ISSR 2016

Serotonin in Seattle

International Society for Serotonin Research

Acknowledgements

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IRVINE PAGE PLENARY LECTURER
Professor Trevor Sharpe, PhD

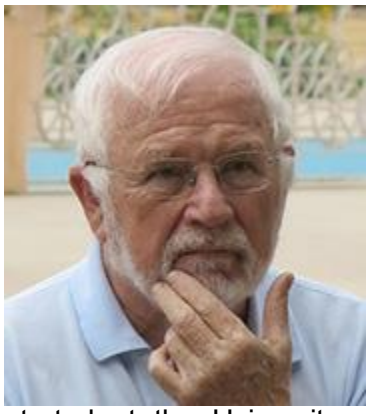
Professor of Neuropharmacology
Radcliffe Medical Fellow in Neuroscience at the University College Oxford
Lecturer in Pharmacology at Corpus Christi College Oxford

Trevor Sharp graduated in Biochemistry at the University of Birmingham in 1979. He was a PhD student under the supervision of Charles Marsden and Geoff Bennett in the Department of Physiology and Pharmacology at the University of Nottingham where he obtained a PhD in 1983 for his studies on monoamine-peptide interactions. He spent the next three years (1983-1986) in the Department of Pharmacology at the Karolinska Institute, Stockholm with Urban Ungerstedt, first as a NATO/SERC Overseas Fellow and then as a Karolinska Institute Visiting Fellow. In Stockholm he contributed to the development of brain microdialysis for monitoring extracellular concentrations of monoamines. In 1986 he joined David Grahame-Smith in the Medical Research Council Unit of Clinical Pharmacology in Oxford, where he began a programme of research on 5-HT. He was appointed to the Medical Research Council External Scientific Staff in 1993, and following a further six years in the Department of Clinical Pharmacology, he joined the Department of Pharmacology in 2000. He was appointed Professor of Neuropharmacology at the University of Oxford in 2010. Throughout his time in Oxford, Professor Sharp's research has centred on the neuropharmacology and neurophysiology of serotonin, with a particular aim to advance our understanding of the treatment and cause of mood disorder. Alongside his research he has been fully engaged in the teaching of pharmacology and neuroscience to Oxford undergraduate medical and biomedical science students. In relation to this teaching, he is a medical tutor at University College Oxford where he holds the Radcliffe Medical Fellowship in Neuroscience. He holds visiting Professorships at the Universities of Maastricht and Hokkaido. He has served in many capacities including Chairing the International Peer Review Panel for Neuroscience for the Danish Medical Research Council. He is a member of the International Scientific Review Panel for INSERM/Université Paris VI Neuroscience Unit, the International Peer Review Panel for Fellowship in Translational Pharmacology for the Swedish Research Council and the International Scientific Advisory Panel, Center for Integrated Molecular Imaging in Copenhagen. He has served terms on the Medical Research Council College of Experts as well as the Medical Research Council Advisory Board. He has served on the editorial board of Neuropharmacology and Neuroscience and is currently serving on the editorial boards of the European Journal of Neuropsychopharmacology, Frontiers in Neuropharmacology and Current Neuropharmacology. Professor Sharp was Chair of the organising committee for 8th meeting of International Society for Serotonin Research, held in Oxford in 2008. He was deputy chair of the organising committee for the 14th International Conference for In Vivo Monitoring (2012, London). In addition he has organized (and been chair/speaker) in numerous symposia at national and international scientific meetings including: British Pharmacological Society (2005, 2006, 2009, 2012, 2013), European Winter Conference for Brain Research (2001, 2002), International Society for Serotonin Research (2002, 2006, 2008, 2010, 2014). He has given numerous keynote lectures the world over. Professor Sharp is a member of the British Pharmacological Society, British Association of Psychopharmacology and British Neuroscience Association. He has been a member of the International Union of Basic and Clinical Pharmacology (IUPHAR) Serotonin Receptor Nomenclature Committee since 2009 and has been a member of the International Society for Serotonin Research (Serotonin Club) since 1993. He is currently a member of the International Society for Serotonin Research Executive Committee. Professor Sharp has been very well funded throughout his career and has trained many undergraduate and graduate students who have gone on to have highly successful careers. Professor Sharp has over 217 papers/articles, H-index of 60, with 2 cited more than 500 times, 26 cited more than 100 times and 47 cited more than 50 times. His publications appear in top tier journals including Science, Proceeding of National Academy of Sciences, Journal of Neuroscience, Current Opinions in Pharmacology, Trends in Pharmacological Sciences and British Journal of Pharmacology.

MAURICE RAPPORT PLENARY LECTURER
Professor Daniel Hoyer, PhD, DSc, FBPhS.

Chair and Head, Department of Pharmacology and Therapeutics, School of Biomedical Sciences, FMDHS, The University of Melbourne.
Honorary Professorial Fellow, The Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Parkville, Australia
Adjunct Professor, Department of Chemical Physiology, The Scripps Research Institute, La Jolla, CA, USA

Professor Hoyer received his MSc in Biochemistry & Physiology (1978), PhD in Pharmacology (1981), DSc (1986, Strasbourg, France) and was a post-doctoral fellow first at the University of Pennsylvania, Philadelphia, then in the Cardiovascular Research Unit, Sandoz/Basel (1983), then Neuroscience Research (1989). At Sandoz/Novartis, he worked both on drug development and basic research projects, including catecholamine and serotonin (5-HT) receptors, ligand-gated channels, peptide receptors and their chemistry (European Consortium on Somatostatin in the CNS), genomics of depression and schizophrenia (Maryland Psychiatric Research Center, Baltimore, MD; Scripps & GNF, La Jolla, CA). His recent interests are in epilepsy, sleep disorders, epigenetics of neuropsychiatric disorders and the applications of RNAi in the brain. Professor Hoyer has more than 26,000 citations, H index of 82, and has published over 325 papers/articles. He is/was a member of the British and German Pharmacological Societies, European College of Neuropsychopharmacology, Society for Neurosciences, served on the scientific council of the Pasteur Institute (Paris), on the Council and as a Director of the British Pharmacological Society. Professor Hoyer was in the top 10 most cited researchers in Pharmacology (http://www.in-cites.com/scientists/pha-10-aug2003.html). He was nominated Novartis Leading Scientist (1998), Highly Cited Researcher, ISI, Pharmacology (2002), Manfred Zimmerman Award (2003), Professor adjunct at the Molecular and Integrative Neuroscience Department, Scripps Research Institute, La Jolla CA/USA (2004), and a Fellow of the British Pharmacological Society (2004). Professor Hoyer chaired the Serotonin and the Somatostatin Receptor Nomenclature subcommittees (NC IUPHAR), was President of the Serotonin Club and the European Neuropeptide Club, and was involved in the organization of numerous conferences on serotonin or peptide receptors, receptor nomenclature and mechanisms. He is/was editor of European Journal of Pharmacology, Neuropharmacology, Current Opinions in Pharmacology, Current Drugs, Drug Discovery Today, Journal of Receptors & Signal Transduction, Pharmacology & Therapeutics. He is currently a senior editor of British Journal of Pharmacology, Psychopharmacology, Naunyn Schmiedeberg's Archives of Pharmacology and the Encyclopedia of Psychopharmacology. In December 2012, Professor Hoyer became Chair and Head of the Department of Pharmacology and Therapeutics, School of Biomedical Sciences, FMDHS, University of Melbourne. Under his leadership the Lung Health Research Center was established as a University Center in 2013 to study and treat lung diseases in collaboration with Royal Melbourne Hospital, schools of Physiotherapy and Nursing and Industry partners. He has reorganized the Australian Venom Research Unit (AVRU), which under the leadership of Dr. David Williams places a strong emphasis on preclinical and clinical snake venom research, education and engagement; fostering strong links with industry, governments and non-government organizations in Europe, Asia and South America. AVRU is completing a phase II study with a new anti-taipan anti venom, carried out in the snake bite clinic in Port Moresby in Papua New Guinea. This is just one example of the many new frontiers Professor Hoyer is spearheading. Professor has established a strong research program at the University of Melbourne. He is an investigator on several Nation Health and Medical Research Council (NHMRC) grants and United States Alzheimer's disease association grants in collaboration with the Florey Institute and the Stanford University Medical School, among others.



