# FINAL PROGRAM

International Parkinson and
Movement Disorder Society
Pan American Section

# 3rd Pan American Parkinson's Disease and Movement Disorders Congress

**FEBRUARY 14–16, 2020**

Special Meeting Theme:
Therapeutics of Movement
Disorders in the Americas

MIAMI
FLORIDA

#pascongress

International Parkinson and Movement Disorder Society Pan American Section

# Dear Colleagues,

On behalf of the International Parkinson and Movement Disorder Society – Pan American Section (MDS-PAS), we would like to formally welcome you to Miami, FL, USA for the 3rd Pan American Parkinson's Disease and Movement Disorders Congress.

We are excited to have you participate in this important meeting, which gives us a forum to discuss relevant issues in our field that are specific to the Pan American Section. This will also be a tremendous opportunity for you to interact with colleagues from different parts of Pan America.

We hope that along with networking with colleagues, you are able to take full advantage of the exceptional Scientific Program, visit the exhibit and poster hall, participate in guided poster tours and witness the exciting Challenging Case MDS-PAS Rounds.

We welcome you to Miami and thank you for taking the opportunity to be part of this important event.

Warmest regards,

**Francisco Cardoso**
Chair, PAS Congress Scientific Program Committee

**Cynthia Comella**
Chair, MDS Pan American Section

International Parkinson and Movement Disorder Society Pan American Section

## Download the Free PAS Congress App

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## *Search for MDS Events*

The PAS Congress app is your complete resource for:

- Abstracts
- Session Evaluations
- Poster Schedules
- Speaker Information

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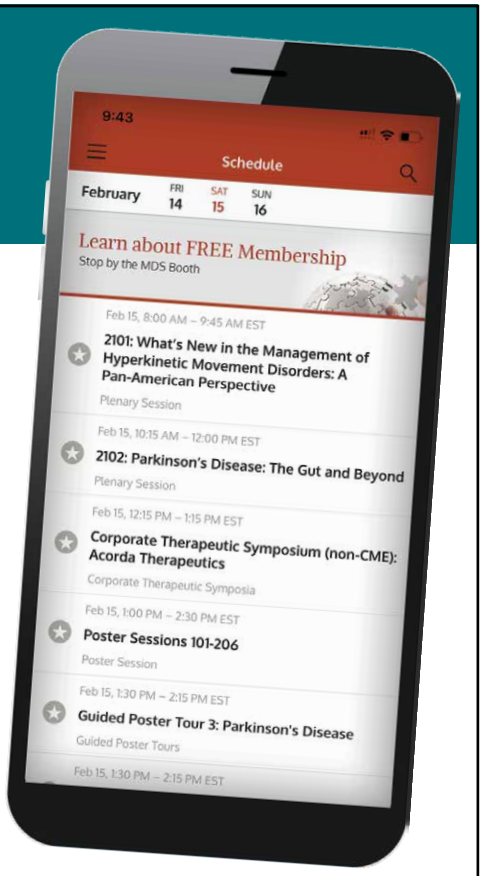

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| 8:30 | | | |
| 9:00 | | | |
| 9:30 | | | |
| 10:00 | Break 9:45 - 10:15 | Break 9:45 - 10:15 | Break 9:45 - 10:15 |
| 10:30 | Plenary Session 10:15 - 12:00 | Plenary Session 10:15 - 12:00 | Plenary Session 10:15 - 12:00 |
| 11:00 | | | |
| 11:30 | | | |
| 12:00 | Break 12:00 - 12:15 | Break 12:00 - 12:15 | END |
| 12:30 | Corporate Therapeutic Symposia 12:15 - 13:15 | Corporate Therapeutic Symposia 12:15 - 13:15 | |
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| 19:30 | | Challenging Case MDS-PAS Rounds 19:30 - 22:00 | |
| 20:00 | | | |
| 20:30 | | | |

**Special Meeting Theme:** The PAS Congress Scientific Program Committee has selected a theme that is highlighted throughout the meeting. This year's theme, *Therapeutics of Movement Disorders in the Americas* will be showcased in two Plenary Sessions, one Parallel Session and one Skills Workshop. Themed sessions are designated in the program with .

