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World Sleep 2019

SEPTEMBER 20-25, 2019 • VANCOUVER, CANADA

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RESTLESS LEGS SYNDROME TRACK

FULL TRACK RUNS SATURDAY - WEDNESDAY

The RLS Track at World Sleep 2019 will include some of the biggest names in the field offering cutting-edge science and information.

23 HOURS OF RLS content have been added to the final Scientific Program. Register today to learn more about RLS research and treatment options.

REGISTRATION OPTIONS:

RLS Course (C05) $125
IRLSSG Study Group Annual Meeting & Course $165
Both Courses + Congress Registration (Member)..... $685

FOR MORE INFORMATION & ALL PRICING VISIT
worldsleepcongress.com/register

RLS TRACK OVERVIEW

TYPE	DAY	TITLE	HOURS
COURSE	Saturday	C05: Recent advances in RLS treatment	8:00am - 12:00pm
COURSE	Sunday	International Restless Legs Syndrome Study Group annual meeting & course	8:00am - 9:00pm
SYMPOSIUM	Monday	Pathophysiological insights from animal models of restless legs syndrome	3:00pm - 4:30pm
SYMPOSIUM	Tuesday	Sensory–motor network of the restless legs syndrome (RLS): Electrophysiology and imaging	10:45am - 12:15pm
KEYNOTE	Tuesday	K08: Restless legs syndrome/periodic limb movements of sleep: New insights into neurobiology and treatment	2:00pm - 2:45pm
SYMPOSIUM	Wednesday	Brain iron as a central factor in the pathophysiology of RLS: Emerging evaluation methods and therapeutic opportunities	3:00pm - 4:30pm

COURSE | SATURDAY, SEPTEMBER 21, 2019 | 8:00AM - 12:00PM | ROOM 120

C05 Recent advances in RLS treatment

Saturday, September 21, 2019 | 8:00am - 12:00 pm | Room 120
Chairs Richard Allen (United States); Diego García-Borreguero (Spain)

ADDITIONAL REGISTRATION REQUIRED

Summary
This course will start with a quick summary of the current practice of RLS and then move to new concepts in diagnosis and management of RLS, with a special focus on iron therapy, opioids, α2δ agents, glutamate modulation, augmentation, long term outcomes including impulse control disorders, new guidelines, and update on pathophysiology including insights from genetics and animal models.

8:00am – 8:05am
Introduction

OPIOIDS

8:05am – 8:35am
Biological differences of opiods: Low abuse potential of methadone
Sergi Ferre (United States)

8:35am – 9:15am
USA Clinical guidelines/experience with opioid use in RLS
Christopher Earley (United States)

9:15am – 9:55am
European guidelines/experience with opioid use in RLS including oxycodone/naloxone
Birgit Högl (Austria)

IRON

9:55am – 10:40am
IV iron: choices, advantages and limitations
Richard Allen (United States)

EXPERIMENTAL TREATMENTS: RATIONALE AND CLINICAL EXPERIENCE

10:40am – 11:20am
Adenosine
Diego García-Borreguero (Spain)

11:20am – 11:40am
Cannabinoid/Cannabis
Imad Ghorayeb (France)

11:40am – 12:00pm
Discussion – Questions to speakers

COURSE | SUNDAY, SEPTEMBER 22, 2019 | 9:00AM – 6:00PM | ROOM 220

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INTERNATIONAL RESTLESS LEGS SYNDROME STUDY GROUP

IRLSSG

INTERNATIONAL RESTLESS LEGS SYNDROME STUDY GROUP ANNUAL MEETING & COURSE

Summary

The International Restless Legs Syndrome Study Group (IRLSSG) will offer a full-day course on Sunday, September 22, 2019. Attendance is open to any sleep professional who is interested in RLS. A business meeting will be held after the course, which is only open to IRLSSG members. Registration includes the sessions, lunch and networking dinner.