INAUGURAL PAUL VANHOUTTE DISTINGUISHED LECTURE
Professor Paul M.G. Vanhoutte, MD, PhD

Chair Professor
Department of Pharmacology & Pharmacy
The University of Hong Kong

Professor Paul M. Vanhoutte was born in 1940 in Belgium, where he obtained his degrees at the University of Gent (B.S., M.S., and M.D.) and the University of Antwerpen (Agregatie Hoger Onderwijs, equivalent to Ph.D.). He received his postdoctoral training at the University of Gent and at the Mayo Clinic (Rochester, MN, USA). His academic career started at the University of Gent (Assistant, 1969-1971), followed by the Mayo Clinic (Research Associate, 1972-1973), the University of Antwerpen (Belgium; from Associate Professor to full Professor and Head of the Department of Pharmacology, 1973-1981), again the Mayo Clinic (Professor of Physiology and Pharmacology, 1981-1989) and Baylor College of Medicine (Houston TX, USA, Professor of Medicine, Pharmacology and Physiology, and Director Center for Experimental Therapeutics, 1989-1995). From 1992 to 2002, Dr. Vanhoutte was Vice-President R&D, and Director of Discovery Research at the Institut de Recherches Internationales Servier, in Courbevoie (Paris, France). During his tenure as Director of Discovery Research at Servier, he supervised the discovery and preclinical development of drugs designed for the treatment of cardiovascular diseases, diabetes, obesity, central nervous system disorders, cancer and osteoarthritis. From 2003 to 2006 he was Distinguished Visiting Professor and Director of the BioPharmaceutical Development Centre, at the University of Hong Kong. From 2006 to 2011 he was the Head of the Department of Pharmacology and Pharmacy. He currently is Visiting Professor in the same department. He also has been Visiting Professor at the National University of Rwanda (1967), the Polish Academy of Sciences (1979) and King Saud University (Riyadh, Saudi Arabia, 2013-2015). He currently is Honorary Professor at the Peking Union Medical College (Beijing), the Institute of Materia Medica of Beijing, the Ocean University of Qingdao, the Second Military Medical University in Shanghai and the Shanghai Institute of Materia Medica. He currently is also visiting Professor at the University of South Denmark, the University of Malaya (Kuala Lumpur), Chonbuk National University in Jeonju (South-Korea) and the University of Zurich (Switzerland). Dr. Vanhoutte is member of the Academia Europea, the Academie Nationale de Pharmacie [Paris] and the Belgian Academies of Medicine, and honorary member of the Brazilian Academy of Medicine. He is member of the American Association of Physicians, the American Society of Physiology, the American Heart Association(Fellow), the American Society for Clinical Investigation (Emeritus), the American College of Cardiology (Fellow), the American College of Angiology (Fellow), the American Society for Pharmacology and Experimental Therapeutics, the Belgian Society for Physiology and Pharmacology, the British Pharmacological Society (Honorary Fellow), the French Pharmacological Society and the European Society of Cardiology(Fellow). He is member and Past-President of the Hong Kong Pharmacology Society. He is honorary member of the Physiological Society (London), the Chinese Pharmacological Society, the German Society of Angiology and the Société Française de Cardiologie. Dr Vanhoutte is the founder and Past-President of the Serotonin Club [renamed International Society for Serotonin Research] and of the Asian Society of Vascular Biology. From 1989 to 2007, he was the Editor-in-Chief of the *Journal of Cardiovascular Pharmacology*. He has been Associate Editor of the *American Journal of Physiology (Heart and Circulatory Physiology)*, of *News in Physiological Sciences*, and of the *Journal of Vascular Medicine and Biology*. He is or has been member of the Editorial Board of many scientific journals (e.g. *Circulation, Circulation Research, Cardiovascular Research, Hypertension, Journal of Hypertension, American Journal of Physiology, Acta Sinica Pharmacologica, Journal of Pharmacology and Experimental Therapeutics*). He has been member, and chairman, of the Program Project Review Committee of the National Heart Blood and Lung Institute of the NIH (Bethesda, MD, USA). He chaired the IUPHAR Committee for Receptor Nomenclature from 1989 to 1998. He was Secretary General of the International Union of Basic and Clinical Pharmacology (IUPHAR) from 1998 to 2002, and President of the Union from 2002 to 2006. Dr. Vanhoutte has written three theses. He has co-authored or edited 36 books. He has published 667 original research papers, and 572 editorials, reviews or chapters in books. His major

scientific contribution has been to appreciate and analyse the importance of endothelial cells in the control of the underlying vascular smooth muscle in vascular health and disease, and to highlight the complexity of that regulation. Dr. Vanhoutte has received the Doctor Honoris Causa degree of the University of Gent (Belgium) in 2001, from the Universities of Antwerp (Belgium), Montreal (Canada) and Zurich (Switzerland) in 2003, from the Royal Melbourne Institute of Technology (Australia) in 2005, from the University Louis Pasteur in Strasbourg (France) in 2006, from the Gr. T. Popa University of Medicine and Pharmacy in Iasi (Romania) in 2009 and from Monash University (Australia) in 2012. Named lectures in his honor have been created by the American Society for Experimental Pharmacology and Therapeutics and by the International Society for Serotonin Research. Dr. Vanhoutte is a Highly Cited Researcher (ISI) in three categories: Biology & Chemistry, Pharmacology, and Clinical Medicine. His current H-index is 128.

PROGRAM OVERVIEW

Sunday, July 24, 2016		
1:00-4:00pm	Registration	4th floor foyer
4:00pm	**Welcome/Opening remarks** John Neumaier & Lynette Daws	Olympic Ballroom
4:30-5:30pm	**Irvine Page Plenary Lecture** Trevor Sharp	Olympic Ballroom
5:30-7:00pm	**Opening Cocktail Reception**	Olympic Ballroom
7:30pm	Dinner on own	

Monday, July 25, 2016		
7:00am	Registration	4th floor foyer
7:00-8:00am	**NIDA Travel Award Breakfast** *Invitation Only*	Rainier Room
7:00-8:00am	**Continental Breakfast**	Terrace
8:00-9:30am	**Plenary Symposium 1** *Role of epigenetic remodeling in serotonin signaling, plasticity and antidepressant action (*Chairs: Nick Barnes & Connie Sanchez)	Olympic Ballroom
9:30-10:00am	BREAK	
10:00-11:30am	**Plenary Symposium 2** *Multi-system serotonin in autism and developmental disorders* (Chairs: Randy Blakely & Kara Margolis)	Olympic Ballroom
11:30am-12:30pm	LUNCH BUFFET	Terrace
12:30-2:00pm	**Parallel Symposia 1** *5-HT and inflammation: from gut to brain* (Chair: Luc Maroteaux)	Cascade I & II
	Parallel Symposia 2 *Serotonin 5-HT$_{2A}$ receptor modulation of executive domains* (Chairs: Noelia Weisstaub & Evelyn Lambe)	Olympic Ballroom
2:00-2:20pm	BREAK	
2:20-5:30pm	**Open Oral Session**	Olympic Ballroom
5:30-7:30pm	**Poster Session**	Cascade & Rainier
7:30pm	Dinner on own	

