



NEWSLETTER

CHILD NEUROLOGY SOCIETY Bienvenue à Québec!

QUEBEC CITY, CANADA



This year's meeting may well pose the sternest test yet to the widely held perception that child neurologists are "all work and no play," happily taking notes through twelve hours of PowerPoint presentations, committee meetings and poster sessions in splendid venues that would likely find colleagues in other fields swinging golf clubs, applying sunscreen or posing for snapshots to hang on their office walls.

Welcome to the 36th Annual Meeting of the Child Neurology Society. This year's meeting may well pose the sternest test yet to the widely held perception that child neurologists are "all work and no play"; Quebec City may well be the most beautiful—certainly the most European—city in North America. Will the 800+ neurologists, nurses, and exhibitors expected to attend this meeting be able to resist its siren call until Saturday, or will the menu of options put together by CNS President, Ann Tilton and Scientific Program Chair, Gary Clark and his committee prove equal to the challenge and keep attendees glued to their seats, immersed in their sessions, and engrossed in between-meeting networking, hugs and catch-up conversations? A few late breaking highlights to the program and other items of interest to keep in mind as the week progresses:

A few late breaking highlights

- **Wednesday NDC Symposium and ACCN Meeting.** Registration packets and namebadges can be picked up beginning at 6:30 am at the CNS Registration counter located on the 4th level (street level) of the Quebec City Convention Centre (QCCC). NDC Continental Breakfast will be served in Foyer 2, 6:30 - 7:30 am; ACNN will be served in back of meeting room (Rm 301AB).

REMEMBER: Attendance at NDC Symposium is by pre-registration only. Print and catering deadlines and the \$\$ commitment that goes with them simply do not allow for on-site registration, so please, plan ahead for next year.

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CHILD NEUROLOGY SOCIETY

From the President



Ann Tilton, MD
CNS President

Au revoir....et merci

I have found this letter very difficult to write, not the least reason being that I can hardly believe that two years have passed since I stepped to the podium in Los Angeles to formally succeed Jim Bale as CNS President. It has been a wonderful two years; an odd thing to say, I suppose, about a time that began, really, with the devastation and dislocation brought on by Hurricane Katrina. I think such events teach us a lot about ourselves, clarifying our sense of what is truly most important in life and reminding us almost daily of the remarkable kindness and generosity that so many others possess and so freely share. I can't tell you how extraordinary it was to see all of the outpouring of concern and help that seemed to rush in almost as fast as the water. I don't think a day has passed that I did not hear from fellow child neurologists offering any kind and level of assistance that they had at their disposal, from shelter to job opportunities. I truly believe that this is just one measure of the heart to be found in our profession and Society. Ultimately my family and I were direct beneficiaries of enormous generosity in Houston. My children were able to go to excellent school because of Marvin and Gloria Fishman claiming us, essentially, as family. Gary Clark and his staff at Baylor embraced me as a faculty member. How many times does someone have such an opportunity? Our LSU Child Neurology group found strength and support in one another and with that found our way back to our patients and New Orleans.

As I reflect on the role of the President of the CNS it is clear that one needs to look not only at the immediate present, but five, ten, even twenty years into the future. My hope has always been to both continue down the excellent path that my predecessors have forged and be open to exploring other avenues as they open up in changing times.

The MAIN issues wrestled with during my two-year tenure have included the following:

- **Workforce Issues.** I do not think there's a single member of the CNS that doesn't see the growing shortage of child neurologists as THE dominant issue that needs to be addressed. We're not alone in this, of course: many pediatric subspecialties are confronting similar challenges, as is neurology in general, if not quite so acutely.

Our initial efforts in addressing workforce issues really began about seven or eight years ago when we drew on the expertise of health economists at the University of Pennsylvania to begin surveying child neurologists to get a clearer sense of the changes they were experiencing "on the ground." Follow-up surveys of child neurologists and on-line surveys of pediatricians, our primary referral source, have corroborated earlier estimates suggesting a significant (20 per cent) shortfall of child neurologists nationwide.

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Printed in St. Paul, MN
Published Quarterly



Printed on Recycled Paper
50% Post Consumer Waste
50% Recycled Fibers

AU REVOIR....ET MERCI, continued from page 2

So now the question is: where do we go from here? As a small subspecialty and a correspondingly small professional organization with relatively limited resources in numbers and dollars, we really need to focus our efforts for maximum effect. We need to address recruitment, reimbursement, and the role of child neurology in the larger medical and public community.

- **Recruitment.** We are just now seeing the first sizable wave of child neurologists retire—the founding and charter members of the CNS when it started in 1972. Their departure is keenly felt. Thanks to the mentorship they provided and the development of the seventy-plus child neurology training programs we are able to continue successfully with an outstanding “second generation” of neurologists. And we’re drawing some truly impressive young people into the field, including a growing number of combined MD, PhDs. The problem is we’re not drawing enough of them. We have made efforts to address this; signing up with the San Francisco match has made a difference. Additionally, the outreach work done by the Child Neurology Foundation has helped raise awareness about our field among medical students. But we need to do more to convince prospective child neurologists early on, as undergraduates and medical students, that this is a great field to grow in and find real lifelong career satisfaction.
- **Reimbursement.** This is one of the chief concerns of some medical students and residents as they consider a career in child neurology. There is poor reimbursement nationally for specialties that are not procedurally based but are instead centered on cognitive skills. As one would expect, this has a profound negative impact on our members directly and does not go unnoticed by potential trainees. Trainees often must face a heavy burden of debt from their education and by necessity seek residencies that offer higher earning potential. This is a national issue and needs to be addressed on a national level. The CNS is working with other organizations such as the AAP and AAN to advocate for better reimbursement.
- **The Role of child neurology** in general, and the Child Neurology Society specifically in the larger medical and public community. Advocacy for children with disorders of their neurological system is a central focus of the CNS mission. This involves teaming up with families and organizations with similar missions, including a wide range of family support and disease specific research associations, as well as professional associations with whom we share both large numbers of members and interests: the AAN, ANA and AAP. The CNS has benefited greatly over the years from the willingness of these larger “sister” organizations to share their numbers and resources to influence policy changes affecting issues related to reimbursement and recruitment.
- **CNS and CNF.** We are indeed one and the same, with the common goal of advancing the mission of child neurology being the tie that binds. Progress has been made toward clarifying issues pertaining to mission and accountability at two retreats and through joint participation of representatives from each organization at the other’s board meetings. The CNF, under the direction of Mike Painter, its Board of Directors, and new Executive Director, John Stone, have worked diligently with contributors to solicit the funding necessary to support the missions of the CNS and CNF.

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CHILD NEUROLOGY SOCIETY

Letter from the President

AU REVOIR....ET MERCI, continued from page 3

- **Integration of the Society of Developmental Pediatrics** has been accomplished. It is clear that the broadening of this area of interest in our society has been a great addition, especially with training programs now including Neurodevelopmental Disabilities. It is our clear intent that this group of trainees call their professional home the CNS.

What is new and on the horizon for the CNS?

- **CNS Web site.** You may have noticed prior Letters from the President have not all been updated on the Web. We are midway through a transition from our original web developer to a new developer and, as with any repair or renovation (I still don't have a kitchen!), not everything gets done according to our wishes and timetables. The new site should be completed by mid-November. Although the basic "look" will remain the same, its usefulness (and "ease of use") should be noticeably enhanced. Two exciting new features developed by the Electronic Communications Committee will debut in November: a Journal club and a Case Studies section, both greatly enhancing the Society's goal of supporting training efforts nationally. On-line CME capability will be added in January as well as a section designed to enhance prospective trainees' ability to explore training and career opportunities in child neurology.
- **Closer relationships with the AAP and AAN.** We recognize that while our small size offers flexibility we do need to team with larger organizations to address more global issues.
 - We now have Memorandum of Understanding with the AAP outlining a series of collaborations between the AAP Section of Neurology and the CNS. Through this common effort, the two organizations will seek to improve the health of infants, children, adolescents,

and young adults who face the challenges of neurological and developmental disorders.

The two organizations will also work to promote the discipline of pediatric neurology in medical schools and in the pediatric marketplace in ways that will enhance medical care for these children and aid the growth of the subspecialty. It is recognized that combining the expertise and resources of both organizations will reap benefits for patients and their families, for pediatric neurologists, and for general pediatricians.

- The AAN is very receptive as well. I have had the opportunity to meet with AAN President, Dr. Stephen Sergay (a child neurologist at heart). The organization is very willing to discuss common needs and possible support. For example, we have discussed training and workforce issues, and expansion of Child Neurology related topics at the AAN meetings and in the publications.

I want to close with a special note of gratitude to the many people who have contributed to the CNS the past two years. This society is successful because of the many contributions of the Committee chairs and their members, and the ever-sage and energetic Executive Board, just to name a few. It has been a real pleasure working with the National Office staff, most notably Mary Currey, CNS Executive Director and Roger Larson, our Associate Director; they are the touchstones of this organization and truly take the Society's mission and the individual needs and concerns of its members to heart.

I am so proud to be a part of this very special group of committed physicians who truly love what they do and I am so grateful to have been given the honor to serve as your president these past two years.

CHILD NEUROLOGY SOCIETY Bienvenue à Québec!