## REGISTRATION HOURS:

Thursday, February 13: 15:00 – 19:00
Friday, February 14: 7:30 – 17:00
Saturday, February 15: 7:30 – 17:00
Sunday, February 16: 7:30 – 12:00

## EXHIBIT HOURS:

Friday, February 14: 9:30 – 17:00
19:30 – 21:00
Saturday, February 15: 9:30 – 17:00
Sunday, February 16: 9:30 – 12:00

# About MDS

The International Parkinson and Movement Disorder Society (MDS) is a professional society of clinicians, scientists, and other healthcare professionals who are interested in Parkinson's disease, related neurodegenerative and neurodevelopmental disorders, hyperkinetic movement disorders, and abnormalities in muscle tone and motor control.

## Purpose, Mission and Goals

### Purpose:

The objective and mission of the Society shall be to advance the neurological sciences pertaining to Movement Disorders; to improve the diagnosis and treatment of patients; to operate exclusively for scientific, scholarly and educational purposes; to encourage research; to provide forums, such as medical journals, scientific symposia and International Congresses, for sharing ideas and for advancing the related clinical and scientific disciplines; to encourage interest and participation in the activities of the Society among healthcare and allied professionals and scientists; and to collaborate with other related professional and lay organizations.

### Mission and Goals:

To disseminate knowledge about Movement Disorders by:

- Providing educational programs for clinicians, scientists and the general public designed to advance scientific and clinical knowledge about Movement Disorders
- Sponsoring International Congresses and Symposia on Movement Disorders
- Collaborating with other international organizations and lay groups
- Publishing journals, videotapes and other collateral materials committed to high scientific standards and peer review

To promote research into causes, prevention and treatment of Movement Disorders by:

- Using the Society's influence and resources to enhance support for research
- Facilitating the dissemination of information about research
- Encouraging the training of basic and clinical scientists in Movement Disorders and related disorders

For the purposes of favorably affecting the care of patients with Movement Disorders, the Society will provide expertise, advice and guidance to:

- Regulatory agencies to assist them in the approval process of safe and effective therapeutic interventions
- The public (media) and patient support groups by informing them of new research and therapeutic advances
- Governments to assist them in the development of policies that affect support of research and patient care
- Educational efforts to assist in developing standards of training in the specialty

## MDS Officers (2019-2021)

**President**
Claudia Trenkwalder,
*Germany*

**President-Elect**
Francisco Cardoso,
*Brazil*

**Secretary**
Bastiaan Bloem,
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**Secretary-Elect**
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**Treasurer**
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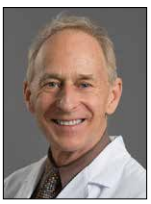

**Past-President**
Christopher Goetz,
*USA*

# About MDS-PAS

## Mission and Goals:

The mission of the MDS-PAS is to represent and promote the International Parkinson and Movement Disorder Society (MDS) in Pan America. Membership of MDS-PAS is open to all members of MDS within the Pan American region.

MDS-PAS aims to facilitate communication between clinicians and researchers in the region; disseminate updated knowledge about Movement Disorders; improve quality of life and independence of Movement Disorders patients and caregivers; and promote research in Movement Disorders within the region.

## PAS Congress Oversight Committee

Chair: Cynthia Comella, *USA*
Francisco Cardoso, *Brazil*
Henrique Ferraz, *Brazil*
Christopher Goetz, *USA*
Jennifer Goldman, *USA*

## PAS Congress Scientific Program Committee

Chair: Francisco Cardoso, *Brazil*
Helen Bronte-Stewart, *USA*
Cynthia Comella, *USA*
William Fernandez, *Colombia*
Henrique Ferraz, *Brazil*
Susan Fox, *Canada*
Steven Frucht, *USA*
Oscar Gershanik, *Argentina*
Christopher Goetz, *USA*
Jennifer Goldman, *USA*
Oksana Suchowersky, *Canada*

## MDS-PAS Executive Committee

Gabriel Arango, *Colombia*
Shilpa Chitnis, *USA*
Steven Frucht, *USA*
Pedro González-Alegre, *USA*
Anne Louise Lafontaine, *Canada*
Cecelia Peralta, *Argentina*
Maria Elisa Pimentel Piemonte, *Brazil*
Carlos Roberto Rieder, *Brazil*
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**Chair-Elect**
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**Secretary**
Alberto Espay
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**Secretary-Elect**
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**Treasurer**
William Fernandez
*Colombia*

**Treasurer-Elect**
Carlos Cosentino
*Peru*

**Past Chair**
Henrique Ferraz
*Brazil*

# Continuing Medical Education (CME) Information

## Target Audience

Clinicians, researchers, post-doctoral fellows, medical residents, medical students, allied health professionals with an interest in current clinical trends and approaches for diagnosis and treatment of movement disorders.