Tuesday, July 26, 2016		
7:00am	Registration	4th floor foyer
7:00-8:00am	Continental Breakfast	Terrace
8:00-9:30am	**Plenary Symposium 3** *Psychedelics: Out of the closet after half a century of neglect!* (Chairs: Dave Nichols & Mark Geyer)	Olympic Ballroom
9:30-10:00am	BREAK	
10:00-11:30am	**Plenary Symposium 4** *Serotonin deficiency an its endophenotypes: implications for neuropsychiatric disorders* (Chairs: Patricia Gaspar/ Sebastian Fernandez / Natalia Alenina)	Olympic Ballroom
11:30am-1:00pm	Lunch Buffet	Terrace
12:00-1:00pm	Business Meeting- ISSR Council	Rainier
1:00-2:30pm	**Parallel Symposia 3** *Disruption of serotonin and tryptophan metabolism in pregnancy: consequences for fetal development and programming* (Chair: Cathy Vaillancourt)	Cascade I & II
	Parallel Symposia 4 *Novel 5-HT$_6$ receptor signalling and functions* (Chair: Joel Bockaert)	Olympic Ballroom
2:30-3:00pm	BREAK	
3:00-5:15pm	**Pioneers and Prodigies: *NIDA Travel Award Session*** (Chairs: Trevor Sharp, Paul Vanhoutte & Daniel Hoyer)	Olympic Ballroom

5:15-5:20pm	BREAK	
5:20-6:20pm	**Paul Vanhoutte Distinguished Lecture** Paul Vanhoutte	Olympic Ballroom
6:20-6:30pm	BREAK	
6:30-7:30pm	**Wine Tasting/Reception**	Olympic Ballroom
7:30pm	Dinner on own	

Wednesday, July 27, 2016		
7:00am	Registration	4th floor foyer
7:00-8:00am	Continental Breakfast	Terrace
8:00-9:30am	**Parallel Symposia 5** *Recent advances in the role of the serotonergic system in Parkinson's disease?* (Chair: Andrew McCreary)	Cascade I & II
	Parallel Symposia 6 *Heterogeneity of the ascending serotonin system: Cellular properties to behavioral repertoire* (Chairs: Kathryn Commons & Lynn Kirby)	Olympic Ballroom
9:30-10:00am	BREAK	
10:00-11:30am	**Parallel Symposia 7** *The 5-HT$_{2C}$ receptor agonist lorcaserin as a new treatment for addictive disorders: Preclinical and clinical evidence* (Chairs: Paul Fletcher & Andrew Grottick)	Cascade I & II
	Parallel Symposia 8 *The highs and lows of serotonin in autism spectrum disorders* (Chairs: Georgianna Gould & Lyn Daws)	Olympic Ballroom
11:30am-1:00pm	Lunch Buffet	Terrace
1:00-2:30pm	**Parallel Symposia 9** *Unexpected roles for peripheral serotonin* (Chair: Francine Cote)	Cascade I & II
	Parallel Symposia 10 *Novel serotonergic mechanisms and functional crosstalk: Shaping innovative neurotherapeutics* (Chairs: Harriet Schellekens & Kathryn Cunningham)	Olympic Ballroom
2:30-2:45pm	BREAK	
2:45-4:15pm	**Parallel Symposia 11** *The role of serotonin in disinhibited behaviors, related processes and psychopathologies: Neuroscientific perspectives* (Chairs: Florian Zepf & Cynthia Kuhn)	Cascade I & II
	Parallel Symposia 12 *Serotonin neurons in the dorsal raphe: bridging the gap between synaptic physiology, neural coding, and behavior* (Chairs: Jean-Claude Beique & Rodrigo Andrade)	Olympic Ballroom
4:15-4:30pm	BREAK	
4:30-5:30pm	**Maurice Rapport Plenary Lecture** Daniel Hoyer	Olympic Ballroom
5:30-6:00pm	BREAK	
6:00-10:00pm	**Tillicum Cruise/Banquet and Awards**	Pier 66

PROGRAM DETAILS

Sunday, July 24, 2016 (4:00pm-7:00pm)

Irvine Page Plenary Lecture and Opening Reception
Olympic Ballroom

4:00pm-4:30pm **Welcome and Opening Remarks**

John Neumaier, *Chair, ISSR 2016*; Lynette Daws, *President, ISSR*

4:30pm-5:30pm **Page Plenary Lecture**

"*Translating basic research on 5-HT neuron control and signalling"*

Trevor Sharp, Oxford University

(Sponsored by The British Pharmacological Society)

5:30pm-7:00pm **Opening Cocktail Reception**

Monday, July 25, 2016

8:00am-9:30am
Olympic Ballroom

Plenary Symposium 1
Chairs: Nicholas Barnes*, Univ of Birmingham and* Connie Sanchez*, Alkermes*
Sponsored by Lundbeck

Role of epigenetic remodeling in serotonin signaling, plasticity and antidepressant action

Emerging evidence reveals epigenetic regulation of gene expression plays a central role in cognition and memory formation and is also implicated in various pathological states. This symposium will address recent findings of the role of serotonin signaling in epigenetic modulation of plasticity targets, epigenetic mechanisms by which antidepressants can reverse depressive-like phenotypes, and the crucial role of epigenetic regulation in memory. These studies underscore the importance of epigenetic regulation in the heterogeneity of depression and provide potential therapeutic targets to reverse depressive behaviors. The wide array and various combinations of epigenetic marks that recruit distinct transcriptional protein complexes in response to altered serotonin signaling will continue to shed light on mechanisms of antidepressant action in different brain regions and open avenues for development of additional biomarkers.

8:00am-8:20 am — Marcelo Wood*, University California-Irvine*
EPIGENETICS, SYNAPTIC PLASTICITY, AND MEMORY

8:20am-8:40am — Anne West, *Duke University Medical Center*
CHROMATIN REGULATION BY DOPAMINE AND SEROTONIN

8:40am-9:00am — Marco Riva, *University Milan*
THE SEROTONIN-BDNF LINK: DEVELOPMENTAL AND EPIGENETIC MECHANISMS

9:00am-9:20am — Connie Sanchez*, Lundbeck*
5-HT; DEPRESSION AND COGNITION

9:20am-9:30am Open Discussion

9:30am-10:00am *Coffee Break*

10:00am-11:30am
Olympic Ballroom

Plenary Symposium 2

Chairs: Randy Blakely*, Florida Atlantic University* and Kara Margolis*, Columbia University*

Multi-System Serotonin in Autism and Developmental Disorders

The biogenic amine serotonin exerts powerful modulatory control in the brain and periphery and, not surprisingly therefore, medications that manipulate serotonin signaling have found uses in the treatment of depression, OCD, schizophrenia, pain disorders and migraine, to name but a few. In recent years, research has revealed key developmental roles for serotonin, both in the CNS and periphery, and these findings have focused our attention on the health risks attendant to genetic or environmental perturbations of early life serotonin signaling. In this Symposium, we bring together research that 1) that seeks to elucidate key steps in serotonin's control of normal development, 2) that through genetic and pharmacological manipulations interrogates key sites and steps in early serotonin production and inactivation, and 3) that seeks to convert the lessons from studies of fundamental mechanisms to opportunities for novel, mechanism-based prevention and treatment.

10:00am-10:20am Pat Levitt*, Univ Southern California-Irvine*
EXTRAEMBRYONIC REGIONALIZATION OF SEROTONIN REGULATION: IMPLICATIONS FOR BRAIN DEVELOPMENT

10:20am-10:40am Randy Blakely, *Florida Atlantic University*
MINING IMMUNE SEROTONIN CROSSTALK FOR INSIGHTS INTO NOVEL THERAPEUTICS IN AUTISM

10:40am-11:00am Michael Gershon, *Columbia University*
ENTERIC SEROTONERGIC SIGNALING, SERT, AND AUTISTIC SPECTRUM DISORDER

11:00am-11:20am Kara Margolis, *Columbia University*
ENTERIC SEROTONIN, SERT AND THE 5-HT4 RECEPTOR AND DEVELOPMENTAL SSRI EXPOSURE

11:20am-11:30am Open Discussion

11:30am-12:30pm **LUNCH**
Terrace

12:30pm-2:00pm
Cascade I & II

Parallel Symposium 1

Chair: Luc Maroteaux, Institut du Fer a Moulin

5-HT and inflammation: from gut to brain

In the CNS, serotonin (5-hydroxytryptamine, 5-HT) is a neurotransmitter involved in many functions, including sensory transmission, sleep, wakefulness and mood. Outside the CNS, 5-HT is found in the gastrointestinal tract and the enteric nerves, and with particularly high abundance in platelets. Besides its role as a neurotransmitter, 5-HT regulates inflammation via a set of receptors whose pattern of expression varies among cell lineages. Lymphocytes, monocytes, macrophages and mast cells have been described as targets of this classical neurotransmitter. Not only certain immune cells express distinct receptors for the neurotransmitter but also, some at least, are capable of producing 5-HT. Rodent and human immune tissues (spleen, thymus and peripheral lymphocytes) have been reported to express numerous 5-HT receptors. In this symposium, we will discuss different inflammatory processes involving serotonin.