36TH ANNUAL MEETING, continued from page 1

- **Getting Around.**
 - The QCCC is visible at street level from both the Hilton and Delta Hotels. It may also be accessed via underground walkways that feature a number of shops and restaurants. Follow signs to the QCCC, then go up one level to CNS Registration Desk.
 - The CNS Registration Counter is located on the 4th floor (i.e., Street Level) as you walk in. Registration for those NOT attending the NDC symposium begins at 1:00 pm, Wednesday.
 - Wednesday's Opening Reception will be held in the spacious 4th Floor (Street Level) Foyer.
 - Exhibits and Posters will be on display Thursday (11:30 am – 5:30 pm) and Friday (11:30 am – 4:00 pm) in Rm 400A/B of the QCCC (Street Level).
 - All symposia and breakfast seminars will be held in Rooms 200A, 200B or 301A/B of the QCCC. The rooms are located on the 2nd or 3rd level of the QCCC, accessed by taking elevators or escalators outside the exhibit/poster hall down to Level 2 or 3.
 - Monitors throughout the building will keep you up on the day's schedule. Updates will be shown on-screen before/between each session.
- **CME credit.** It's simple, really: Attend the sessions, fill out the required on-line survey form by November 10, and you'll have a certificate sent to you by December 10; miss the deadline, and you won't. On-line CME survey will be available beginning Thursday, October 11.
- **Thanks!** Special thanks to Ortho-McNeil Neurologics, Inc. (tote bags and continuous beverage service), Ovation Pharmaceuticals (lanyards), and UCB, Inc. (CyberCafe and Thursday Moderated Poster Session on Epilepsy) for their generous support of this meeting and their continuing commitment to the Child Neurology Society Annual Meeting.
- **Movement Disorders Special Interest Group Meeting.** Although not originally placed on the program due to the high level of interest expected for the "Neurology of Great Musicians" seminar scheduled at the same time (8:00 – 10:00 pm, Wednesday), popular demand put it back on the schedule, albeit too late to appear in the published program. Those interested in presenting cases should bring video clips on standard format storage devices easily loaded onto the computer at the front of the room. Session will be held in Rm 301A/B (QCCC).
- **Satellite Symposium: "AED Mandatory Substitution Policy Issues"** Thursday, October 11; 6:00 PM – 7:30 PM 200C QCCC. Buffet dinner served. *See highlighted box, page 6.*
- **Junior Member Seminar: "Life After Residency: Where Do You Want to Be in Five Years?"** (3:30 pm, Friday; 301A/B QCCC). This marks the third consecutive year Meredith Golomb, MD has led CNS Junior Members through a guided tour of different key aspects of their future in the field. "Highly informative," "enormously helpful," and "most valuable part of the meeting" are among the comments registered by those attending past sessions. Cookies and beverages will be served. Note to trainees: You MUST be a CNS Junior Member to attend—Apply on-line now!
- **A Wine and Cheese Reception hosted by the Ring Chromosome 20 Foundation** will be held Thursday, October 11, 2007 at 7:30 PM in the Delta Quebec Hotel, Duquesne Ballroom, First Floor.
- **Tallie Z. Baram, MD, PhD** (Breakfast Seminar 4) hails from UC Irvine, not UCLA.
- **One can never say too many good things about Phil Dodge**, in whose honor the Young Investigator Award is named. One can, however, use too many "I's"; the correct spelling is: Philip R. Dodge, MD.

CNS ANNUAL MEETING

Day Planner

START	END	EVENT	ROOM
TUESDAY, OCTOBER 9			
9:00 AM	5:00 PM	CNS Executive Board Meeting	Vieux-Port (Hilton)
5:00 PM	7:00 PM	ACNN Board Meeting	Montmorency (Hilton)
6:00 PM	10:00 PM	Speaker Ready Room	201AB (QCC)
7:00 PM	9:00 PM	ACNN Reception	Ste Foy (Hilton)
WEDNESDAY, OCTOBER 10			
6:00 AM	6:00 PM	Speaker Ready Room	201AB (QCCC)
6:30 AM	8:00 AM	NDC Symposium Registration	Level 4 Entrance (QCCC)
6:30 AM	7:30 AM	NDC Continental Breakfast	Foyer 2 (QCCC)
7:30 AM	5:30 PM	NDC Symposium I	200A (QCCC)
12:35 PM	1:35 PM	NDC Symposium Lunch	200B (QCCC)
7:00 AM	8:00 AM	ACNN Continental Breakfast	301AB (QCCC)
8:00 AM	5:05 PM	ACNN	301AB (QCCC)
2:00 PM	5:00 PM	Professors of Child Neurology	302AB (QCCC)
5:30 PM	6:30 PM	Long Range Planning Committee	Orleans (Hilton)
6:00 PM	9:00 PM	Poster Set-up (P1 - P142)	400AB (QCCC)
6:00 PM	8:00 PM	Opening Reception	Foyer 4 (QCCC)
7:30 PM	10:00 PM	AAP Board Meeting	Villeray (Hilton)
8:00 PM	10:00 PM	Symposium II: Neurology of Great Musicians	200B (QCCC)
8:00 PM	10:00 PM	Movement Disorders SIG	301AB (QCCC)
THURSDAY, OCTOBER 11			
6:00 AM	6:00 PM	Speaker Ready Room	201AB (QCCC)
6:30 AM	5:00 PM	Registration	Level 4 Entrance (QCCC)
7:00 AM	8:00 AM	Pediatric Neurology Journal	Beauport/Beaumont (Hilton)
7:00 AM	8:30 AM	NIH Breakfast	Portneuf/Ste-Foy (Hilton)
7:00 AM	8:00 AM	Practice Committee	Courville (Hilton)
6:30 AM	7:00 AM	Continental Breakfast	Foyer 2 (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 1	200A (QCCC)
		Breakfast Seminar 2	200B (QCCC)
		Breakfast Seminar 3	301AB (QCCC)
9:00 AM	12:00 PM	Welcome and Symposium III-Presidential	200A (QCCC)
11:30 AM	5:30 PM	Exhibits, CyberCafe & Posters	400AB (QCCC)
12:00 PM	1:30 PM	CNF Donor Luncheon	302AB (QCCC)
12:00 PM	12:30 PM	CNS Business Meeting	200A (QCCC)
12:45 PM	1:30 PM	CNS Executive Board Meeting	Vieux-Port (Hilton)
12:30 PM	1:30 PM	Poster Session 1 (P1 - P70) - with Box Lunch	400AB (QCCC)
12:30 PM	1:30 PM	Autonomic Disorders SIG (Jarjour)	Beaumont/Belair (Hilton)
12:00 PM	2:00 PM	ACNN	301AB (QCCC)
12:00 PM	1:30 PM	Journal of Child Neurology	Beauport (Hilton)
1:45 PM	2:30 PM	CNF Corporate Advisory Board	Montmorency (Hilton)
1:30 PM	3:00 PM	Symposium IV	200A (QCCC)
1:30 PM	3:00 PM	Moderated Poster: Epilepsy	200B (QCCC)
2:30 PM	6:00 PM	Child Neurology Foundation Board Meeting	Montmorency (Hilton)
3:30 PM	5:30 PM	Platform 1: Translational Research	200A (QCCC)
3:30 PM	5:30 PM	Platform 2: Clinical Research	200B (QCCC)
5:45 PM	6:30 PM	International Affairs Committee	Duchesnay (Hilton)
5:45 PM	6:30 PM	Electronic Communications Committee	Ste-Foy (Hilton)
5:45 PM	6:45 PM	Headache SIG (Bicknese)	Dufferin (Hilton)
5:45 PM	6:45 PM	Neurodevelopmental Training Directors (B.Shapiro)	Courville (Hilton)
6:00 PM	7:30 PM	Satellite Symposium: AED Mandatory Substitution Policy Issues	200C (QCCC)