## Learning Objectives

1) Identify the pathophysiology and microbiology of Parkinson's disease and other movement disorders.
2) Appraise diagnostic approaches for management of Parkinson's disease and other movement disorders.
3) Evaluate pharmacological and non-pharmacological treatment options available for Parkinson's disease and other movement disorders.

## Satisfactory Completion

Your chosen sessions must be attended in their entirety. Partial credit of individual sessions is not available. If you are seeking continuing education credit for a specialty not listed in the Accreditation Statement, it is your responsibility to contact your licensing/certification board to determine course eligibility for your board requirement.

## Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME). The International Parkinson and Movement Disorder Society is accredited by the ACCME to provide continuing medical education for physicians.

## Credit Designation Statement

The International Parkinson and Movement Disorder Society designates this education activity for a maximum of 20 *AMA PRA Category 1 Credits*™. Physicians should claim only credit commensurate with the extent of their participation in the activity.

## Content Validity Statement

All recommendations involving clinical medicine in MDS activities are based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the case of patients. All scientific research referred to, reported or used in CME in support or justification of a patient care recommendations conforms to the generally accepted standards of experimental design, data collection and analysis. Activities that promote recommendations, treatment or manners of practicing medicine not within the definition of CME or are knowing to have risks or dangers that outweigh the benefits or are knowing to be ineffective in the treatment of patients do not constitute valid CME.

## Faculty Disclosures

All individuals in control of content for the 3rd PAS Congress are required to disclose all relevant financial relationships. Disclosure information is available online at www.pascongress.org.

## PAS Congress Evaluations

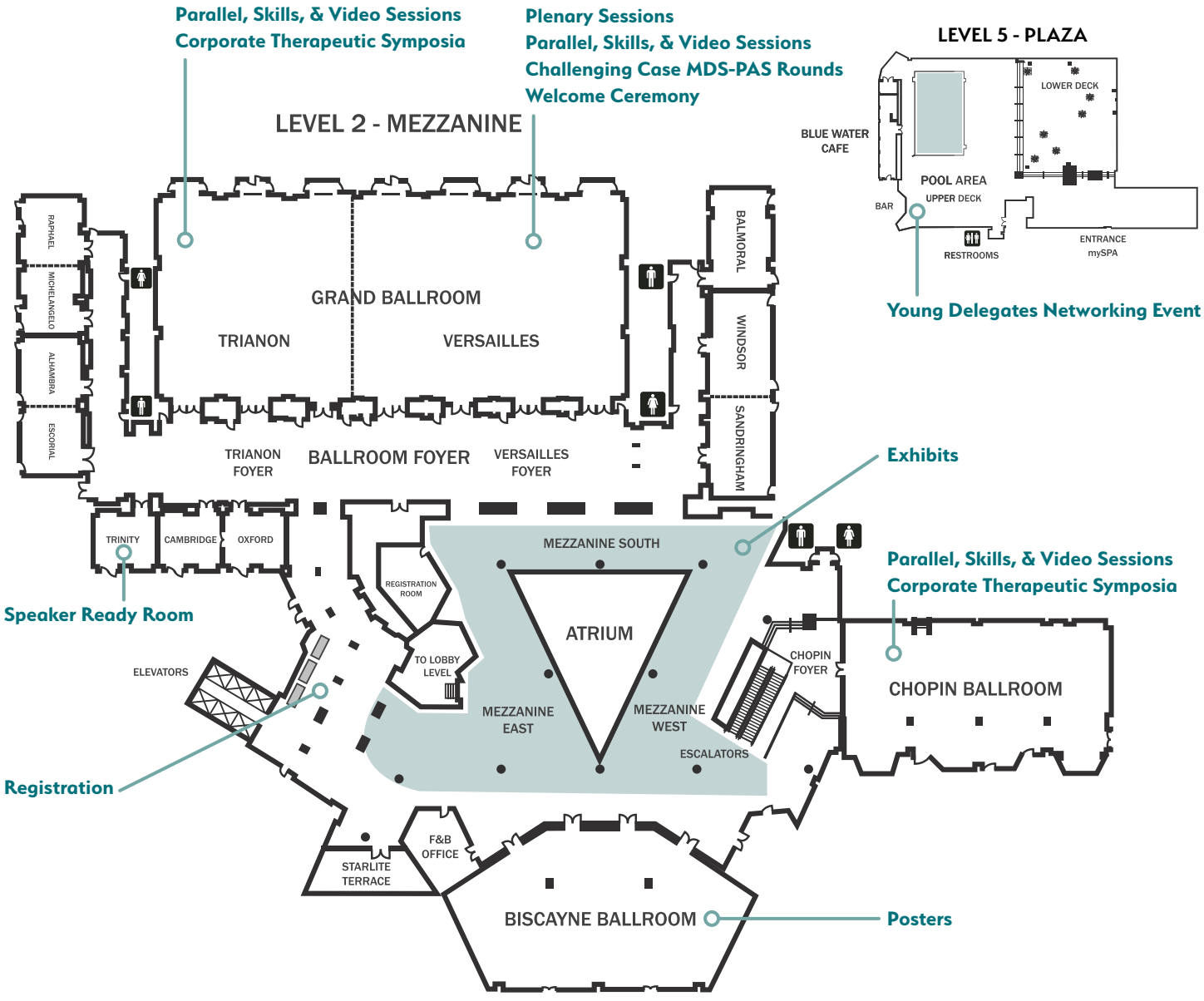
Evaluations are considered part of the course. All evaluations must be completed by Monday, February 24, 2020. Evaluations are available via the PAS Congress mobile app. Delegates must be logged in to the PAS Congress mobile app to access evaluations. Your input and comments are essential in planning future educational activities.