12:30pm-12:50pm	Md. Sharif Shajib, *McMaster University* 5-HT AND GUT INFLAMMATION
12:50pm-1:10pm	Anne Roumier, *Institut du Fer a Moulin* 5-HT2B RECEPTOR REGULATES MICROGLIAL ACTIVATION AND ADAPTIVE BEHAVIOR IN RESPONSE TO A PERIPHERAL IMMUNE CHALLENGE
1:10pm-1:30pm	Eric Boilard *, Université Laval* PLATELET-DERIVED SEROTONIN IN AUTOANTIBODY MEDIATED INFLAMMATION
1:30pm-1:50pm	NIDA Travel Award Recipient Nako Nakatsuka, *UCLA* DEVELOPING SEROTONIN-SPECIFIC IN VIVO NEUROSENSORS TO LINK NEURAL SIGNALING WITH COMPLEX BEHAVIORS
1:50pm-2:00pm	Open Discussion

12:30pm-2:00pm

Olympic Ballroom

Parallel Symposium 2

Chairs: Noelia Weisstaub, *University of Buenos Aires;* Evelyn Lambe, *University of Toronto*

Serotonin 5-HT$_{2A}$ receptor modulation of executive domains

Serotonin (5-HT) is a key modulator in the central nervous system. Serotonergic cells are highly ramified and project profusely from the raphe nuclei located in the midbrain to anterior and posterior regions. In this way, the frontal cortex receives diffuse and profuse 5-HT innervation. This 5-HT modulation is important for executive function, and its alteration has been linked to a plethora of psychiatric disorders. However, it is only beginning to be appreciated exactly how 5- HT modulates specific executive functions, such as anxiety regulation and the salient retrieval of long-term memories. Understanding the cellular basis for the action of 5-HT means probing its receptors, which have exquisite regional, laminar and cellular specification. Here, we focus on advances made possible with new techniques to investigate one of the more enigmatic serotonin receptors in frontal regions: the 5-HT$_{2A}$ receptor. This symposium will analyze the roles of the 5-HT$_{2A}$ receptor from signaling to behavior, including: their receptor-level cellular signaling and stimulation by endogenous 5-HT as well as by psychedelic hallucinogens, their ability to exert epigenetic changes in psychiatric disorders, and their role during retrieval of episodic memories. Overall, we will bring together diverse perspectives to create a unified overview of the cellular and circuit mechanisms by which serotonin 5-HT$_{2A}$ receptors regulate emotional control and cognitive performance.

12:30pm-12:50pm	Rodrigo Andrade, *Wayne State University* EXPRESSION OF *htr2A* GENE IDENTIFIES A NOVEL CLASS OF SEROTONIN-REGULATED EXCITATORY NEURONS IN THE CEREBRAL CORTEX
12:50pm-1:10pm	Javier Gonzalez-Maeso*, Virginia Commonwealth Univ Medical School* EPIGENETIC MECHANISMS OF 5-HT2A RECEPTOR-DEPENDENT ANTIPSYCHOTIC ACTION
1:10pm-1:30pm	Evelyn Lambe*, University of Toronto* SEROTONIN AND CORTICAL DISINHIBITION: A NOVEL SYNERGY BETWEEN 5-HT1A AND 5-HT2A RECEPTORS IN PREFRONTAL CORTEX
1:30pm-1:50pm	Noelia Weisstaub, *University of Buenos Aires* ROLE OF MEDIAL PREFRONTAL CORTEX SEROTONIN 2A RECEPTORS IN THE CONTROL OF RECOGNITION MEMORY RETRIEVAL IN RODENTS
1:50pm-2:00pm	Open Discussion
2:00 pm-2:20pm	*Coffee Break*

2:20pm-5:30pm
Olympic Ballroom

Open Oral Session

Chairs: Lynette Daws, John Neumaier, Anne Andrews, Kevin Fone

2:20pm Benjamin Rood, *Harvard Medical School*
IDENTIFICATION OF FUNCTIONAL HETEROGENEITY WITHIN SEROTONIN NEURON POPULATIONS

2:32pm Mark Ansorge, *Columbia University*
HIPPOCAMPAL 5-HT INPUT REGULATES MEMORY STORAGE AND SCHAFFER COLLATERAL EXCITATION

2:44pm Allan Gulledge, *Geisel School of Medicine/ Dartmouth*
RECIPROCAL CONTROL OF CORTICOFUGAL OUTPUT BY SEROTONIN AND ACETYLCHOLINE

2:56pm Amelie Bigorgne, *Institut Imagine Hôpital, Paris*
DUODENUM-DERIVED SEROTONIN REGULATES LIVER HEPCIDIN EXPRESSION AND IRON METABOLISM IN RESPONSE TO HYPOXIA

3:08pm Anne Andrews, *University California- Los Angeles*
HOW CAN WE KNOW WHO WILL BENEFIT FROM SSRIS?

3:20pm Amelia Gallitano, *University of Arizona College of Medicine*
ABNORMALITIES IN SLEEP AND THE RESPONSE TO SEDATING ANTIPSYCHOTIC MEDICATIONS UNDERSCORE A LINK BETWEEN THE IMMEDIATE EARLY GENE EGR3 AND THE 5-HT2A RECEPTOR

3:32pm Thibault Renoir, *University of Melbourne*
DISSOCIATING THE PROCOGNITIVE AND ANXIOLYTIC-LIKE EFFECTS OF EXERCISE AND ENVIRONMENTAL ENRICHMENT IN 5-HT1A RECEPTOR KNOCK-OUT MICE

3:44pm BREAK

3:56pm Renee Ryals, *Oregon Health & Science University*
5-HT1A AGONIST, 8-OH-DPAT, and 5-HT2A ANTAGONISTS, KETANSERIN AND SARPOGRELATE, PROTECT THE RETINA FROM LIGHT-INDUCED RETINOPATHY

4:08pm Ayesha Sengupta, *University of Oxford*
OPTOGENETIC INVESTIGATION OF THE SEROTONERGIC CONTROL OF THE BASOLATERAL AMYGDALA MICROCIRCUITRY

4:20pm Beate Niesler, *University of Heidelberg*
ALTERED 5-HT4 RECEPTOR SIGNALLING IN IRRITABLE BOWEL SYNDROME MAY BE CAUSED BY IMPAIRED MIRNA REGULATION

4:32pm Val Compan, *NIMES University*
HOW DOES THE BRAIN IMPLEMENT DECISION-MAKING TO EAT? IMPLICATION OF THE 5-HT4 RECEPTORS

4:44pm Massimo Pasqualetti, *University of Pisa*
EMOTIONAL INSTABILITY AND BEHAVIORAL TRANSITION IN SEROTONIN DEPLETED MICE

4:56pm John McCorvy, *University of North Carolina*
ATOMIC-LEVEL RESOLUTION OF SEROTONIN RECEPTOR SIGNALING

5:08pm Wendy Adams, *University of British Columbia*
SEROTONIN 5-HT2C RECEPTOR ANTAGONISM PARADOXICALLY IMPROVES DECISION-MAKING IN A RODENT GAMBLING TASK IN THE PRESENCE OF WIN-PAIRED CUES

5:30pm-7:30
Cascade & Rainier

Poster Session

light refreshments served and cash bar

Tuesday, July 26, 2016

8:00am-9:30am

Olympic Ballroom

Plenary Symposium 3

Chairs: Dave Nichols*, University of North Carolina and* Mark Geyer*, University California-San Diego*

Psychedelics: Out of the closet after half a century of neglect!