Program Committee

Denise Sharon (United States); Federica Provini (Italy); Garima Shukla (Canada); Rochelle Zak (United States); Cornelius Bachman (Germany)

COST $165 | FREE TO IRLSSG MEMBERS
BECOME A MEMBER AT WWW.IRLSSG.ORG

REGISTRATION INCLUDES
SESSIONS, LUNCH & NETWORKIG DINNER

Presentation

8:00am – 08:30am
Networking and Coffee
Denise Sharon (United States); Frederica Provini (Italy); Garima Shukla (Canada); Rochelle Zak (United States) Cornelius Bachman (Germany)

8:30am – 8:45am
Welcome to Vancouver & Introductions
Denise Sharon (United States); Allan O'Bryan (United States)

ANIMAL MODELS TASK FORCE
Mauro Manconi (Switzerland); Diego García-Borreguero (Spain)

8:45am – 9:00am
Behavioral Animal Models: When phenotype matters and objective markers are missing
Jerome Siegel (United States)

9:00am – 9:15am
Critical review of outcome measures of the past models: Rationale and need of consensus
Mauro Manconi (Switzerland)

9:15am – 09:30am
Expert Consensus Guideline for an animal model of RLS: How to reach a consensus on outcome measures in animal models: Methods and preliminary results
Aaro Salminen (Germany)

9:30am – 09:45am
Update on RLS animal models and iron
Richard Allen (United States)

9:45am – 10:00am
State of the research on animal model KO for BTBD9
Yuqing Li (United States)

10:00am – 10:15am
Animals models task force summary and update
Mauro Manconi (Switzerland)

10:15am – 10:30am
Coffee break

10:30am – 10:50am
RLS: Leg movements identify arousal
Richard Allen (United States)

COURSE | SUNDAY, SEPTEMBER 22, 2019 | 9:00AM – 6:00PM | ROOM 220

INTERNATIONAL RESTLESS LEGS SYNDROME STUDY GROUP ANNUAL MEETING & COURSE

10:50am – 11:10am
Update on blood pressure and endothelial dysfunction in RLS
Yves Dauvilliers (France)

11:10am – 11:30am
New MRI findings in RLS
Ambra Stefani (Austria)

11:30am – 11:45am
A proteomic and system biology approach reveal novel biomarker signatures for RLS
Raffaele Ferri (Italy)

11:45am – 12:00pm
The lifespan course of short-interval, periodic and isolated leg movements during sleep
Raffaele Ferri (Italy)

12:00pm-12:15pm
Iron treatment
Richard Allen (United States)

12:15pm – 1:00pm
Lunch break

Neurologic co-morbidities of RLS
Rochelle Zak (United States)

1:00pm – 1:03pm
Introduction
Garima Shukla (Canada)

1:03pm – 1:23pm
Restless legs syndrome and Parkinson's disease - the dopaminergic connection and treatment challenges
Luigi Ferini-Strambi (Italy)

1:23pm – 1:40pm
Restless legs syndrome in acute neurological conditions - lessons from stroke and acute neuropathies
Garima Shukla (Canada)

1:40pm – 2:00pm
How RLS contributes to quality of life in Multiple Sclerosis
Mauro Manconi (Switzerland)

3:15pm – 3:30pm
Break

IRLSSG Projects
Denise Sharon (United States)

3:30pm – 3:45pm
Diagnostic accuracy of RLS screening tools
Stephany Fulda (Switzerland)

3:45pm – 4:00pm
Update on PLMS scoring program certification
Stephany Fulda (Switzerland)

4:00pm – 4:15pm
National RLS Opioid Registry: 1-2 year longitudinal results
John Winkelman (United States)

4:15pm – 4:30pm
Establishing RSD as a new diagnosis
Lourdes DelRosso (Peru)

4:30pm – 4:45pm
Pediatric RLS and GP Task Force update
Arthur Walters (United States)

4:45pm – 4:50pm
Ideas for projects from the attendees

4:50pm – 5:00pm
Outgoing chair summary
Diego García-Borreguero (Spain)

5:00pm – 5:15pm
Break

5:15pm – 6:00pm
Business meeting
Diego García-Borreguero (Spain)

6:00pm – 9:00pm
Dinner

Young Investigators
Arthur Walters (United States); Denise Sharon (United States); Rochelle Zak (United States); John Swieca (United States)