## Claiming CME

Please visit www.pascongress.org to claim CME for this activity. When the requested fields are completed, a CME certificate will be provided to you for download. Please be advised: 3rd PAS Congress CME must be claimed by April 30, 2020. Please contact education@movementdisorders.org with any questions.

# InterContinental Miami Floorplan

## All meeting space is located on Level 2 - Mezzanine of the InterContinental Miami



# Session Definitions

**Challenging Case MDS-PAS Rounds:**

During the Challenging Case MDS-PAS Rounds, attendees will witness clinical experts evaluate a case by phenomenology, syndromic classification and differential diagnosis. Presenters will discuss complex movement disorder cases which emphasizes unusual or challenging presentations of common diseases or common presentations of rare diseases where therapeutic strategies are critical.

**Controversies:**

This Plenary Session is designed to involve all PAS Congress attendees. Content is prepared to stimulate interest and debate among a panel of experts. Views from several angles will be addressed as discussion of pre-selected "hot" topics will be open for debate among the panelists.

**Corporate Therapeutic Symposia:**

These company-based informational sessions will provide attendees with non-CME educational opportunities to learn the latest in therapeutics and/or diagnostics.

**Guided Poster Tours:**

Guided Poster Tours will give small groups of delegates an opportunity to hear discussion on a select group of abstracts in several sub-categories.

**Parallel Sessions:**

These concurrent sessions provide an in-depth report of the latest research findings, state-of-the-art treatment options, as well as a discussion of future strategies. Parallel sessions will have evidence-based components and incorporate the "hot" issues in Parkinson's disease and other movement disorders.

**Plenary Sessions:**

These sessions provide a broad overview of the latest clinical and basic science research findings and state-of-the-art information.

**Poster Sessions:**

Poster sessions give each delegate an opportunity to view their colleagues' posters on the most current research in the field of Movement Disorders. Authors will be present for 90 minutes during scheduled poster sessions to explain their work and answer questions.

**Skills Workshops:**

These clinic-based training sessions provide an educational illustration of clinical techniques and treatment procedures through demonstrations utilizing patient videos and proper equipment to further develop practitioners' skills and knowledge within the field of treatment of movement disorders.

**Video Sessions:**

Designed to provide a broad overview of related movement disorders, the video sessions will focus on the phenomenology covering the many different kinds of movement disorders affecting the population today.

## Faculty Roles

### Speaker/Presenter:

Creates and delivers the presentation materials, and participate in the dialogue of the session.