In the past 15 years there has been a marked resurgence of interest and research into psychedelics (aka classic serotonergic hallucinogens). This symposium will bring together experts on various aspects of the basic and clinical pharmacology of psychedelics, from electrophysiological effects on cortical neurons, to behavioral effects in rodents and the role of glutamate, to a recently-identified and unexpectedly potent anti-inflammatory action of psychedelics. Recently completed clinical studies employing psilocybin that have demonstrated remarkable efficacy in treating cancer-related psychosocial distress, as well as alcohol and nicotine dependence, will be discussed. How neurobiological effects of psychedelics lead to insight into the basis of mood disorders, and the potential of psychedelics to be new therapies for treating depression will also be discussed. This symposium should provide the audience with a broad and updated perspective on this long-neglected class of potential therapeutic agents, and should illustrate the potential of further research on psychedelics. We anticipate that federal funding agencies will soon see these substances as worthy of funding for clinical research again, allowing new investigators to enter the field, and ending the decades-long neglect of this class of fascinating and potentially medically very important substances.

8:00am-8:20am	Adam Halberstadt, *University California-San Diego* REGULATION OF HALLUCINOGEN-INDUCED BEHAVIORAL RESPONSES BY MGLU2/3 AND MGLU5 RECEPTORS
8:20am-8:40am	Charles Nichols, *LSU Health Science* PSYCHEDELICS ARE POTENT ANTI-INFLAMMATORIES WITH THERAPEUTIC EFFICACY AGAINST SPECIFIC DISEASES INCLUDING ASTHMA
8:40am-9:00am	Matthew W. Johnson*, Johns Hopkins School of Medicine* CLINICAL PSILOCYBIN STUDIES: CANCER ANXIETY/DEPRESSION AND TOBACCO ADDICTION
9:00am-9:20am	Franz X. Vollenweider, *University Zürich* PSILOCYBIN ENHANCES EMPATHY AND REDUCES SOCIAL PAIN IN HEALTHY SUBJECTS: IMPLICATION FOR MOOD DISORDERS
9:20am-9:30am	Open Discussion
9:30am-10:00am	*Coffee Break*

10:00am-11:30am

Olympic Ballroom

Plenary Symposium 4

Chairs: Patricia Gaspar, *Institute du Fer a Moulin*; Sebastian Fernandez, *Institute of Molecular and Cellular Pharmacology and* Natalia Alenina, *Max-Delbrück-Center for Molecular Medicine*

Serotonin deficiency an its endophenotypes: implications for neuropsychiatric disorders

Neuropsychiatric disorders such as depression, panic attacks, generalized anxiety, autism spectrum disorders, phobias and post-traumatic stress have been associated with decreased serotonin (5-HT) function, based on the positive effects of treatments that enhance 5-HT neurotransmission. However, it has been difficult to establish a primary role for 5-HT deficiency in these diseases, making preclinical models particularly useful. In this symposium we will present recent advances in the evaluation of genetic mouse models of hyposerotonergia. These disorders have a complex heterogeneous etiology, involving genetic predisposition and environmental factors, but thanks to these recently generated mouse models we now have a unique opportunity to evaluate the contribution of lowered 5-HT transmission to neuropsychiatry.

10:00am-10:20am Patricia Gaspar, *Institute du Fer a Moulin*
SELECTIVE MEMORY IMPAIRMENTS IN 5-HT DEFICIENT MICE: ROLE OF MEDIAN RAPHE

10:20am-10:40am Marc Caron, *Duke University*
BRAIN SEROTONIN DEFICIENCY: STRESS VULNERABILITY AND TREATMENT RESISTANT DEPRESSION-LIKE SYMPTOMS

10:40am-11:00am Natalia Alenina, *Max-Delbrück-Center for Molecular Medicine*
LACK OF SEROTONIN IN THE RAT BRAIN ALTERS BDNF EXPRESSION DURING ADULTHOOD

11:00am-11:20am Judith Homberg, *Radboud Univ Nijmegen Medical Centre*
AGGRESSIVE BEHAVIOUR AND COCAINE ADDICTION IN TPH2 KNOCKOUT RATS

11:20am-11:30am Open Discussion

11:30am-1:00pm **LUNCH**

Terrace

12:00pm-1:00pm **Business Meeting**- ISSR Council

Rainier

1:00pm-2:30pm **Parallel Symposium 3**

Cascade I & II *Chair:* Cathy Vaillancourt, *University of Quebec*

Disruption of serotonin and tryptophan metabolism in pregnancy: consequences for fetal development and programming

The placenta is essential for ensuring the growth and survival of the fetus. It also plays the key role of synthesizing serotonin (5-HT) and melatonin from a maternal tryptophan precursor; these biogenic amines are made available to the fetal brain during developmental milestones including cortical neurogenesis, cell migration and circuit formation. In addition, maternal tryptophan is metabolized through the placental kynurenine pathway, which not only confers important immune protection to the fetus but also could influence fetal brain development. Therefore, proper placental tryptophan as well as serotonin metabolism during gestation may be essential for neurodevelopment. The purpose of this symposium is to explore and present the novel data related to the role of placental serotonin and tryptophan metabolism in fetal brain development and how drugs of abuse or therapeutic drug use such as SSRIs during pregnancy and maternal serotonergic genotype may alter this molecular pathway and the fetal programming of adult mental diseases.

1:00pm-1:20pm Padma Murthi, *Monash Medical Centre*
PLACENTAL SEROTONIN SIGNALING IS DISRUPTED IN HUMAN FETAL GROWTH RESTRICTION

1:20pm-1:40pm David W Walker, *Monash Institute of Medical Research*
KYNURENINE METABOLITES ACROSS PREGNANCY AND AT PARTURITION IN PREGNANT WOMEN, AND THE EFFECTS OF LOW OXYGENATION ON TRYPTOPHAN METABOLISM IN THE HUMAN PLACENTA

1:40pm-2:00pm Francine Côte, *Institut Imagine Hôpital, Paris*
SEROTONIN PRODUCTION BY TROPHOBLAST CELLS: ROLE IN PLACENTAL AND EMBRYO DEVELOPMENT AND HEMATOPOISESIS

2:00pm-2:20pm NIDA Travel Award Recipient
Cornelia Hainer, *Max-Delbrück-Center*
BRAIN SEROTONIN DEFICIENCY AFFECTS FEMALE SEXUAL ACTIVITY

2:20pm-2:30pm Open Discussion

1:00pm-2:30pm
Olympic Ballroom

Parallel Symposium 4

Chair: Joel Bockaert, *University of Montpellier*

Novel 5-HT$_6$ receptor signalling and functions

5-HT6 receptors have been implicated in several affective disorders such as anxiety, depression, epilepsy, obesity, pain and cognition. 5-HT$_6$R antagonists improve cognitive performances in numerous behavioral tests in rodents. The inhibition of the mTOR pathway, or stimulation of neurite outgrowth may also be involved in the positive action of 5-HT$_6$R antagonists on cognitive processes. Recently, a phase II clinical trial of idalopirdine, a 5-HT$_6$R antagonist, demonstrated cognitive improvement in donepezil-treated patients with moderate Alzheimer's disease. A phase III is underway. The mechanisms by which 5-HT6 antagonists are precognitive are not well understood and will require better knowledge of their cellular localization and signalling effects. The importance of understanding the cellular localization for a fine-understanding of 5-HT6 receptor function(s) will be nicely illustrated in the striatum by J. Neumaier. Several laboratories using elegant technologies, represented in this symposium by P. Marin, H. Rhim and M. Rasenick, have demonstrated, that, in addition to Gs proteins, 5-HT6 receptors interact directly with many proteins (Fyn, mToR, cdK5, Jab1, Map1b, SNX14) and others to be revealed during the symposium. Thus, 5-HT6 receptors trigger a unique signalling and bi-functional pattern controlling neuronal migration and morphogenesis, gene transcription as well as the receptor trafficking.