START	END	EVENT	ROOM
FRIDAY, OCTOBER 11			
6:00 AM	6:00 PM	Speaker Ready Room	201AB (QCCC)
6:30 AM	3:00 PM	Registration	Level 4 Entrance (QCCC)
6:30 AM	7:00 AM	Continental Breakfast	Foyer 2 (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 4	200A (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 5	200B (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 6	301AB (QCCC)
7:00 AM	8:00 AM	P Duffner NY Group	Villeray (Hilton)
8:30 AM	12:30 PM	Ovation Pharmaceutical	Belair (Hilton)
9:00 AM	12:00 PM	Bernard Sachs/Symposium V	200A (QCCC)
11:30 AM	4:00 PM	Exhibits, CyberCafe & Posters	400AB (QCCC)
12:15 PM	1:30 PM	Poster Session (P71 - P142) - with Box Lunch	400AB (QCCC)
12:15 PM	1:30 PM	CNS Executive Board Meeting	Vieux-Port (Hilton)
12:15 PM	1:30 PM	Finance Committee	Villeray (Hilton)
2:00 PM	5:00 PM	CNF Advocacy Committee	Montmorency/Courville (Hilton)
12:00 PM	2:00 PM	ACNN	301AB (QCCC)
12:15 PM	1:30 PM	Membership Committee	Ste-Foy (Hilton)
12:15 PM	1:30 PM	Ethics Committee	Bernieres (Hilton)
1:30 PM	3:00 PM	Symposium VI	200A (QCCC)
1:30 PM	3:00 PM	Moderated Poster: Potpourri	200B (QCCC)
4:00 PM	6:00 PM	Neurobehavioral (Witznitzer)	200B (QCCC)
3:30 PM	4:30 PM	Legislative Affairs Committee	Villeray (Hilton)
3:30 PM	5:30 PM	Junior Member Seminar: Life After Residency (M.Golomb)	301AB (QCCC)
3:30 PM	4:30 PM	Awards Committee	Ste-Foy (Hilton)
3:30 PM	4:30 PM	Scientific Selection Committee	Belair (Hilton)
3:30 PM	4:30 PM	Neonatal SIG group	Beauport (Hilton)
4:30 PM	6:30 PM	CNS Research/CNF Scientific Awards	Beaumont (Hilton)
4:30 PM	5:30 PM	Neurogenetics SIG: Chromosome microarray— case studies in child neurology practice (Gropman)	Dufferin (Hilton)
5:45 PM	6:45 PM	Pediatric Demyelinating SIG (Ness)	301AB (QCCC)
7:00 PM	8:00 PM	Reception	Foyer 2 (QCCC)
8:00 PM	12:00 AM	Banquet	200C (QCCC)
SATURDAY, OCTOBER 11			
6:00 AM	11:30 AM	Speaker Ready	201AB (QCCC)
7:00 AM	12:00 PM	Registration	Foyer 4 Front Entrance
6:30 AM	7:00 AM	Continental Breakfast	Foyer 2 (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 7	200A (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 8	200B (QCCC)
7:00 AM	8:30 AM	Breakfast Seminar 9	301AB (QCCC)
8:45 AM	12:30 PM	Hower Award/Symposium VII	200A (QCCC)
1:00 PM	3:00 PM	Child Neurology Foundation — Respite Care	301AB (QCCC)
1:00 PM	3:00 PM	Mentorship (CNS-Tilton/Schor)	Beauport (Hilton)

SATELLITE SYMPOSIUM: “AED Mandatory Substitution Policy Issues”

Thursday, October 11
6:00 PM – 7:30 PM
200C QCCC

Since the mid-1980's the Epilepsy Foundation (EF) has been seriously concerned about policies requiring or permitting mandatory substitution of anti-epileptic drugs without prior approval of the patient and treating physician. Professional groups representing those who treat patients with epilepsy have also expressed their concerns. In this session,

representatives of the Epilepsy Foundation, the American Academy of Neurology (AAN) and the American Epilepsy Society (AES) will discuss the need for patient protections and the development of their respective positions on this issue. Updates on activities and collaborative approaches to collect the much needed data, conduct appropriate research and put forth recommendations to assure patient protection and access to needed treatments will also be highlighted.

PANELISTS

Michel J. Berg, MD – Associate Professor of Neurology, Strong Epilepsy Center, University of Rochester, Rochester, NY (Represents American Epilepsy Society)

Steven C. Schachter, MD, Professor of Neurology, Harvard Medical School, Director of Research, Dept. of Neurology, Beth Israel Deaconess Medical Center, Boston, MA.

Shlomo Shinnar, MD, PhD, Professor of Neurology and Pediatrics, Director, Comprehensive Epilepsy Management Center, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY (Represents American Academy of Neurology)

Brien J. Smith, MD, Director, Epilepsy Monitoring Unit, Henry Ford Medical Systems, Detroit, MI, Chair of the Legal and Government Affairs Committee of the Epilepsy Foundation.

Eric Hargis, President and CEO, Epilepsy Foundation

ELECTION RESULTS

In balloting conducted over the past summer, two new officers were elected to serve on the CNS Executive Committee: Jonathan Mink, MD, PhD (Councillor from the Northeast, succeeding Laura Ment, MD, PhD) and Stephen Leber, MD, PhD (Councillor from the Midwest, succeeding Kenneth Mack, MD, PhD); each will serve two-year terms beginning at the CNS Annual Meeting in October.



CNS President Ann Tilton, MD (L) and Legislative Affairs Committee Chair, Bennett Lavenstein, MD (R) visited Senator Norman Coleman (R-MN) at his Capitol Hill office in June to thank him and his staff for work done on behalf of the CNS in securing two HRSA grants for use in continuing to survey and address workforce issues in child neurology. One of two papers funded by the HRSA grants will be presented in the Friday afternoon Moderated Poster Session by James Bale, Jr., MD (Abstract M8: “The Child Neurology Workforce Study: Pediatrician Opinions Regarding Supply and Utilization of Child Neurologists in the United States”).

AWARDS COMMITTEE

Award Profiles

The roster of the five distinguished neurologists chosen to receive the Child Neurology Society's highest awards at the 36th Annual CNS Meeting in Quebec City has, appropriately enough, a decided northern tier bias. Two awardees call the host province home: Bernard Sachs Lecturer, Dr. Frederick Andermann and CNS Lifetime Achievement Awardee, Dr. Gordon Watters. Two others hail from states bordering the host country: CNS Lifetime Achievement Awardee, Dr. Charles Kennedy and Philip R. Dodge Young Investigator Awardee, Dr. Mirjana Maletic-Savetic. And while the fifth awardee, Hower Award Lecturer, Dr. Robert Rust is a Southerner by birth (well, *Southern California*) and bearing, he has spent enough time practicing in Wisconsin and Massachusetts to at least qualify as an Honorary Northerner. As always, Rob has honored the award recipients with richly detailed and insightful profiles of their professional careers featured both on display boards outside the main meeting hall and in the annual meeting issue of the CNS Newsletter.

Bernard Sachs Lecture

Friday, October 12, 9:15 am



FREDERICK ANDERMANN,
MD

FREDERICK ANDERMANN, MD

Frederick Andermann was awarded the Bachelor of Science by McGill University in 1952 and his M.D., magna cum laude by Université de Montreal in 1957. His year of Rotating Internship was completed at the Hôtel Dieu De Montreal, Hôpital Notre-Dame, Hôpital de la Misericorde, and Hôpital Pasteur in Montreal. His 4½ years of Residency at the Montreal Neurological Hospital, Montreal General Hospital, and Queen Mary Veterans Hospital included Medicine, Neurology, Child Neurology, Psychiatry, Neuropathology, and Electrophysiology.

Andermann's developing interest in neurology was influenced by Dr. Jean Saucerie (who had trained in Paris with Charcot's pupil, d'Alembert) and Francis McNaughton, Chief of Neurological Services. McNaughton's "gentleness and legendary kindness" impressed Andermann, as well as the fact that he was "the neurologist's neurologist." Perhaps his greatest formative influence was Preston Robb at Montreal Children's, a towering figure who was at that time at the height of his power. His fondness for children, powers of observation, phenomenal clinical judgment and decisiveness impressed Andermann.

The deeply thoughtful and analytical Pierre Gloor was his mentor in electroencephalography. Many of the same qualities found in these mentors found fertile ground in Andermann, notably a passion for teaching, a desire to manifest "rectitude and fairness" in those he taught, and the commitment to "nurturing independent thought and supporting initiative" that he so admired in Robb.

During residency Dr. Andermann published his first papers, including several on movement disorders in multiple sclerosis, the first of many subsequent papers on unusual movement disorders. In 1961, he published a paper with Gloor on continuous partial inflammatory epilepsy, prefiguring what would become the major concentration of his career. Robb wished to offer Andermann a faculty position, asking him if he would be able to accept the only available one, seeing children. It was thus that Andermann was appointed at Montreal Children's, where Robb himself provided most of his own consultations. When Robb moved to the National Institutes of Health to join Richard Masland and others in fashioning the modern comprehensive approach to basic and clinical research and training in epilepsy, he turned his own patients over to Andermann.

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AWARDS COMMITTEE

CNS Awards

FREDERICK ANDERMANN, MD, continued from page 9

In 1965 Andermann married geneticist Dr. Eva Andermann, a collaboration that proved highly successful in both their private and professional lives. That same year, Preston Robb returned to Children's and, five years later, succeeded McNaughton as neurologist-in chief at the MNI, taking prized Andermann colleagues, Marie Joubert and Tony Griegson with him. In 1971 Andermann joined them. Over the ensuing decades, he would see ever increasing numbers of patients with epilepsy of all ages, yet somehow managed to maintain an interest in many other areas of neurology, particularly those that had a clinical overlap with epilepsy, such as migraine and movement disorders.

How does one summarize a publication record that now includes participation in nearly 500 original papers, reviews, chapters, and letters? To some extent this massive outpouring is a testimonial to the collaborative approach taken by one of the world's largest collections of remarkable physicians within the context of the Montreal Neurologic Institute. Yet even within that Penfieldian fellowship, this record of publication is extraordinary. Thus Dr. Andermann's capacity on the one hand to support and on the other to originate and organize investigations must have played a considerable role—as have similar capacities on the part of his wife. Robb, who in common with most neurologists of his day knew little of the genetic aspects of epilepsy, found it difficult to answer questions posed by parents of children with epilepsy on that subject. Likely for that reason, he supported the development of genetic studies of epilepsy, including on his staff Julius and Kay Metrakos, as well as Eva Andermann.

