal).

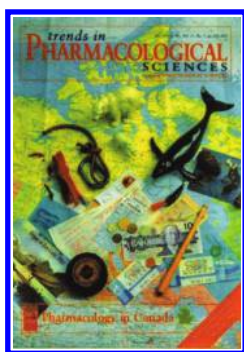
The 1994 International Congress was a scientific, social, and financial success (Box 9). The CNC-IUPHAR report by Gerry Marks begins: "It is my pleasure to share with members of the Pharmacological Society of Canada the numerous congratulatory messages I have received from all corners of the globe which testify to the success of the Congress." Attendance exceeded expectations (there were 4225 attendees from 78 countries, with 600 from Canada), and many congratulatory letters on the excellence of the Scientific Program were received. *Trends in Pharmacological Sciences* (TIPS) devoted the July 1994 issue to Pharmacology in Canada, and *Pharmacological Reviews* for June 1994 was devoted to receptor nomenclature and drug classes; both were made available to all conference participants. Abstracts for the meeting were published in CJPP as Supplement 1, while abstracts to noteworthy satellite symposia were published as Supplements 2–4. Box 10 features Gerry Marks, who chaired the IUPHAR Committee.

The 1994 international meeting was a notable financial success, and a substantial amount of money would soon become available to the PSC for investment. Despite the introduction of Corporate Membership in 1986, which led to peak membership in 1989 ($N = 349$), PSC numbers were now falling with resignations due to the IUPHAR levy. The society decided to use funds to promote trainee participation by creating travel bursaries for students and post-doctoral fellow members to attend PSC meetings at various

venues. A Student Member category of membership, with lower dues, was created in 1995 to further encourage participation in the society. Furthermore, a Post-Doctoral Award was created and first awarded in 1996.

In 1996, the PSC met with the British Pharmacological Society in Bath, UK. This was the first time the PSC had conducted its annual affairs, including award lectures, outside Canada, and it was considered a very successful venture. The PSC had conducted affairs at the IUPHAR congress in Canada and now considered doing so at the next international congress in Munich, Germany in 1998. While IUPHAR had provided rooms for award lectures and business meetings for both the PSC and ASPET in Montreal, there was a concern that if too many national societies made this request of the international venue, it might not be viable. However, the PSC request was made and accepted, and it would go on to conduct its annual affairs at IUPHAR in Munich in 1998. A strong desire for joint meetings with other pharmacological societies, rather than at CFBS annual meetings, was developing. The PSC would go on to meet with the Swiss Pharmacological Society in Zermat, Switzerland in 1999 and then with ASPET/British Pharmacological Society/Western Pharmacological Society in Vancouver in 2001. The PSC met at CFBS meetings only twice in the late 1990s.

Box 9 IUPHAR IN MONTREAL, CANADA 1994



Canada hosted a very successful International Congress of Pharmacology in Montreal in 1994. A special issue of Trends in Pharmacological Sciences featured Pharmacology in Canada in July 1994. Gerry Marks, the IUPHAR Congress Chair, prepared an article on the History of Pharmacology in Canada which outlined a brief history of Departments of Pharmacology across the country which offered teaching and graduate training in the discipline of Pharmacology. (Marks 1994)

Box 10 GERALD MARKS Chair Montreal IUPHAR Congress Committee

Gerry Marks (b.1930) grew up in Cape Town, South Africa. After high school, he spent a year in Palestine, completed his BSc and MSc at the University of Cape Town, and then a PhD in Chemistry at Oxford University in 1954. In 1956, he undertook a postdoctoral fellowship in Ottawa, then went to Chicago where he began his lifelong love affair with porphyrins in the laboratory of Larry Bogorad. In 1962, he returned to Canada accepting a faculty position in Pharmacology at the University of Alberta, and would become Professor in 1967. In 1969, he became Head of Pharmacology at Queen's University, a position he held until 1988. During his term, he oversaw development of the department from modest beginnings to a unit that became well-known for its teaching and research, and prominent contributions to the PSC (3 faculty members would serve as Presidents of the PSC, Drs. Marks, Jhamandas, and Nakatsu) and to CJPP (4 faculty would serve as Pharmacology Editors, see main text). In addition to porphyrin research, Gerry Marks made major contributions to the areas of organic nitrates and gasotransmitters, especially carbon monoxide, and his senior authored paper in Trends in Pharmacological Sciences published in 1991 entitled, "Does carbon monoxide have a physiological function?" is considered to be the seminal article in the field. Beyond science, he was known for his friendship, mentorship and humanity, as well as his sense of humor and "gift of the gab." He was an active member of the PSC - serving as PSC President from 1983-85, receiving the Upjohn Senior Scientist Award in 1986, and most notably, chairing the IUPHAR Congress Committee from 1989-1994. He retired from academia in 1996. He died in 2013. To commemorate his larger-than-life contributions, his colleagues prepared a memorial edition for his children which was filled with contributions of written memories and photographs from former students, colleagues and friends from Canada, the USA and beyond.