1:00pm-1:20pm	Philippe Marin, *University of Montpellier* REGULATION OF 5-HT6 RECEPTOR CONSTITUTIVE ACTIVITY BY INTERACTING PARTNERS
1:20pm-1:40pm	Hyewhon Rhim, *Korea Institute of Science and Technology* CELLULAR MECHANISMS OF 5-HT6 RECEPTORS VIA ITS BINDING PROTEINS: FROM FYN TO A RNA SPLICING PROTEIN
1:40pm-2:00pm	Mark Rasenick, *University of Illinois at Chicago* LIPID RAFT TRAFFICKING OF 5HT6R AND GSA: POSSIBLE INSIGHTS TO THE BIOLOGY OF DEPRESSION
2:00pm-2:20pm	John Neumaier, *University of Washington* 5-HT6 RECEPTORS IN STRIATUM: LOCATION AND FUNCTION
2:20pm-2:30pm	Open Discussion
2:30pm-3:00pm	*Coffee Break*

3:00pm-5:00pm
Olympic Ballroom

Pioneers and Prodigies: *NIDA Travel Award Session*

Chairs: Trevor Sharp, Paul Vanhoutte and Daniel Hoyer

3:00pm	Mariano Soiza-Reilly, *INSERM/UPMC* REQUIREMENT OF SERT IN PREFRONTAL CORTICAL NEURONS TO CONTROL SYNAPTIC MATURATION IN SUBCORTICAL TARGETS.
3:15pm	Yanlin He , *Baylor University* THE SEXUAL DIMORPHIC ROLE OF A SMALL POTASSIUM CURRENT IN SEROTONIN NEURONS IN BINGE EATING, ANXIETY AND DEPRESSION
3:30pm	Rhea Fraser-Spears, *UTHSC-San Antonio* ANTIDEPRESSANT-LIKE EFFECTS OF THE "UPTAKE-2" BLOCKER, DECYNIUM 22 (D22) IN THE FLINDERS SENSITIVE LINE RAT MODEL OF DEPRESSION: AN ASSESSMENT OF ACUTE VS. CHRONIC ADMINISTRATION
3:45pm	Ben Okaty, *Harvard* TRANSCRIPTOMIC AND FUNCTIONAL DIVERSITY OF SEROTONIN NEURON SUBTYPES
4:00pm	BREAK

Pioneers and Prodigies (Continued)

4:15pm	Sudhakar Selvarar, *UTHSC-Houston* SEROTONIN AND AFFECT REGULATION IN HUMANS: A COMBINED 5-HT1A [11C]CUMI-101 PET AND FUNCTIONAL MRI STUDY
4:30pm	Jessica Babb, *Boston Childrens Hospital/Harvard* ADAPTATIONS OF THE DORSAL RAPHE IN A RAT MODEL OF DEPRESSION AND FOLLOWING ANTIDEPRESSANT TREATMENT
4:45pm	Coralie Berthoux, *University of Montpellier* COGNITIVE DEFICITS DUE TO CHRONIC CONSUMPTION OF Δ9-TETRAHYDROCANNABINOL DURING ADOLESCENCE: ROLE OF THE 5-HT6/MTOR PATHWAY
5:00pm	Mario de la Fuenta Revenga, *Virginia Commonwealth University* EPIGENETIC ROLE OF 5-HT2A RECEPTOR-DEPENDENT SIGNALING IN SCHIZOPHRENIA TREATMENT
5:15pm-5:20pm	Short Break
5:20pm-6:20pm	**Paul Vanhoutte Distinguished Lecture** "*Platelet –derived serotonin: From bad to good"* Professor Paul Vanhoutte (Sponsored by Servier)
6:20pm-6:30pm	Short Break
6:30pm-7:30pm	**Wine Tasting Reception**

8:00am-9:30am
Cascade I & II

Parallel Symposium 5

Chairs: Kathryn Commons, Boston's Children's Hospital and Lynn Kirby, Temple University School of Medicine

Heterogeneity of the ascending serotonin system: Cellular properties to behavioral repertoire

The stereotyped image of serotonin neurons projecting diffusely across the central nervous system to broadly modify behavior has been stamped into the neurotransmitter lexicon. Yet, there are many distinct disorders that differentially impair emotional behavior, physiology or cognition associated with dysfunction of the serotonin system, raising the likelihood of functional heterogeneity within the serotonin system. This symposium will explore how diverse effects on cognition, motivated behavior and addiction may be generated by cellular heterogeneity within the major ascending groups of serotonin neurons, the dorsal and median raphe (DR and MR).

8:00am-8:20am — Susan Dymecki, *Harvard Medical School*
MORE THAN MEETS THE EYE: MAPPING MOLECULAR AND FUNCTIONAL SUBTYPES OF SEROTONIN NEURONS

8:20am-8:40am — Lynn Kirby, *Temple University School of Medicine*
GABAERGIC SENSITIZATION OF THE SEROTONIN SYSTEM IN STRESS-INDUCED OPIOID RELAPSE

8:40am-9:00am — Bernat Kocsis, *Harvard Medical School*
COMPLEX EFFECT OF ASCENDING MIDBRAIN RAPHE PROJECTIONS ON OSCILLATORY SYNCHRONIZATION IN THE HIPPOCAMPUS: BEYOND THETA SUPPRESSION

9:00am-9:20am — Kathryn Commons, *Boston Children's Hospital*
CONNECTIVITY OF THE ASCENDING RAPHE: THE DEVIL IS IN THE DETAILS

9:20am-9:30am — Open Discussion

8:00am-9:30am
Olympic Ballroom

Parallel Symposium 6

Chair: Andrew McCreary*, Janssen Prevention Center*

Recent advances in the role of the serotonergic system in Parkinson's Disease?

The cardinal symptoms of Parkinson´s disease (PD) are associated with lesions of the nigrostriatal dopaminergic system, but the disease is also associated with the degeneration of serotonergic systems. Increasing evidence indicates that the serotonergic system is critically involved in the pathophysiology of motor and non-motor symptoms of PD and treatment-related side effects. The goal of this symposium is to provide an update of recent developments in the understanding of the serotonergic system and the role it plays in PD from a translational perspective, encompassing rodent, non-human primate and clinical research.

8:00am-8:20am — Veronique Sgambato-Faure, *Centre de Neuroscience Cognitive, CNRS*
NEUROCHEMICAL AND BEHAVIOURAL IMPACT OF COMBINED SEROTONERGIC AND DOPAMINERGIC LESIONS IN THE NHP, A NOVEL MODEL FOR PARKINSON'S DISEASE

8:20am-8:40am — Philippe Huot, *Université de Montréal*
SEROTONIN AND DYSKINESIA, ROADMAP TO CURRENT AND NEW THERAPIES

8:40am-9:00am — Andrew McCreary, *Janssen Prevention Center*
5-HT1A RECEPTOR AGONISTS FOR THE TREATMENT OF L-DOPA-INDUCED DYSKINESIA IN PARKINSON'S DISEASE: BIASED AND MIXED AGONISM

9:00am-9:20am — Susan Fox, *University of Toronto*
CLINICAL STUDIES USING SEROTONERGIC AGENTS IN PARKINSON'S DISEASE (PD)

9:20am-9:30am — Open Discussion

9:30am-10:00am *Coffee Break*

10:00am-11:30am Cascade I and II

Parallel Symposium 7

Chairs: Paul Fletcher, University of Toronto and Andrew Grottick, Arena Pharmaceuticals

The 5-HT$_{2C}$ receptor agonist lorcaserin as a new treatment for addictive disorders: Preclinical and clinical evidence

The 5-HT$_{2C}$ receptor has long been associated with aspects of feeding behaviour. Over the last 15 years, preclinical research has demonstrated an additional role as a modulator of the discriminative stimulus and rewarding properties of drugs of abuse, as well as drug self-administration. Recently, the selective 5-HT$_{2C}$ receptor agonist, lorcaserin (Belviq®), was approved by the FDA for the treatment of obesity. This provides the opportunity for clinical evaluation of a role for the 5-HT$_{2C}$ receptor in addictive disorders, and thus potentially an additional avenue for their treatment. The work presented in this symposium will provide a current overview of preclinical and clinical studies assessing lorcaserin as a modulator of the effects of drugs of abuse. These talks will cover studies conducted across a variety of species (rats, non-human primates and humans), as well as a range of drugs of abuse (nicotine, cocaine, and oxycodone). The overall objective of this symposium is to describe the current developments and future directions in this exciting area of serotonin-based research and therapeutics.