The quality of the publications coauthored by Dr. Andermann is reflected in their record of citation: 200 (40%) have been cited more than 20 times, an exceptionally high number. When one considers that 105 have been cited more than 50 times and 45 have been cited more than 100 times, the status of this body must be estimated as truly and thoroughly first-rate. The most highly cited paper is Pierre Gloor's famous 1982 experimental formulation of the role of the limbic system in temporal lobe epilepsy (457).

Among the remaining papers with 100+ citations—and in most cases lengthy lists of distinguished coauthors—Andermann is first, second, or corresponding author of more than half. As important, there is a clear pattern in these papers of retaining pride of place for exceptionally talented trainees and junior colleagues. This may be an admirable MNI trait. In Dr. Andermann's case, it is as well a reflection of the capacity he shared with Robb to attract bright minds and provide them with opportunities, ideas, and support that produce such first class results and remarkable subsequent academic careers.

The scope of Dr. Andermann's papers and chapters beggars description. Fully 70% consider epilepsy, leaving "only" 150 treating other subjects. Throughout this vast corpus of work the approach is comprehensive, considering evaluation, drug and surgical treatment, classification, imaging, pathogenesis. Of great importance are the papers that consider diagnostic dilemmas and quality of life in epilepsy. A career's worth of papers are found on other individual topics, particularly complex genetic diseases, with more than twenty papers describing novel conditions and many more skillfully refining the semiology and classification of known conditions. Movement disorders and ataxias are richly represented, particularly alternating hemiplegia and hyperekplexias. Many longterm followup results are reported, some intervals that may exceed 40 years. His efforts to refine classification show Andermann as the embodiment of his mentor, Robb, and his close friend, Fred Dreifuss. When Dreifuss finally relinquished the chair of the classification committee of the ILAE after his lengthy and remarkable service, he was particularly satisfied that his successor was to be Fred Andermann.

Dr. Andermann has long held the position of Chief of the Epilepsy Service and Clinic, Associate Electroencephalographer at the MNI. He holds Consultant appointments at a long list of Canadian Hospitals. He is past President of the Canadian Neurological Society; the Canadian League Against Epilepsy; the Canadian Society of EEG, EMG, and Clinical Neurophysiology; the

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Eastern Association of Electroencephalographers; the Association des Neurologues et des Neuropsychiatres de la Province du Quebec; the Board of Examiners in Neurology, Quebec; the Canadian Association for Child Neurology; and has held many other Directorships, Liaison or Advisory positions. He is currently 1st Vice President of the International League Against Epilepsy. He has served as member of the Editorial Boards of seven major journals.

Dr. Andermann's major honors include the Epilepsy Research Award of the AES and Milken Family Foundation (1999); the William G. Lennox Award of the AES, the Prix du Quebec—Wilder Penfield Award (2003); the Ross Award, Canadian Pediatric Society (2004); the Order of Canada (2006); the Peter Emil Becker Prize (2007); Honorary Membership, Polish Epilepsy Society (2003); and Corresponding Membership, Swiss Epilepsy Society (2005). The list of lesser honors is far too long to consider here.

It is difficult to know how to summarize a career so exceptional, so utterly phenomenal for its productivity as that of Fred Andermann. He attributes much of this to his associates, particularly his wife Eva, who has co-authored so many of the papers. Dr. Andermann's success must be due in considerable degree to the combination of intellectual brilliance, insight, sensitivity, limitless curiosity, and the capacity to work hard and work well together with others. In his natural and effective approach to children and adults of all ages with disabilities, Dr. Andermann resembles his mentor, Preston Robb. Both manifested similar fondness for children, unfailing courtesy, understanding, and devotion to care. Although both learned their child neurology "on the fly" as Robb put it, their grasp of our complex field became very early in their careers remarkable not only in scope, but also in depth.

The opportunity to see a master neurologist at work presenting a patient with neurologic disease is the greatest educational experience in which

other physicians may participate. The list of the greatest of these is not long, if one is to consider those who have the stature of Gowers, Symonds, Adams, or others. Canada has been greatly enriched with them—Osler, Fisher and others. This is company in which Fred Andermann belongs. Dr. Andermann is quite exceptional with regard to his intrinsic sensitivity to both the cultural and emotional attributes of their patients. He is aided in this by his mastery of a number of languages, a capacity he shares with his old friend, Fred Dreifuss. Andermann's clinical presentations provide the most memorable picture of disease, personalized to capture as well impact on patient and family, followed inevitably by reflections on what remains to be done to improve recognition, understanding, and treatment. This is not the sort of presentation that can be captured in a "sound-bite" and once in the midst of a presentation Dr. Andermann cannot be deterred from completing the orderly sequence of observation and reflection, with not a word too few or too many. The same is true of his similarly eloquent papers and scientific presentations.

Preston Robb's own view of Fred Andermann highlighted his boundless energy, loyalty, and his capacity to stimulate research in congenital malformations and hereditary degenerative diseases. Dr. Robb similarly praised the achievements of Eva Andermann, including her work on the effects of anticonvulsants on fetal development. Together, the Andermanns have shared a long and exceptionally productive life. It has been enriched not only by medicine and science, but by three accomplished children and a wide circle of devoted friends and associates. Fred Andermann has demonstrated the knack of getting to know and being attentive to not only fellow physicians, but their spouses as well. The Andermanns share an interest in the outdoors, particularly plants, birds, and the raising of Norwegian ponies on their farm near the Vermont border.

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Hower Award Lecture

Saturday, October 13, 8:45 am



ROBERT S. RUST, MD, MA

ROBERT S. RUST, MD, MA

Dr. Robert Rust's undergraduate studies at four State Universities (UCLA, Alabama, Kent, Virginia) resulted in Honors at Graduation in History and English Literature. Graduate studies in several Departments at Virginia resulted in an M.A. in History and training in immunology. He spent several years as lecturer and Associate Director of Studies at the International College, Salzburg, Austria and earned a certificate in Greek language, history, and culture at the University of Thessaloniki/Institute of Balkan Studies. He then returned to Virginia where he completed most requirements for Ph.D. in history. A longstanding interest in medicine and science diverted him completing his dissertation. He spent two years as a surgical Research Associate investigating wound infection and lymphatic aspects of immune function, published in nine papers. During this time he also discovered the writings of Osler and Penfield and entered medical school intent on becoming a surgeon.

During his first year of studies encounters with three remarkable individuals resulted in another change of course: 1) Lennart Heimer, the famous neuroanatomist and captivating teacher, with his spirited discussion illustrated with chalkboard freehand drawings of what was known and not yet fully understood concerning higher cortical functions and behavior; 2) Fritz Dreifuss, delivering two extraordinarily eloquent and stimulating lectures on "The Nature of Epilepsy;" and 3) James Q. Miller, neurologist and neuropathologist who, as leader of a Practice of Medicine small-discussion group, taught Rust those aspects of medicine that go beyond diagnosis and treatment. All would remain influential through the rest of his career. To these a number of other remarkably influential teachers were added through the rest of medical school. Despite dalliances with

cardiology or infectious disease, he settled on child neurology during his third year.

Dr. Rust's pediatric training at Yale-New Haven brought him into contact with numerous excellent teachers, foremost among them Laura Ment and George Lister; both taught more than medicine with their similar emphasis on meticulousness and clear thinking. Upon the recommendation of Dreifuss and Ment, he obtained his neurological training at Washington University, St. Louis, where numerous individuals influenced his career development during a golden era of that famous program. From the adult side Stuart Weiss, Mark Raichle, Bill Powers, and John Trotter were especially important. At Children's, Phil Dodge, Art Prensky, Ed Dodson, Joe Volpe, master pediatrician Jim Keating, and others expanded and transformed his horizons as did interactions with a splendid cadre of fellow trainees. Dodson and John Trotter fostered interest in immunological disease and the first publications of what would form a particularly important element of his career followed.

Upon completion of formal clinical training, Rust remained at Washington University as a Clinical and Research Fellow in neurochemistry and neonatal neurology under Joe Volpe, Joe Ackerman, and Oliver Lowry. Although he was clinically active, Rust spent much of the following three years acquiring training as a scientist interested in the metabolic aspects of brain development, work that was carried out in three laboratories. This included developmental lipid chemistry in the Volpe laboratory, resulting in three publications concerning the regulation of the dolichol synthase pathway, of importance due to its intricate relationship to the glycosylation of membrane bound proteins involved in the development of neurological functions. In the laboratory of Joe Ackerman, Rust participated in NMRS studies

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leading to three publications concerning potential error in deoxyglucose estimation of regional cerebral metabolism or the role of cellular hypoxia in sepsis. And, in what would become his primary venue--Oliver Lowry's laboratory--he acquired the meticulous skills of the microhistochemical methods that Lowry had so famously developed. These experiences enabled Rust to employ a rich array of techniques as he initiated developmental and regional studies of intermediary metabolism in normal brain as well as brains of animals subjected to hypoxia, asphyxia, or oligemia.

Of particular importance was a unique and comprehensive comparative evaluation of developmental changes in eighteen enzymes in seven pathways of intermediary metabolism of developing neurons, astrocytes, oligodendroglia, and Schwann cells, published as an invited paper in a 1991 Festschrift issue of *Neurochemical Research* honoring Louis Sokoloff. Rust then meticulously detailed regional concentrations and utilization rates of eight key intermediates of energy metabolism in 12 discrete regions of rabbit brain and spinal cord. The scope of the resulting illustration of regional metabolic heterogeneity correlating with regional functional demand by both energy and synthetic paths of intermediary metabolism had not been approached by prior studies. Dr. Rust published four clinical papers and established what would become in ensuing years large collections of children for longterm followup in a very large longterm study of childhood cerebellar ataxia, ADEM, MS and related conditions, newborn stroke, and headache.