2:00pm – 2:15pm
Young Investigator Presentation #1

2:15pm – 2:30pm
Young Investigator Presentation #2

2:30pm – 2:45Ppm
Young Investigator Presentation #3

2:45pm – 3:00pm
Young Investigator Presentation #4

3:00pm – 3:15pm
Young Investigator Presentation #5

SYMPOSIUM | MONDAY, SEPTEMBER 23, 2019

Pathophysiological insights from animal models of restless legs syndrome

3:00pm – 4:30pm I Room 219

Chair
Yuqing Li (United States)

Summary
Iron deficiency, which produces changes in dopaminergic neurons and receptors in the substantia nigra and putamen, has been reported to correlate with restless legs syndrome (RLS). Iron Deficient rats have insomnia and severe PLM in wake and in Slow Wave Sleep. The sleep pattern and symptoms of putamen-lesioned rats and ID rats resemble human RLS patients. Using neurotoxic lesion, in vivo microdialysis HPLC analysis, microinfusion of GABAA receptor agonists and antagonists, systemic injection of histamine receptor agonist and antagonist, Western blotting, and EEG spectral analysis techniques, a comprehensive understanding of RLS pathophysiology has emerged.

Recently, genome-wide association studies were performed, and 19 genetic loci were found to impart varying increased risk of developing RLS. Among these loci, genetic regions containing the genes MEIS1 and BTBD9 represent the top two hits and have been replicated in multiple independent genetic studies. The identification of these RLS candidate genes paved the way for making genetic animal model of RLS that could potentially be more relevant in elucidating the pathophysiology of RLS and developing therapeutic treatments.

The speakers are established scientists in the RLS pathophysiology and published extensively in this and related topics.

3:00pm – 3:02pm
Introduction

3:02pm – 3:22pm
Pathophysiological insights from the iron deficient rats
Yuan-Yang Lai (United States)

3:22pm – 3:42pm
Pathophysiological studies of RLS using BTBD9 mutant animal models
Yuqing Li (United States)

3:42pm – 4:02pm
MEIS1-based animal models and the pathophysiology of RLS
Aaro Salminen (Germany)

4:02pm – 4:22pm
Use of animal models for the pathophysiological study of RLS
Mauro Manconi (Switzerland)

4:22pm – 4:30pm
Conclusion

SYMPOSIUM | TUESDAY, SEPTEMBER 24, 2019

Sensory–motor network of the restless legs syndrome (RLS): Electrophysiology and imaging

10:45am – 12:15pm I Room 119

Chair
Richard Allen (United States)

Summary
In recent years, there are most progress on pathophysiology of restless legs syndrome (RLS), especially electrophysiological and neuroimaging researches in sensory-motor disorder of RLS.

Novel imaging techniques such as functional MRI and diffusion tractography imaging have demonstrated activation or connectivity changes in the sensory–motor network. The cortex, basal ganglia, cerebellum, thalamus, and their connections seem to play a key part in abnormalities of sensory–motor processing in RLS. Also, RLS patients exhibit increased excitability of the sensorimotor cortex, a remarkable abnormality existing in early somatosensory gating control and an attenuated inhibitory interneuron network by electrophysiological magnetoencephalography. But in vivo excitability studies on motor and sensory axons of the median nerve provide evidence that the increased excitability of peripheral motoneurons but not sensory axons contributes to the pathophysiology of RLS. And RLS like tics in Tourette's syndrome, the movement disorders are modulated by internal and external sensory signals and that abnormal sensorimotor integration might alter normal motor control. Reduced short-latency afferent inhibition, a marker for sensorimotor integration, has been shown with transcranial magnetic stimulation (TMS) in RLS patients. Further, low-frequency rTMS on S1-M1 connectivity alleviated the sensory–motor complaints of RLS patients by modulating cortical excitability and inducing short-term synaptic plasticity.

This symposium will provide the electrophysiological and imaging evidence for the abnormality of sensory–motor network and gain novel insight into physiopathologic mechanism of RLS in order to better guide the treatment.