10:00am-10:20am Guy Higgins, *InterVivo Solutions*
PRECLINICAL EVIDENCE TO SUPPORT LORCASERIN AS A TREATMENT FOR NICOTINE DEPENDENCE

10:20am-10:40am Noelle Anastasio, *University Texas Medical Branch*
THE SEROTONIN (5-HT) 5-HT2C RECEPTOR (5-HT2CR) AGONIST LORCASERIN SUPPRESSES DRUG-SEEKING FOR COCAINE- OR OXYCODONE IN RODENTS

10:40am-11:00am Stephen Kohut, *Harvard Medical School*
MODIFICATION OF THE ABUSE-RELATED EFFECTS OF COCAINE BY LORCASERIN IN NON-HUMAN PRIMATES

11:00am-11:20am William Shanahan, *Arena Pharmaceuticals*
LORCASERIN AS A POTENTIAL TREATMENT FOR SMOKING CESSATION AND ASSOCIATED WEIGHT GAIN: RESULTS OF A RANDOMIZED, 12-WEEK, PHASE 2 TRIAL

11:20am-11:30am Open Discussion

10:00am-11:30am Olympic Ballroom

Parallel Symposium 8

Chairs: Georgianna Gould*, Univ Texas Health Sci Center-San Antonio and* Lynette Daws*, Univ Texas Health Sci Center-San Antonio*

The highs and lows of serotonin in autism spectrum disorders

Serotonin system disruptions are evident in a subset of individuals with autism spectrum disorders (ASD). Platelet hyperserotonemia was the first reported biomarker of autism, it manifests in about 30% of ASD patients. Neuroimaging and behavioral pharmacology studies also implicate serotonin system dysfunctions in ASD, although these findings do not fit neatly into a simple model. For example, decreased serotonin transporter and receptor binding, altered synthetic capacity across development, and sensitivity to tryptophan depletion were reported in different human studies. This symposium will delve into genetic and physiological mechanisms by which the serotonin system can contribute to ASD risk.

10:00am-10:20am Jeremy Veenstra-VanderWeele, *Columbia University*
IMPACT OF MATERNAL SEROTONIN TRANSPORTER GENOTYPE ON PLACENTAL SEROTONIN, FETAL FOREBRAIN SEROTONIN, AND NEURODEVELOPMENT

10:20am-10:40am Joseph Dougherty, *Washington University*
GENETIC AND ENVIRONMENTAL MANIPULATIONS OF MONOAMINES AND ALTERATIONS OF SOCIAL AND COMMUNICATIVE BEHAVIORS

10:40am-11:00am Alexandre Bonnin, *University of Southern California*

PRENATAL EXPOSURES AND PLACENTAL SEROTONIN: A POTENTIAL PATHWAY FOR THE DEVELOPMENTAL PROGRAMMING OF MENTAL DISEASES

11:00am-11:20am — NIDA Travel Award Recipient
Matthew Robson, *Florida Atlantic University*
CHRONIC INHIBITION OF P38A MAPK NORMALIZES SEROTONIN CLEARANCE, SEROTONIN RECEPTOR HYPERSENSITIVITY AND SOCIAL BEHAVIOR DEFICITS IN THE SERT ALA56 GENETIC MODEL OF AUTISM SPECTRUM DISORDER

11:20am-11:30am — Open Discussion

11:30am-1:00pm
Terrace
LUNCH

1:00pm-2:30pm
Cascade I and II

Parallel Symposium 9

Chair: Francine Côté, *Institut Imagine Hôpital, Paris*

Unexpected roles for peripheral serotonin

Since its identification, serotonin (5-HT) has attracted considerable attention towards its role as a neurotransmitter in the central nervous system. However, only a small percentage of the body's 5-HT (~5 %) is synthesized in the brain (Tph2) while most of its content (~95%) is produced in peripheral tissues (Tph1). The objective of the symposium is to study many functions played by 5-HT in non-nervous tissues and also to illustrate how analysis of 5-HT deficient animal models can lead to a better understanding of the hormonal and/or autocrine/paracrine nature of 5-HT.

1:00pm-1:20pm — Alex Green, *McMaster University*
INHIBITING PERIPHERAL SEROTONIN SYNTHESIS REDUCES OBESITY, NON-ALCOHOLIC FATTY LIVER DISEASE AND INSULIN RESISTANCE BY PROMOTING BROWN ADIPOSE TISSUE THERMOGENESIS

1:20pm-1:40 pm — Fusun Kilic, *University of Arkansas For Medical Sciences*
THE JUNCTIONAL ZONE OF PLACENTA AND SEROTONIN TRANSPORTER

1:40pm-2:00 pm — John Cryan, *University College Cork*
SEROTONIN AND THE MICROBIOTA-GUT-BRAIN AXIS

2:00pm-2:20pm — NIDA Travel Award Recipient
Laetitia Laurent, *Université Laval*
IN UTERO EXPOSURE TO VENLAFAXINE ALTERS PLACENTAL AND FETAL HEART SEROTONIN SYSTEMS INDUCING FETAL HEART DEFECTS IN THE RAT

2:20pm-2:30pm — Open Discussion

1:00pm-2:30pm
Olympic Ballroom

Parallel Symposium 10

Chairs: Harriët Schellekens, *University College Cork and* Kathryn Cunningham, *University of Texas Medical Branch*

Novel serotonergic mechanisms and functional crosstalk Shaping innovative neurotherapeutics:

This symposium will highlight molecular mechanisms of 5-HT_{1B} and 5-HT_{2C} receptor signalling which are poised to lead to innovative therapeutics targeting obesity, binge eating, substance use and potentially other neural disorders. Dr. Schellekens will present data demonstrating that the selective 5-HT_{2C}R agonist lorcaserin attenuates ghrelin-mediated food intake and sucrose preference via dimerization with GHS-R1a receptors. She will also discuss a novel 5-HT_{2C}R/dopamine (DA) D_1R dimer that inhibits D1-mediated cAMP

signalling, suggesting a potential mechanism for 5-HT-mediated attenuation of DA signalling. Dr. Neisewander will discuss the mechanisms through which dysregulated 5-HT_{1B}R function contributes to the pathology underlying cocaine use disorder and the implications for the development of effective treatments to enhance abstinence. Dr. Cunningham will discuss the discovery of small molecule positive allosteric modulators (PAMs) of the 5-HT_{2C}R. *In vitro* and *in vivo* data will be presented to suggest that 5-HT_{2C}R PAMs are a pioneering pharmacological means to selectively enhance 5-HT_{2C}R function with potential value for treatment of binge eating and psychostimulant use disorders.