Dr. Rust moved to the University of Wisconsin in 1990, succeeding Ray Chun as Director of Child Neurology and Medical Director, Cerebral Palsy Clinic. He established with an NIH grant a Developmental Brain Chemistry laboratory. He moved to Boston Children's to become Child Neurology Training Director, Director of Neurological Education, Director of Outpatient Clinics, Co-Director of the Weekly Neuropathology Conference. In 1999 he returned to Virginia as Director of Child Neurology and Worrell Professor of Epileptology and Neurology and Co-Director of the Dreifuss Epilepsy-Child Neurology Clinics.

Dr. Rust has published 93 full-length papers or chapters addressing a broad variety of topics. With some overlap their distribution is as follows: inflammatory/infectious (44), biochemical (13), epilepsy (10), renal (6), historical (6), headache (5), neurocutaneous (5), movement (2), developmental (1) degenerative (1). Dr. Rust has served as Training Director for 23 child neurologists; he has also mentored clinical research for 14 individuals and basic science for five more. He has served on five Editorial Boards and as ad hoc reviewer for 18 journals. He served as ad hoc advisor to the Technical Advisor to the NIH/NINDS-sponsored Disability in Speech/Language Disorders consortium.

Dr. Rust is a devoted teacher. Despite his skepticism concerning the value of formal lectures, he has delivered as many as 36 in a year. His devotion to bedside teaching has made him available on short notice for consideration of interesting cases "where two or three are gathered together" to learn something. His enthusiastic partaking in what David Clark called the "clinical feast" of bedside medicine is usually palpable. He is known to incorporate not only what he regards as the all-important fundamentals of anatomy, pathology, and physiology, but also historical, literary, musical, geographical, or other references. His chief objective is to arouse interest in a particular problem but more importantly to illustrate the importance of meticulous history, successful limited examination drawn from a large bag of potential tricks, and to entrain by example curiosity, equanimity, empathy, and understanding. Residents from pediatrics, psychiatry, developmental pediatrics and, occasionally, veterinary medicine rotate through his clinics. He is devoted to rural outreach clinics, regarding them as an important element of Resident/Fellow education and professional growth.

Dr. Rust's honors include the Outstanding Physician Award of the Wisconsin Epilepsy Association, the Raven Award for Service to the University of Virginia, and a recent Testimonial Dinner by the Epilepsy Foundation of Virginia. He has received eight University or national teaching awards. He has enjoyed numerous

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visiting professorships in America and overseas. He was particularly touched by the opportunity to deliver the Naomi Amir Memorial Lecture in Jerusalem in 1999, honoring a child neurologist whose vision and devotion to the care of children he has found particularly inspiring. In 2005, Dr. Rust was awarded the Child Neurology Society's Overseas Visiting Professorship, which was spent in Iran. He was elected to the ANA in 1999. Perhaps he is best known for his frequent participation in the marvelous Child-Neuro on-line discussion group originated by Drs. Steve Leber and Ken Mack (approximately 1400 communications in the past 13 years). He has authored more than 120 published book reviews for the Virginia Quarterly Review of Literature over the past 37 years.

Dr. Rust has served on the usual list of departmental and university committees and for a number of years as a Faculty Fellow of Virginia's liberal arts residential college. He has been a frequent examiner for the ABPN, has twice chaired the Annual Meeting of the Upper Midwest Child Neurology Society and is a long-time member of the Central Society for Neurological Research. He is in his eighth term as Chair of the CNS Archives Committee and has prepared numerous displays considering the careers of annual award designees, as well as "CNS Presidents,"

"Women in Child Neurology," and "Canadian Child Neurologists." With Howard Goodkin he prepared a similar display of AES Presidents for the AES. He moderates selected poster discussions each year at the CNS. AAN service includes: member/Chair of the Child Neurology Education Committee; member of the Scientific Program Subcommittee; reviewer and Topic Chair for Child Neurology/Developmental Neurobiology; Secretary-Treasurer, Councillor, and now Chair-Elect of the AAN Child Neurology Section; Member or Co-Chair of the AAN Child Neurology Course for eight years, participant/Director of other courses. He is Chair of the Child Neurology Section of the RITE exam subcommittee and is a member of the President's Advisory Council of ICNA.

Nothing that he has done could have been done without the support that he has received from Betsy, his wife of 32 years. His life has been enriched by the presence of four sons who, among other accomplishments, are all musicians. Dr. Rust has been a musician for most of his life and has performed as a member of various orchestras and in church. He enjoys many sports and coached little league for six years. He has many hobbies, among which he finds building free-laid stone.

COMING IN LATE NOVEMBER: CNS WEBSITE 2.0



CHILD NEUROLOGY SOCIETY

- JOURNAL CLUB
- CASE STUDY PRESENTATIONS
- CNS ANNUAL MEETING COURSE MATERIAL
- "CAREERS IN CHILD NEUROLOGY"
- 2008 SYMPOSIA/SEMINAR APPLICATION/PROPOSAL FORM
- ON-LINE ACCESS TO FULL CNS MEMBER ACTIVITY
- and more . . .

CNS Lifetime Achievement Award

Presented 9:00 AM, Friday, October 12 | Introduction; Bennett Lavenstein, MD



CHARLES KENNEDY, MD

CHARLES KENNEDY, MD

Dr. Charles Kennedy studied chemistry at Princeton prior to attending medical school at the University of Rochester, from which he graduated in 1945. During his internship at Yale-New Haven, where he served as an Instructor in pathology, Malcolm Carpenter fostered his interest in neuroanatomy. Two years of military service at a Veterans Hospital were followed by five months of training in child psychiatry and eighteen in pediatrics at the Children's Hospital of Buffalo. While there, Mitchell Rubin helped to arouse his interest in clinical research. Between 1951 and 1954 Kennedy completed fellowships in physiology and neurology at the University of Pennsylvania. Malcolm Carpenter made Dr. Kennedy an excellent neuroanatomist, an attainment that in time would figure importantly not only to Dr. Kennedy, but for much of the work that the Kety-Sokoloff group at the NIMH would undertake upon his joining them.

The faculty of Penn's world famous programs in physiological biochemistry included, among others Otto Meyerhof, Julius Comroe, Carl Schmidt (until their respective departures to the NIMH in 1951 and 1953), and the brilliant young biochemist, Seymour Kety. Kety had recently published the famous nitrous oxide method that would open the whole field of cerebral blood flow and metabolic study of conscious humans. Dr. Kennedy first came into contact there with another young and scientifically ambitious Research Fellow in the Physiology Department, Louis Sokoloff. Both came to this laboratory to learn to apply the Kety method to neurological investigation. Dr. Kennedy wished to adapt the method to the study of children and as Assistant Professor of Pediatrics at CHOP was given laboratory space. Sokoloff joined Kennedy in this effort and recalls that Kennedy "worked brilliantly and successfully to achieve his goal." Kennedy in turn joined Sokoloff in a study of the effects of adult higher cortical functions in adults on cerebral metabolism. This collaborative work resulted in the first of

what would be many pioneering team efforts and also established a firm friendship that has now lasted for nearly 60 years. Sokoloff's study was published in 1955. Kennedy's report demonstrating the efficacy and safety of the nitrous oxide method in children was published in 1957 and included the first normative values for cerebral blood flow and metabolism in children. For this work Kennedy also developed and published a micro method for measurement of nitrous oxide in blood.

Kennedy and Sokoloff also collaborated in completing the first study of interictal cerebral blood flow in children with epilepsy. Kennedy shared his background in psychiatry with both Kety and Sokoloff, both of whose dissatisfaction with psychoanalytic theory played an important role in their motivation to investigate the neurochemical basis of behavior. Kennedy had received additional impetus in this direction from psychiatrist and famous medical educator, John Romano, whose studies of the biochemical basis of most delirium would further undermine psychoanalytical theory.

As Kennedy's promising career in neuroscience began to blossom, Houston Merritt encouraged him to interrupt this work long enough to obtain an additional year of clinical training. Kennedy was among the first three trainees of the first formally sanctioned program for training in child neurology in America, under Sid Carter, and became the first individual whose formal training qualified him for subsequent recognition with the awarding of formal boards in neurology and child neurology. While at Columbia he became interested in childhood optic neuritis and multiple sclerosis, upon which subject he published his first clinical papers. In 1959 Kennedy was named first Chief of the newly established Division of Neurology at the Children's Hospital of Philadelphia as well as Director of Child Neurology. During the decade that he held this position he often traveled by train to Columbia to participate in Carter's patient rounds.