10:45am – 10:47am
Introduction

10:47am – 11:03am
fMRI: Connectivity and sensory-motor systems in RLS
Yong Won Cho (Republic of Korea)

11:03am – 11:19am
The mechanism of sensory disorder in RLS based on MEG
Yuping Wang (China)

11:19am – 11:35am
Non-invasive brain stimulation and RLS: Clinical, electrophysiological and neuroplastic effects
Giuseppe Lanza (Italy)

SYMPOSIUM | TUESDAY, SEPTEMBER 24, 2019

11:35am – 11:51am
The sensory experience of RLS and its relationship to pain, itch and Tourette's
John Winkelman (United States)

11:51am – 12:07pm
Peripheral mechanisms in restless legs syndrome
Dirk Czesnik (Germany)

12:07pm – 12:15pm
Conclusion

KEYNOTE SPEAKER

K08: Restless legs syndrome/periodic limb movements of sleep: New insights into neurobiology and treatment

2:00pm - 2:45pm I Room 212

Keynote
Diego García-Borreguero (Spain)

Summary
Restless legs syndrome (RLS) is a common chronic neurological disorder that manifests through sensorimotor symptoms that interfere with rest and sleep. It has a wide spectrum of symptom severity affecting not only quality of life but also possibly increasing cardiovascular risk.

Our knowledge on the causes and mechanisms of RLS is still limited: several susceptible single nucleotide polymorphisms such as BTBD9 and MEIS1, which are thought to be involved in embryonic neuronal development, have been reported to be associated with RLS. An increasing number of studies have suggested an important role of brain iron deficiency in the pathophysiology of RLS. Moreover, a number of recent preclinical and clinical studies suggest a hypoadenosinergic state leading to hypersensitive cortico-striatal input and leading to a striatal presynaptic hyperglutamatergic and hyperdopaminergic neurotransmission. Understanding the interplay between these dysfunctional striatal circuitries might be crucial to develop new therapeutic targets.

2:00pm – 2:02pm
Introduction

2:00pm – 2:45pm
Restless legs syndrome/periodic limb movements of sleep: New insights into neurobiology and treatment

SYMPOSIUM | WEDNESDAY, SEPTEMBER 25, 2019

Brain iron as a central factor in the pathophysiology of RLS: Emerging evaluation methods and therapeutic opportunities

3:00pm – 4:30pm I Ballroom A

Chair
Diego García-Borreguero (Spain)

Summary
A number of epidemiological and clinical studies support the notion that a brain iron dysregulation, despite normal peripheral iron, plays a key role in the pathophysiology of RLS. Such a concept is also supported by an increasing number of experimental and animal data. In addition, new, large multicentric studies show a complete, long-lasting remission of RLS symptoms for some patients when this brain iron deficit is addressed by treatment with intravenous iron.

The present symposium will discuss the latest concepts on brain iron homeostasis, along with very recent studies that show how a brain iron deficit causes an increased corticostriatal hyperexcitability by means of changes in extracelular adenosine, leading to a hyperdopaminergic and hyperglutamatergic state. It will also discuss methods to evaluate brain iron homeostasis in RLS. The Symposium will discuss most recent neuroimaging data (3 and 7 Tesla MRI), identification of critical brain regions, and the goals and safety of iron treatments. Preliminary data will be presented on transcraneal sonography of the substantia nigra which demonstrate its potential as a new clinical tool predicting benefit from intravenous iron treatment.

3:00pm – 3:02pm
Introduction

3:02pm – 3:22pm
Brain iron deficiency relation to dopamine dysfuntion and augmentation in RLS
Christopher Earley (United States)

3:22pm – 3:42pm
Brain iron dysregulation in RLS relation to brain adenosine and glutamate
Sergi Ferre (United States)

3:42pm – 4:02pm
MRI evaluation of regional brain iron relation to RLS symptoms and iron treatments
Richard Allen (United States)

4:02pm – 4:22pm
Transcraneal sonography evaluation of substantia nigra iron: A potential clinical tool to predict IV iron treatment outcome
Celia Garcia Malo (Spain)

4:22pm – 4:30pm
Conclusion