1:00pm-1:20pm	Janet Neisewander, *Arizona State University* DYSREGULATION OF THE 5-HT_{1B} RECEPTOR AND ITS IMPLICATIONS FOR NOVEL TREATMENTS IN DRUG DEPENDENCE
1:20pm-1:40pm	Harriët Schellekens *University College Cork* FUNCTIONAL CROSSTALK OF THE 5-HT2C RECEPTOR IN FOOD INTAKE AND REWARD
1:40pm-2:00pm	Kathryn Cunningham, *University of Texas Medical Branch* POSITIVE ALLOSTERIC MODULATORS OF THE SEROTONIN (5-HT) 5-HT2C RECEPTOR (5-HT2CR) AS NOVEL NEUROTHERAPEUTICS
2:00pm-2:20pm	NIDA Travel Award Recipient Carrie McAllister, *University of Texas Medical Branch* INVESTIGATING A PUTATIVE PROTEIN:PROTEIN INTERACTION BETWEEN THE SEROTONIN (5-HT) 5-HT2A RECEPTOR (5-HT2AR) AND 5-HT2CR
2:20pm-2:30pm	Open Discussion
2:30pm-2:45pm	*Coffee Break*

2:45pm-4:15pm
Cascade I and II

Parallel Symposium 11

Chairs: Florian Zepf, *University of Western Australia*; Cynthia Kuhn, *Duke University*

The role of serotonin in disinhibited behaviors, related processes and psychopathologies - Neuroscientific perspectives

This symposium will comprise a selection of talks focusing on the role of serotonin (5-HT) in disinhibited behaviors, and how 5-HT-related mechanisms in the brain impact aspects of psychopathology. Evidence shows that changes in brain 5-HT synthesis can impact behaviors characterized by disinhibition, impulsivity and aggression, which all are behaviors that are highly relevant for psychiatric disorders and their underlying neurobiology. Together, the talks of this symposium, which comprise data obtained in different species, will provide an iterative overview of central nervous 5-HT function and the impact of brain 5-HT availability on pathological behaviors that have a crucial role in psychopathology. Potential clinical implications of such research findings will be discussed.

2:45pm-3:05pm	Stefano Comai, *McGill University* SEROTONIN, KYNURENINE AND AGGRESSIVE BEHAVIOR: FROM NEUROBIOLOGY TO BIOMARKERS
3:05pm-3:25pm	Florian Zepf, *University of Western Australia* TRANSLATIONAL RESEARCH FINDINGS ON THE ROLE OF SEROTONIN IN IMPULSIVE AND DISINHIBITED BEHAVIORS
3:25pm-3:45pm	Cynthia Kuhn, *Duke University* SEROTONIN AND ANXIETY IN ADOLESCENT RATS
3:45pm-4:05pm	NIDA Travel Award Recipient Caleb Browne, *University of Toronto* ELEVATED 5-HT ACTIVITY FOLLOWING CONSTITUTIVE SERT-KO AND ACUTE CITALOPRAM TREATMENT BROADLY REDUCES INCENTIVE MOTIVATION
4:05pm-4:15pm	Open Discussion

2:45pm-4:15pm

Olympic Ballroom

Parallel Symposium 12

Chairs: Jean-Claude Beique, *University of Ottawa and* Rodrigo Andrade, *Wayne State University*

Serotonin neurons in the dorsal raphe: bridging the gap between synaptic physiology, neural coding, and behavior

By means of their highly divergent and expansive axonal projections, raphe 5-HT neurons powerfully regulate the excitability of large ensembles of neural networks distributed across virtually the entire brain. In turn, these neurons receive synaptic inputs from a remarkably wide array of brain structures. Yet, we only have a superficial understanding of the cellular and network mechanisms by which the raphe subnetwork integrates and processes these inputs in order to ultimately generate the core features of 5-HT neuron's firing during behavior. This symposium will present data that addresses this knowledge gap. The work presented in this symposium adds to an emerging framework that seeks to understand how the synaptic processing rules that are operant in the raphe sub-network govern the coding features of 5-HT neurons during specific behaviors.

2:45pm-3:05pm	Jean-Claude Beique, *University of Ottawa* NETWORK ARCHITECTURE AND NEUROMODULATION OF THE LONG-RANGE DESCENDING INPUT FROM THE PREFRONTAL CORTEX TO THE DORSAL RAPHE NUCLEUS.
3:05pm-3:25pm	Samir Haj-Dahmane, *University Buffalo* TONIC ENDOCANNABINOID SIGNALING GATES HEBBIAN PLASTICITY IN THE DORSAL RAPHE NUCLEUS THROUGH PEROXISOME PROLIFERATOR-ACTIVATED RECEPTORS
3:25pm-3:45pm	Jeremiah Cohen, *Johns Hopkins School of Medicine* DORSAL RAPHE SEROTONERGIC NEURONS SIGNAL REWARDS AND PUNISHMENTS
3:45pm-4:05pm	NIDA Travel Award Recipient Alvaro Garcia, *Columbia University* SEROTONIN INPUTS TO THE BNST REDUCE ANXIETY IN A 5-HT1A RECEPTOR DEPENDENT MANNER
4:05pm-4:15pm	Open Discussion
4:15pm-4:30pm	*Break*

4:30pm-5:30pm

Olympic Ballroom

Maurice Rapport Plenary Lecture

5-HT Receptor Nomenclature: Naming names, does it matter?

Daniel Hoyer, *University of Melbourne*

(Sponsored by British Pharmacological Society)

5:30pm-6:00pm *Break*

6:00pm-10:00pm

Tillicum Cruise/Banquet and Awards

Pier 66

POSTER PRESENTATIONS

Monday, July 24, 2016

5:30pm-7:30pm

NIDA TRAVEL AWARD RECIPIENTS

Board #	Author, Title
1	Jessica Babb, *ADAPTATIONS OF THE DORSAL RAPHE IN A RAT MODEL OF DEPRESSION AND FOLLOWING ANTIDEPRESSANT TREATMENT*.
2	Coralie Berthoux, *COGNITIVE DEFICITS DUE TO CHRONIC CONSUMPTION OF Δ9-TETRAHYDROCANNABINOL DURING ADOLESCENCE: ROLE OF THE 5-HT6/MTOR PATHWAY*
3	Caleb Browne, *ELEVATED 5-HT ACTIVITY FOLLOWING CONSTITUTIVE SERT-KO AND ACUTE CITALOPRAM TREATMENT BROADLY REDUCES INCENTIVE MOTIVATION*
4	Mario de le Fuente Revenga, *EPIGENETIC ROLE OF 5-HT2A RECEPTOR-DEPENDENT SIGNALING IN SCHIZOPHRENIA TREATMENT*
5	Rheaclare Fraser-Spears, *ANTIDEPRESSANT-LIKE EFFECTS OF THE "UPTAKE-2" BLOCKER, DECYNIUM 22 (D22) IN THE FLINDERS SENSITIVE LINE RAT MODEL OF DEPRESSION: AN ASSESSMENT OF ACUTE VS. CHRONIC ADMINISTRATION*
6	Alvaro Garcia, *SEROTONIN INPUTS TO THE BNST REDUCE ANXIETY IN A 5-HT1A RECEPTOR DEPENDENT MANNER*
7	Cornelia Hainer, *BRAIN SEROTONIN DEFICIENCY AFFECTS FEMALE SEXUAL ACTIVITY*
8	Yanlin He, *THE SEXUAL DIMORPHIC ROLE OF A SMALL POTASSIUM CURRENT IN SEROTONIN NEURONS IN BINGE EATING, ANXIETY AND DEPRESSION*
9	Laetitia Laurent, *IN UTERO EXPOSURE TO VENLAFAXINE ALTERS PLACENTAL AND FETAL HEART SEROTONIN SYSTEMS INDUCING FETAL HEART DEFECTS IN THE RAT*
10	Felix Mayer, *NEW PSYCHOACTIVE SUBSTANCES AND THEIR IMPACT ON THE SEROTONERGIC SYSTEM*
11	Carrie McAllister, *INVESTIGATING A PUTATIVE PROTEIN:PROTEIN INTERACTION BETWEEN THE SEROTONIN (5-HT) 5-HT2A RECEPTOR (5-HT2AR) AND 5-HT2CR*
12	Nika Nakatsuka, *DEVELOPING SEROTONIN-SPECIFIC IN VIVO NEUROSENSORS TO LINK NEURAL SIGNALING WITH COMPLEX BEHAVIORS*
13	Ben Okaty, *TRANSCRIPTOMIC AND FUNCTIONAL DIVERSITY OF SEROTONIN NEURON SUBTYPES*

14	Emily Quentin, *THE 5-HT2B RECEPTOR IS A POSITIVE MODULATOR OF RAPHE NEURONS*
15	Meagan Quinlan, *STATE-DEPENDENT PROTEIN INERACTIONS STABLIZE HYPERACTIVE CONFORMATIONS OF THE SEROTONIN TRANSPORTER*
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