2000s: Unifying basic and clinical pharmacologists

By the 2000s, individual pharmacologists were expressing their research interests through participation in new academic affiliations and professional societies. The PSC had focused on pharmacology per se and had conducted meetings with other national and international pharmacological societies. This trend to recognize pharmacology as a uniquely multidimensional discipline led to reunification of the basic and clinical pharmacologists in Canada as well as internationally.

In September 2001, the Clinical Pharmacology division of IUPHAR proposed that their organization name be changed to International Union of Pharmacology and Clinical Pharmacology recognizing the need for integration of basic and clinical pharmacology. During the next IUPHAR meeting in San Francisco (July 2002), a committee comprising Paul Vanhoutte, Sue Piper Duckles, Kim Brösen, and Folke Sjöqvist was charged with investigating this matter. The committee considered a wide array of issues raised by the proposal. Further support for the name change came with the decision in San Francisco to arrange joint World Congresses in Basic and Clinical Pharmacology from 2010 onwards. Moreover, two former Presidents of IUPHAR (Börje Uvnäs and Sir Colin Dollery) as well as Nobel Laureate Sir James Black were enthusiastic supporters of the proposal. In Paris, on October 17, 2002, the Executive Committee decided to poll the IUPHAR General Assembly on the proposal: "The name of the Society shall be the International Union of Basic and Clinical Pharmacology, retaining the acronym IUPHAR". The positive outcome (56 for and 5 against) was ratified by the next IUPHAR General Assembly in Beijing, 2006. Actions speak louder than words, and the basic and clinical pharmacologists came together in the first World Congress of Basic and Clinical Pharmacology, Copenhagen, 2010.

Parallel processes were ongoing in Canada, as the PSC increasingly met with the CSCP and other organizations with an academic focus on drugs. In June 2003, the CFBS Annual Scientific Meeting was held in Ottawa, and this was to be the last time that the PSC was to participate in that multidisciplinary format. While the Ottawa CFBS meeting was successful as a whole, pharmacology participation was disappointing with a significantly smaller than usual number of pharmacologists registering; at the same time, PSC symposia and awards presentations were well attended and received. Most significantly, quorum was not attained at the PSC Annual General Meeting, and this was the first time this had ever happened. The 2004 meeting in Winnipeg, a new initiative called the First Canadian Therapeutics Congress, was instrumental in changing the organizational views of Canadian pharmacologists. Participants in this congress were the PSC, the CSCP, the Canadian Association for Population Therapeutics, and the Canadian College of Clinical Pharmacy. (Elsewhere and coincidentally, the 8th World Conference on Clinical Pharmacology and Therapeutics was held in conjunction with the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists in August 2004 in Brisbane, Australia.) In 2005, the PSC was invited to join the British Pharmacological Society in Cambridge, UK; this was considered a very successful meeting with PSC-sponsored symposia that were well attended. This trend to participate internationally continued in July 2006 with the PSC Annual Meeting merging with the 15th IUPHAR Congress in Beijing, China. Beyond the pharmacological focus, pharmacologists were witness to a culture in dynamic flux. While the important traditional Chinese artifacts of the terra cotta warriors and Great Wall were still prominent, the hordes of bicycles had been replaced by hordes of automobiles. Furthermore, more than 300 building cranes symbolized the frantic pace of construction at the site of the forthcoming Olympic Games adjacent to the congress venue.