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Although he continued studies of cerebral metabolism, the pace of that aspect of his research career slowed given clinical duties that on the other hand contributed to his sophistication as clinician and clinical scientist. He published the first studies of blood flow, metabolism and brain growth in children with mental retardation. He also published a large series of patients with SSPE, papers concerning behavioral manifestations of brain damage, clinical aspects of encephalitis. Other papers concerned childhood venous sinus thrombosis, nemaline myopathy, myelomeningocele, and encephalopathic hemorrhagic pancreatitis. Kennedy studied the predictive value of Apgar scores for infant mortality and of neurological examination for ensuing child development. Maintaining his Columbia connection, he published with Vivian Shih and Bud Rowland a study of homocystinuria (1965). Kennedy attracted promising young individuals to his program, individuals who became the first entries in what would become a long list and distinguished CHOP child neurology trainees.

Inevitably, Kennedy gradually expanded his concentration on basic research with an important pioneering study of changes in regional blood flow and metabolism in both foetal and neonatal monkeys subjected either to hypoxia or asphyxia. The opportunity to do these studies came because Bill Windle, Chief of the Laboratory of Perinatal Physiology at the NINDS wished to provide this additional information about the animals upon which he had already done pioneering work. He invited Kennedy, Sokoloff, and Kety to spend a month at the animal colony in San Juan, Puerto Rico. The researcher brought their families as well. This resulted in further development of a social bond between all three researchers and their families that would also last decades. Kennedy then took a sabbatical year in order to learn the deoxyglucose methods that Kety and Sokoloff had developed to measure regional blood flow in brains of conscious animals.

Kennedy was a quick study and this highly successful year led Kennedy to decide to accept appointment as Professor of Pediatrics at Georgetown with the commitment that he could spend half or more of his time at the Kety-Sokoloff lab at the NIH. Peter Berman assumed

the Chair at CHOP, where (as the saying goes) the rest is history.

For Kennedy, this was the beginning of more than two decades (1967-1990) of intensive and highly successful collaborative experimentation concerning matters relevant to the neurological diseases of children, particularly those afflicting the neonate. He participated with his anatomical and technical expertise in projects concerning individuals of all ages, but strongly influenced the group's expanding concentration on developing brain. Kennedy developed the venerable beagle pup model that has been used subsequently in countless studies of hypoxic-ischemic stress and developing brain and participated in other canine studies resulting overall in the production of a remarkable documentation of the various changes in cerebral blood flow and metabolism that occur from birth to adulthood that the laboratory produced within the next decade. These studies, a model of group effort in intellectual and technical collaboration, thus resulted in the first systematic data on such developmental changes in experimental animals. Kennedy employed and helped to develop other animal models, notably the rat.

The studies of immature animals helped to explain and resolve seeming discrepancies between data the group had accumulated demonstrating decline in bloodflow of normal human brain after peak whole-brain flows at six years of age and data obtained by other researchers in slices of brains of animals at various developmental ages. In a landmark paper, Kennedy showed that regional aspects of brain development must be taken into consideration in order to explain whole-brain data. He was the first to demonstrate that bloodflow (and hence metabolism) is high in developing white matter with ensuing decline in the course of maturation. He related these changes to high metabolic demands for myelin synthesis. The classic body of work on metabolism of developing beagle puppy brain resulted in five additional classic papers in 1972 (first author in most), including his most highly cited paper as first author, summarizing a wealth of data on regional blood flow and metabolism.

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Kennedy made additional prescient observations concerning the role that immaturity of vascular autoregulation in developing brain might play in vulnerability to injury, a suggestion that would occupy the attentions of neuroscientists for the next thirty years—including three studies that Kennedy himself would organize with Sokoloff. By the end of the 1970s, Kennedy joined with a distinguished list of co-authors (Kennedy respectively second and third) in publishing two masterful papers summarizing the antipyrine (1079 citations) and the perfected 14C deoxyglucose (4478 citations!) methods for estimation of global and regional cerebral blood flow and metabolism. The largest part of all ensuing understanding of brain blood flow and metabolism would be based upon these studies. The approach itself, refined over decades after Kety's initial adaptation of the Fick principal, led in time to the development of PET scan techniques that would carry these such work from the laboratory to the bedside.

Three Kennedy papers on the effects of hyperoxia on brain blood flow, growth, and metabolism were early important contributions to the effort to protect brains from incurring the injury to which retinas were known to be vulnerable. The concern over hyperoxic retinal injury to neonates had been among the stimuli that led to the establishment of the NIMH research laboratories in the first place. Kennedy participated in many other projects as a critical member of the team from planning through execution to interpretation. He was coauthor of 13 seminal papers on functional mapping of visual pathways (1st author in 5), two on regional mapping of normal I mature monkey brain awake (1st author 1) and six while asleep (1st author 2). He was first author of a similar study of normal neonatal monkey brain and an attempt to provide metabolic evidence for plasticity of developing brain and another study of effects of hydrocephalus on regional metabolism.

Kennedy was first author in two of three important studies of functional mapping of motor activity. He was coauthor of a paper mapping the hibernating brain (as a model for neuroprotection), and of a study extending

normative regional data to rat brain and another (as 1st author) to neonatal and mature—the former since constituting a very important model for neonatal brain injury. He also coauthored studies of regional metabolism/blood flow in epilepsy including effects of ACDs (3), thyroid disease (3), hypoxemia (1), hypoglycemia (8; 1st author of 1), amphetamine (1), epinephrine (1), morphine (1), physostigmine (1), x-irradiation (1). Of 10 additional important methodological summaries/ refinements/validations he coauthored he was 1st author in two.

It is impossible within the allotted space to do justice to his remaining achievements as scientist. Perhaps it is most fitting to allow Dr. Sokoloff to summarize Kennedy's importance:

“Charles was present and a major figure in our team throughout the development and applications of our Lab's highly regarded deoxyglucose method for measuring local cerebral glucose utilization. In fact, he was my principal and essential collaborator who contributed very significantly to the success of our lab's research. He not only provided the necessary neuroanatomical and neurophysiological expertise needed for the design and interpretation of the results of these studies, but he oversaw, coordinated, trained, and directly supervised the research activities of the numerous post-doc fellows....He very effectively carried out these functions, largely because of the nature of his character. Charles is the most genuinely modest, humble, often self-effacing and sometimes self-sacrificing, dedicated, unselfish, kind, and empathetic person I have known in many years in science. These qualities were recognized and admired by generations of fellows who worked with him in our lab. He is regarded and respected by all as a great teacher and outstanding gentleman, I am proud to be able to recognize him as a collaborator and friend.”

As clinician, Kennedy taught at Georgetown. Having come to child neurology long before any neonatal curriculum was available, he was able on the basis of his own work to bring this information to those he taught. He published a few additional

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clinical reports on genetic disease and on coma and in time authored an account of the life of Duchenne and another of the career of Louis Sokoloff. Honors have included guest lectureships and visiting professorships nationally and internationally, Presidency of the Philadelphia Pediatric Society, Directorship of the International Society for Blood Flow and Metabolism, and

membership on the editorial boards of three prestigious journals. His personal life has been enriched by a long and fulfilling marriage and by his lifelong love of music—Dr. Kennedy is a fine pianist. His personal distillation of the qualities that it is most important to instill into young physicians becoming child neurologists is “Humility, curiosity, and sensitivity to feeling.”

CNS Lifetime Achievement Award

Presented 9:00 AM, Thursday, October 11 | Introduction: Michael Shevell, MD

GORDON WATTERS, MD



GORDON WATTERS, MD

Gordon Watters' decision to attend college and study psychology was a difficult one for someone whose hockey excellence during his school days in Manitoba, and subsequently as an All-American forward skating with the Minnesota Gophers had attracted the attention of scouts for the New York Rangers. In fact, after completing a year of study he did interrupt his studies in order to play semi-pro hockey with the San Francisco Shamrocks. After a year, he returned to the University of Minnesota to complete his degree *Magna Cum Laude*. Although he undertook an additional year of graduate studies toward a Master's Degree, he was again lured away from his studies of psychology, this time to attend medical school at the University of Manitoba Medical College. Attaining his M.D. degree in 1956, he completed a Rotating Internship (Winnipeg General Hospital and then one year of Residency in Pediatrics (Winnipeg Children's Hospital). He then spent a year of Pediatrics residency at the Cincinnati Children's Hospital, then remained in Cincinnati to complete a year of Pediatric Pathology in a program that had achieved international stature under the direction of Benjamin Harrison Landing.

Between 1960 and 1963, Watters trained in neurology at the University of Chicago. Neurology, neuropathology, and neurosurgery had distinguished histories in Chicago, nurtured in particular by Paul Bucy and Percival Bailey. Douglas Buchanan was among the gifted clinician-teachers they had recruited. At the time Watters arrived, Buchanan—who had trained at Glasgow, Cambridge, and Queen Square—had been at his post at the University of Chicago for 29 years and was famed for his Saturday morning clinical teaching rounds. Buchanan was a charismatic figure whose celebrated skills at the bedside of patients, remarkable analytical abilities, and not least his love of neurology (made obvious by the twinkle the solution to a neurological question brought to his eyes) seems to have engendered similar qualities in his distinguished cadre of students and trainees. Perhaps this Chicago experience accounts in part for the ways in which Watters resembled his first great mentor. Certainly his love for neurology, devotion to teaching, and success in attracting promising persons to his clinics and training program were to be similarly celebrated.