### Session Chair:

Facilitates the learnings of the session; ensures that learning objectives are met during the presentation(s), and engages the learners as needed.

### Liaison:

Develops the session from the onset and provides guidance to ensure that the overall objectives are met.

## 3rd PAS Congress Theme:

The PAS Congress Scientific Program Committee has selected a theme that is highlighted throughout the meeting. This year's theme, *"Therapeutics of Movement Disorders in the Americas"* will be showcased in two Plenary Sessions and two Parallel Sessions.

Themed sessions are designated in the program with a  .

# Friday, February 14, 2020

## 1101 Plenary Session

### Updates on Parkinson's Disease Therapeutics in the Americas
**8:00 – 9:45**

Location: Versailles
Chairs: Henrique Ferraz, *Brazil*
Susan Fox, *Canada*

8:00 The Hope of Immune-Based Therapies for Parkinson's Disease
David Sulzer, *USA*

8:35 Drug Repurposing: A Novel Strategy
Susan Fox, *Canada*

9:10 Therapies for Monogenic Forms of Parkinson's Disease
Emilia Gatto, *Argentina*

PAS CSPC Liaison: Oscar Gershanik, *Argentina*

At the conclusion of this session, participants should be better able to:

1. Describe the scientific rationale of immune therapies for Parkinson's disease
2. Recognize how screening for existing drugs may help in the discovery of new treatments for Parkinson's disease
3. Compare treatments targeted at monogenic forms of Parkinson's disease and their potential use in the management of sporadic Parkinson's disease

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 1102 Plenary Session

### Invasive Therapies: Genes, DBS, and Parkinson's Disease
**10:15 – 12:00**

Location: Versailles
Chairs: Alfonso Fasano, *Canada*
Marcelo Merello, *Argentina*

10:15 Intracerebral Gene Therapies
Peter LeWitt, *USA*

10:50 New Directions for Deep Brain Stimulation
Helen Bronte-Stewart, *USA*

11:25 Do Invasive Therapies Treat Non-Motor Symptoms?
Marcelo Merello, *Argentina*

PAS CSPC Liaison: Helen Bronte-Stewart, *USA*

At the conclusion of this session, participants should be better able to:

1. Identify the pros and cons of different intracerebral gene therapies
2. Describe the advances of deep brain stimulation for Parkinson's disease
3. Review the evidence for efficacy of invasive therapies for non-motor symptoms

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 1203 Parallel Session

### Integrated Interdisciplinary Care of Parkinsonism Across the Americas
**14:30 – 16:30**

Location: Chopin Ballroom
Chairs: Helen Bronte-Stewart, *USA*
Janis Miyasaki, *Canada*

14:30 Care Models and Outcomes in North America
Janis Miyasaki, *Canada*

15:10 Care Models and Outcomes in Latin America
Daniela Alburquerque, *Chile*

15:50 Empowering the Person with Parkinson's Disease and their Care Team in the Americas
Jennifer Goldman, *USA*

PAS CSPC Liaison: Jennifer Goldman, *USA*

At the conclusion of this session, participants should be better able to:

1. Identify the value and efficacy of integrated care management for different stages of Parkinsonism in North America
2. Examine different models of interdisciplinary care in Latin America
3. Implement care models for Parkinsonian patients and their care team across the Americas

Recommended Audience: Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

# Friday, February 14, 2020

## 1204 Parallel Session

### Huntington's Disease: Current and Emerging Therapeutics in the Americas
**14:30 – 16:30**

Location: Trianon
Chairs: Blair Leavitt, *Canada*
Oksana Suchowersky, *Canada*

14:30 Current Approach to Treatment of Huntington's Disease Symptoms
Andrew Feigin, *USA*

15:10 Genetic Therapies: Where Are We Now?
Blair Leavitt, *Canada*

15:50 New Therapies for Huntington's Disease: What's in the Pipeline
Cristina Sampaio, *USA*

PAS CSPC Liaison: Oksana Suchowersky, *Canada*

At the conclusion of this session, participants should be better able to:
1. Review the current treatments of Huntington's disease
2. Identify the types and benefits of genetic therapies currently in research trials
3. Describe the cutting edge therapies in development for Huntington's disease and the underlying rationale

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 1205 Parallel Session

### Botulinum Toxins: Current and New Types
**14:30 – 16:30**

Location: Versailles
Chairs: Mark Hallett, *USA*
Mayela Rodriguez Violante, *Mexico*