In 2007, the PSC joined with the Western Pharmacological Society to meet at the Conference Centre in Banff National Park. By then, several medical schools had evolved their curricula to an

integrated format as opposed to discipline-based education. This challenged departments of pharmacology to ensure that their discipline was included in such curricula and taught appropriately. With the greater emphasis on clinical practice, many departments found themselves justifying their hours in new curricula. At the 2004 annual general meeting, it was noted that the Science, Social Policy, and Educational Policy Committees of the PSC were inactive and the society itself was changing. In addition, Canadians were now using an increasing number of complementary and alternative therapies, with one branch in particular — that of Natural Health Products — affecting pharmacology teaching. As of 2004, Canada was regulating Natural Health Products, so this was an important issue to address. An ad hoc committee (consisting of Kathy MacLeod, Bob McNeill, and Kanji Nakatsu) was asked to investigate ways, and the value of, incorporating teaching of Natural Health Products into medical and pharmacy curricula. This manifested as a symposium in Banff to address Complementary and Alternative Medicine, which involved speakers from academia and industry, including some from Europe, where the history of natural product use by individuals and professionals had been significant for decades and was well established.

At the Cambridge Annual General Meeting in 2005, the PSC relationship with the CSCP was raised as an agenda item in part because IUPHAR had changed its name to recognize both basic and clinical pharmacology. Much of the discussion revolved around the similarity of the goals of the two societies and the possibility of greater strength in union. PSC President Bob McNeill requested that Vice President Kanji Nakatsu open a line of communication with the CSCP and report back to the PSC. By September 2006, Stuart MacLeod (President of the CSCP) and Kanji Nakatsu (now PSC President) had produced a document on the potential merger of PSC with CSCP. It identified arguments in favour of amalgamation as (i) the distinction between basic and clinical pharmacology was very small or artificial, (ii) a larger society would have a critical mass, (iii) common activities such as the Canadian Therapeutics Conference in Winnipeg were successful, and (iv) teaching goals and activities were well aligned. Later in 2006, James Hammond (PSC Treasurer) added a section showing that the financial status of each individual society was very strong, with no indication that amalgamation would weaken this situation. The document also addressed potential withdrawal from CFBS, an issue that had been brewing for some time. Many members had pointed out that the two main benefits of CFBS membership, the facilitation of annual scientific and business meetings, and advocacy for research funding at the federal level, were now occurring in other arenas. Furthermore, the Canadian Institutes of Health Research had been established in 2000; this federal granting agency subsumed the former MRC and had a broadened mandate. In early 2007, the PSC membership was polled on two questions. With respect to amalgamation with CSCP, 92% voted in favour; with respect to withdrawal from CFBS, 72% voted in favour. Thus, the wheels for joining PSC with CSCP were now formally set in motion and details of amalgamation became the focus of attention.

The merger between societies was facilitated by the convenient timing of executive duties in the PSC and CSCP and the goodwill of all involved. Since Kanji Nakatsu's term as President of the PSC

was about to end, and James Hammond's was scheduled to begin, it was decided that James Hammond would serve as President of the new amalgamated society for one year to be followed by Richard Kim for 2 years. By consensus, the position of President would subsequently alternate between basic and clinical pharmacologists. The issue of the name of the new society was put to the combined membership and the majority chose the Canadian Society of Pharmacology and Therapeutics. The combined assets at the time of merger were >\$600 000 — somewhat better than assets of \$118 in 1957 even after accounting for inflation.

On August 1, 2008 the Canadian Society of Pharmacology and Therapeutics became an official society.

Author contributions

J.S. drafted the years to the end of the 1990s and K.N. drafted the final decade. Both authors provided images and sought relevant permissions to use images.

Images

Box 1: Boyd, Queen's University; Melville, mcgill.ca/pharma, public domain; Fergusson, Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto (via Christopher Putty); Box 2: PSC Archive; Box 3: PSC Archive; Box 4: Nickerson, from Cuello 1998, with permission Trends Pharmacol. Sci.; Box 5: Daniel, with permission; Box 6: Dresel, Reiffenstein, with permission next-of-kin; Box 7: Renton, with permission; Box 8: Bellward, Pang, Sawynok, with permission; Box 9: with permission Trends Pharmacol. Sci.; Box 10: Marks, with permission next-of-kin.

Acknowledgements

This article was developed based on documents in the PSC Archive at Queen's University and the perspectives of the two authors. J.S. served as PSC Secretary 1992–1996 and then President 1999–2001. K.N. served as PSC President 2005–2007 and facilitated the merger between societies in 2008. The authors wish to thank James Hammond for assistance with retrieving files to supplement the archival material, assistance with images, and reviewing the manuscript. Fiona Parkinson also provided a copy of files to supplement the archive. We wish to thank Khem Jhamandas, Cathy Pang, and Jean Gray for reviewing the manuscript and providing helpful comments. We also thank all those who provided images and permission to use such and Wade Juneke for improving the quality of several images. Special thanks are due to the Queen's University Archive for accommodating PSC historical documents.

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