Upon completing his training, Watters returned to join the faculty at Winnipeg Children's, remaining there for two years. This return was mandated by visa restrictions and interrupted Watters' exploitation of

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research opportunities that he was keen to embrace. In 1965, however, Watters was able to join the faculty of Boston Children's Hospital where another Buchanan trainee, Charlie Barlow, had been appointed Chair of Child Neurology. Watters participated in the well-known studies of spinal fluid engaged in by R. W. P. Cutler and Barlow. These studies involved both physiological and pathophysiological changes in the fluid and its CNS compartments. The studies resulted in normative data of considerable importance. Three successive papers of fundamental importance for which Watters was coauthor detailed the origin and turnover of CSF albumin and IgG. Work in many other laboratories would soon rely on this data in order to establish indexed values that would prove valuable in providing evidence for intrathecal inflammatory processes, particularly multiple sclerosis.

Dr. Watters pursued additional related studies that resulted in the publication of thoughtful observations on experimental brain edema, heritable and acquired hydrocephalus, and intraventricular chemotherapy. Over time he would, in addition, employ his understanding of CSF kinetics to carry out investigations on pharmacokinetic aspects of drug delivery to brains of infants. During his tenure at Boston Children's Watters had the inestimable opportunity to observe at close hand another legendary "father of child neurology": Randy Byers was in the final years of his career, having been at his post at Children's for more than thirty years.. It was perhaps from Byers that Watters acquired additional features of his own well-known diagnostic acumen and some measure of the strong sense of responsibility to the welfare of children that were key elements of Byers' personality. In Charlie Barlow, Watters had another mentor with exceptional capacity to diagnose and manage neurological problems of children, a person who, like Watters, had a knack for reducing a great deal of information into a succinct diagnosis. Barlow also had the knack shared by Watters for attracting trainees to his program.

It was on the recommendations of Buchanan and Barlow that Preston Robb appointed Watters Director of Pediatric Neurology at the Montreal Children's Hospital in 1969. He would hold this position with distinction for twenty-five years. Preston Robb was to become, with Buchanan, Byers, and Barlow, the fourth member of his personal quartet of treasured mentors. Watters continued to pursue an interest in neuromuscular diseases that he manifested in Boston by the publication of two papers, Nine additional papers on various aspects of hereditary and acquired diseases of nerve and muscle would follow in Montreal. These contributions have improved recognition and understanding of myotonic and Duchenne dystrophies, heritable neuropathies, dermatomyositis, anterior horn cell diseases, symptomatic neurofibromata, cranial neuropathy, and the spectrum of heritable hypomyelinated neuropathies.

Dr. Watters' early interest in CSF physiology may have played a role in the several papers that he published with Preston Robb on SSPE. His interest in inflammatory diseases led to excellent papers on infectious encephalitis, meningitis, aseptic meningitis, dermatomyositis, multiple sclerosis, Fisher syndrome, and nephritic complication of Friedreich ataxia, Watters coauthored three important papers relevant to Cree encephalitis, an interesting and important condition now thought to be in the same family of illness as Aicardi-Goutierre syndrome. In his total series of 64 full-length papers or chapters, many other subjects were wisely considered by Watters. More than half of his publications concern various aspects heritable disorders of the central or peripheral nervous system, seven consider aspects of epilepsy, seven neurobiochemistry, four stroke, and three complicated migraine.

Dr. Watters has been active in many Canadian and American professional societies. He has served as President of the Canadian Association for Child Neurology and on numerous committee assignments for these societies, as well as held membership on the Education Committee of the Association of Neurologists of Quebec. His wisdom and practicality benefited the numerous University Committees on which he served at

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McGill. He served for a year as Chair of the Developmental and Cognitive Disabilities Thematic Sub-Group of the Neurosciences Integration Work Group of McGill. He was similarly active on committees for Montreal Children's Hospital, including twelve years as Co-Chair of the Research Ethics Board. He has received two prestigious teaching awards and as served as *ad hoc* reviewer for four prestigious journals. Since he stepped down as Chair of Neurology at Montreal Children's in 1994, he has remained active as Professor of Neurology and Pediatrics.

The qualities universally acknowledged by his colleagues to set him apart from other excellent neurologists include his capacity to elicit accurate history and then to perform an appropriately detailed examination even under the potentially difficult circumstances that may arise with a sick child and worried family. He is able to do this because he sets patient and family at ease while at the same time he recognizes and addresses such worries and stress as may arise during the course of evaluation and treatment. His intuition as to *what* to ask is legendary, as is his skill at the formulation of a provisional diagnosis that is said rarely to have been disproven by his subsequent well-tailored selection of tests. He is aware that there is more to caring for patients than diagnosis and treatment. The additional step is *caring about* the patient and what Mike Shevell has termed "their intrinsic humanity." Since his return to Montreal, Dr. Watters has extended his concern to embrace the needs of the aboriginal peoples of Baffin Island, whom he visits each year. Residents who accompany him usually regard the experience as memorable and highly valuable to their professional development.

Dr. Watters remains tirelessly engaged in teaching, an activity that, for him, has never lost its charm. His contagious enthusiasm and enjoyment of neurological formulation that he demonstrates likely motivates his students and trainees the same way Buchanan did Watters so many years prior. Indeed, as Mike Shevell has observed, through their experiences with Watters, these young individuals acquire not only the lessons and example of Watters, but as well the influence of his four treasured mentors, Buchanan, Byers, Barlow, and Robb. This is almost always the way it is with a great teacher.

Dr. Watters has also remained a tireless learner of all the new and interesting findings and techniques that may affect the practice of the child neurologist.

It is not surprising that most of his trainees have chosen to remain in academic settings. This is not because academic practice is in some way superior to private practice—it is because he has made those he teaches revere the opportunity to be teachers themselves. He has retained throughout his career a well balanced life. He has enjoyed the support of his wife Pat and the joy of two daughters and a son. And he has continued to enjoy ice hockey. In September 2003 he was inducted into the University of Minnesota Sports Hall of Fame. Should he ever wonder what his life might have been like had he chosen a path leading to slapshots with the New York Rangers, others must wonder what would have resulted from the loss of his monumental impact on child neurology and the lives of children that he has cared for and their families. Whatever the neurological equivalent of a slapshot is, it can justly be said that Dr. Watters deserves our #5 Jersey, as the Bernie "Boom Boom" Geoffrion of Child Neurology.

Philip R. Dodge Young Investigator Award Lecture

Thursday, October 11, 9:15 am



MIRJANA MALETIC-
SAVATIC, MD, PHD

MIRJANA MALETIC-SAVATIC, MD, PHD

Dr. Mirjana Maletic-Savatic was awarded her M.D. degree by the University of Belgrade, Serbia in 1985. She subsequently became Clinical Instructor in Medicine. In 1988 she received her M.Sci degree and was promoted to Assistant Professor of Biochemistry. Her work on the pathophysiology of cerebral ischemia resulted in his first peer-reviewed publication in 1989. Thus early in her career did she manifest interest in understanding the mechanisms and consequences of brain injury. An additional paper would appear in 1993 concerning work that she had participated in Belgrade characterizing the kinetics of an erythrocyte Na,KATPase that represented a potential indicator of extent of injury of that such a membrane-bound kinase within the central nervous system might experience under conditions of hypoxia or ischemia. Completing a year of residency in clinical biochemistry at Belgrade in 1991, she moved to Stony Brook University to pursue further training as well as clinical and research opportunities.

Dr. Maletic-Savatic spent nine months as Postdoctoral Research Associate under the supervision of stroke neurologist and biochemist, George C. Newman, at Stony Brook. These were followed by two years as Medical Research Scientist under the supervision of two distinguished senior scientists, developmental biologist/child neurologist, Nick Lenn and ion channel biochemist, J.S. Trimmer. Her work during these years resulted in her appearance in 1995 as first author of the important work she had undertaken with Lenn and Trimmer. The importance of this study of the spatiotemporal expression of rat hippocampal neuron K⁺ channel polypeptides is convincingly attested by the fact that it has to date been cited more than 123 times—an achievement of less than 1% of scientific publications. In November of 1994 Dr. Maletic-Savatic entered a two-year Postdoctoral Fellowship at the Cold Spring Harbor Laboratory under the direction of the distinguished developmental neurobiologists, Roberto Malinow and Kathy Svoboda. Her

successful career as investigator had in the meantime qualified her for a Ph.D. in Neurobiology, which was awarded by the University of Belgrade in 1996.

Her work with Dr. Malinow would result in first authorship of two papers published in 1998; one reports on the regulation of calcium-evoked exocytosis in trans-golgi cell dendritic organelles of cultured rat CA1 hippocampal neurons, a paper that has been cited more than 61 times. The second demonstrates that this effect is mediated by calcium/calmodulin-dependent protein kinase II. It has been cited 39 times. Dr. Maletic-Savatic's work with Drs. Malinow and Svoboda resulted in 1999 in publication in *Science* of a description of the rapidity with which dendritic morphogenesis may be induced in these CA1 cells. This classic paper has been cited more than 368 times and was recognized by *Science* as "Runner-up" for the "Breakthrough Publication of the Year." She coauthored an additional methodological paper in 1999 describing an ingenious technique for two-photon imaging of living brain slices. It has subsequently been cited 35 times.

Dr. Maletic-Savatic served from 1998 to 1999 Clinical Instructor in Pediatrics at Stony Brook University and from 1999 and 2002 as Clinical Instructor in Child Neurology. In 2002 she also completed her own residency training in child neurology under the Direction of Mary Andriola, whereupon she was appointed to her current position as Assistant Professor of Neurology at Stony Brook. With Dr. Andriola and others she reported electroencephalographic studies of children with developmental dysphasia.

In 2001 Dr. Maletic-Savatic was named Visiting Scientist at Cold Spring Harbor. In 2002 she received a Career Development Award by the NINDS and in the same year was named one of four Outstanding Junior Member of the Child Neurology Society. In 2004 Dr. Maletic-Savatic became Director for Biological Research at the Cody Center for Autism at Stony Brook. In 2004 she received a Physician Scientist Training Award from the United States Army.

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In February of 2005 she was promoted to Adjunct Assistant Professor at Cold Spring Harbor. In June of 2005 she was named Assistant Professor of Pharmacology and in June of 2006, Assistant Professor of Genetics, both at Stony Brook. In 2006 she also received the American Society for Clinical Investigation Travel Award. She has vigorously embraced opportunities for both basic and clinical research. She has participated with seven collaborators in further investigating the neural potential of stem cells derived from hair follicles, the results of which are currently in submission. In 2005 she published an intriguing study of the use of stem cells for the treatment of CNS demyelinating illnesses. Dr. Maletic-Savatic has directed studies for the generation and characterization of a monoclonal antibody against neural stem/progenitor (NSC/NPC) cells that will prove useful in the identification of these cells in experimental conditions.

Dr. Maletic-Savatic's interest in brain injury and ensuing mental and motor handicaps in combination with her sophisticated understanding of stem cells led her to seek a method of combining these interests. She reasoned that it would be important to see whether prenatal stress resulted in diminished quantities of NSC/NPC in areas of importance for subsequent cognitive development. She chose the dentate gyrus for the very good reasons that 1) it is part of the hippocampus which plays a major role in memory and learning; 2) the subgranular zone of the dentate is the site of a robust population of NSC/NPC from very early stages of prenatal brain development, and 3) this is a region quite often implicated in the damage that may occur in infants subjected to premature birth or other forms of prenatal and perinatal stress. Her desire to study these phenomena in human infants presented her with the problem of devising a method that could safely identify and quantify the representation of NSC/NPC in distinction to neural and other cell lines at other levels of differentiation within the dentate gyrus. Remarkably, she solved this problem by novel adaptation of 1H-MR spectroscopy that entailed development of a signal processing method relying on singular value decomposition analysis.

The results have been, to say the least, stunning. She was able to demonstrate with *in vitro* methods of isolation of various cell lines a unique peak that represents a biometabolomic marker for NSC/NPC. She and her colleagues further demonstrated that during development and maturation of neural cells derived from NSC/NPC, this peak declined, while the well characterized peaks marking the appearance of neurons (NAA) and glia (Cho) increased. She has further demonstrated that this technique identifies the NSC/NPC peak in rat cortex after these cells have been transplanted. Finally, she has demonstrated that the technique works in human brain in voxels interrogating cortex and hippocampus. All of this work, recently submitted for publication, was presented this year at the AAN. The creativity and importance of the work of Dr. Maletic-Savatic was recognized as among the Top 5% Scientific Presentations for the year.

Dr. Maletic-Savatic's Young Investigator proposal is aimed at employing this noninvasive technique to compare expression of NSC/NPC in hippocampal voxels of cadres of very premature, premature, and full-term infants. Success with this work may well provide a sensitive and important marker for early brain injury. More than that, it may provide a marker for the ensuing course of healing or efficacy of interventions that may be compared to clinical observations with growth and development. She is planning in particular to compare cadres of 2-10-year-old children with cerebral palsies segregated into those with or without mental retardation to demonstrate whether or not her marker is specific for cognitive development. She will be able to compare her results with the white matter imaging biomarkers for poor development identified this year by a prior CNS Young Investigator, Terri Inder.

The success of Dr. Maletic-Savatic's methods may well open up an entire field of research that may differentiate changes observed in children with mental retardation as compared to those with other disorders, such as autism. Already, the indefatigable Dr. Maletic-Savatic has completed a study of cerebral lateralization of children with disorders in the autistic spectrum employing the combination of a dichotic listening paradigm and

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fMRI imaging of activation. The method may permit her as well to explain something else that is of great interest to her: understanding why there is variation in extent and nature of long-term disabilities experienced by children who have been subjected to premature birth or other forms of stress.

Dr. Maletic-Savatic serves on numerous committees at Stony Brook in addition to

Chairing the Research Planning Committee for the Cody Center for Autism. These include the Curriculum Committee of the School of Medicine; the Selection Committee for MD, PhD students; the Stem Cell Initiative Committee; and the Dean's Leadership Advisory Council. She is a member of the mMRI Committee for Translational Research of the Brookhaven National Laboratory.

Association of Child Neurology Nurses Claire Chee Award for Excellence



ELIZABETH D. TATE
FNP-C, MN

ELIZABETH D. TATE FNP-C, MN

Liz began her nursing career at Sibley Memorial Hospital, Washington, DC, after obtaining her BSN from George Mason University in Fairfax, VA in 1976. She held various roles as a nurse on in-patient surgical units and as a certified emergency department nurse prior to completing her Master of Nursing Degree in Primary Care and Family Nurse Practitioner Program at the University of California at Los Angeles in 1985. Liz practiced in primary care in New York City both at Bellevue Hospital and Columbia-Presbyterian Medical Center after completing her graduate programs. Her career in pediatric neurology began in 1990 as a nurse practitioner at Children's National Medical Center, Washington, DC. In 1996 she became the clinical manager of the National Pediatric Myoclonus Center.

Upon joining the Division of Child and Adolescent Neurology at Southern Illinois University School of Medicine Liz helped to establish the opsoclonusmyoclonus syndrome (OMS) program within the Movement Disorders Clinic and is now clinical manager of the program. Michael Pranzatelli, MD describes her as a nurse with deep compassion and commitment to her patient population. She continually advocates for her patients and has a strong sense of ethics.

He notes that "...more than 250 families in the US and abroad know her almost like a family member... she is their lifeline, getting them through the several years of complex immunotherapy... she is the one they e-mail or call with questions about the disease, treatments, behaviors, and the toll OMS takes on the family... the parents will always remember her and what she did for them..." Liz helped to establish the OMS program's website which has been of great benefit to parents. She conducts clinical research on this rare syndrome which requires patience and excellent clinical skills secondary to the complex nature of the syndrome. She has earned a reputation both nationally and internationally for her expertise in OMS.

Liz has been dedicated to the field of Childhood Neurology for the past 17 years and a member of the ACNN since 1996. She has published extensively as first author on 4 of 26 articles in peer-reviewed journals, written a textbook chapter on childhood tic disorders, and presented 19 abstracts/posters both nationally and internationally. She has served as a co-investigator or collaborator on nine research grants. Liz has shared her knowledge base through many lecture presentations on topics ranging from movement disorders to

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ACNN Claire Chee Award

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the role of the nurse practitioner. She has spoken twice at the ACNN meetings and has served on the Program Committee for ACNN. She regularly attends lectures and academic conferences to further her own education.

Liz's clinical expertise, combined with her dedication and professional attributes, renders

her truly deserving of this award. We, the Association of Child Neurology Nurses, are honored to present the *2007 Claire Chee Award for Excellence* to Elizabeth Tate for her exemplary leadership, commitment, and inspiration in the profession of Child Neurology Nursing.

PANEL DISCUSSION

Leisure and Respite Care

Saturday, October 13, 2007

1:00 – 3:00 pm

Rm 301AB, Quebec City Convention Centre

As part of the 36th Annual Meeting of the Child Neurology Society, the Cerebral Palsy Consortium and the Child Neurology Foundation are organizing a panel discussion that will take place October 13, 2007 from 1 to 3 pm. The goal of this panel is to create a discussion surrounding the needs of caregivers and families of children with neurological and neurodevelopmental disorders. We invite parents, caregivers, child neurologists, voluntary health organizations and stakeholders to attend this panel discussion entitled "Leisure and Respite Care."

A simultaneous interpretation service is provided for English speaking participants.

PANELISTS**Amy Bussière**

National Consultant, *Office des personnes handicapées du Québec*, Government of Quebec (Quebec) Canada

Michel Sylvain

Child Neurologist, *Centre hospitalier universitaire de Québec*, Pavillon CHUL, Quebec City (Quebec) Canada

Louise Koclas

Pediatrician in a pediatric rehabilitation center, *Centre de réadaptation Marie-Enfant*, Montreal (Quebec) Canada

Thérèse Sirois

Parent of a child with a disability and President of a community organisation, *Ressource d'aide aux personnes handicapées du Bas-St-Laurent/Gaspésie*, (Quebec) Canada

Maryse Lamarche

Social Worker in a pediatric rehabilitation center, *Institut de réadaptation en déficience physique de Québec*, Quebec City (Quebec) Canada

Lucie Guérard

Psychologist in a special school, *École Madeleine-Bergeron*, Quebec City (Quebec) Canada

Annette Majnemer

Researcher and professor, School of Physical and Occupational Therapy, McGill University, Montreal (Quebec) Canada

MODERATOR**Réjean Tessier**

Researcher and professor, School of Psychology, Université Laval, Quebec City (Quebec) Canada