14:30 Structure and Mechanism of Botulinum Toxins
Joseph Jankovic, *USA*

15:10 Currently Available Botulinum Toxins Across the Americas
Carlos Guerra Galicia, *Mexico*

15:50 Botulinum Toxins in Development
Mark Hallett, *USA*

PAS CSPC Liaison: Cynthia Comella, *USA*

At the conclusion of this session, participants should be better able to:
1. Describe the structure and mechanism of botulinum toxins
2. Explain the differences between currently available botulinum toxins
3. List new botulinum toxins in development

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 1306 Video Session

### Recognizing Atypical Parkinsonism in the Clinic
**17:00 – 18:30**

Location: Trianon
Stephen Reich, *USA*
Janet Rucker, *USA*

PAS CSPC Liaison: Cynthia Comella, *USA*

*In this interactive session, video cases will be presented that highlight the clinical features and the abnormal eye movements associated with atypical parkinsonism.*

At the conclusion of this session, participants should be better able to:
1. Review key clinical features that distinguish atypical parkinsonian syndromes
2. Recognize abnormalities in eye movements
3. Demonstrate appropriate examination techniques

Recommended Audience: Clinical Academicians, Practitioners, Students/Residents/Trainees

## 1307 Skills Workshop

### Pursuing a Career in Movement Disorders in the Americas
**17:00 – 18:30**

Location: Versailles
Chair: Christopher Goetz, USA
Presenters: Stanley Fahn, USA
Mayela Rodriguez Violante, Mexico
Caroline Tanner, USA

PAS CSPC Liaison: Christopher Goetz, *USA*

*In this interactive session, the delegates will be able to discuss the experiences of the more senior faculty in the development of their careers.*

At the conclusion of this session, participants should be better able to:
1. Prepare for the work-life challenges that accompany a successful movement disorder career
2. Integrate skills needed for both personal and collaborative achievement in movement disorders
3. Balance short, mid, and long-term goals of success in movement disorders

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 1308 Video Session

### Autoimmune Movement Disorders: A Universe in Expansion
**17:00 – 18:30**

Location: Chopin Ballroom
Laura Silveira-Moriyama, *Brazil*
Harvey Singer, *USA*

PAS CSPC Liaison: Francisco Cardoso, *Brazil*

*In this interactive session, a case based approach will highlight the clinical features of classical as well as recently recognized autoimmune movement disorders and discuss their management.*

At the conclusion of this session, participants should be better able to:
1. Describe the phenomenology of classical autoimmune movement disorders
2. Recognize recently described autoimmune movement disorders
3. Discuss the management of the autoimmune movement disorders

Recommended Audience: Clinical Academicians, Practitioners, Students/Residents/Trainees

# Saturday, February 15, 2020

## 2101 Plenary Session

### What's New in the Management of Hyperkinetic Movement Disorders: A Pan American Perspective
**8:00 – 9:45**

Location: Versailles
Chairs: Cynthia Comella, *USA*
Jose Ricardo López-Contreras, *El Salvador*

8:00 Dystonia
Cynthia Comella, *USA*

8:35 Infectious Hyperkinetic Disorders
Francisco Cardoso, *Brazil*

9:10 Drug-Induced Hyperkinetic Movement Disorders
Stewart Factor, *USA*

PAS CSPC Liaison: Francisco Cardoso, *Brazil*

At the conclusion of this session, participants should be better able to:
1. Discuss new treatments for dystonia
2. Describe management strategies of infectious and parainfectious hyperkinetic disorders
3. Summarize current treatment options for tremor and tardive dyskinesia

Recommended Audience: Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 2102 Plenary Session

### Parkinson's Disease: The Gut and Beyond
**10:15 – 12:00**

Location: Versailles
Chairs: Oscar Gershanik, *Argentina*
Kathleen Shannon, *USA*

10:15 Leaky Gut and Neurotoxins as Drivers of Parkinson's Disease Onset
Kathleen Shannon, *USA*

10:50 Gastrointestinal Manifestations and Motor Symptom Onset
Maria Cersosimo, *Argentina*

11:25 Beyond the Gut: Where Else Must We Search?
Charles Adler, *USA*

PAS CSPC Liaison: Christopher Goetz, *USA*

At the conclusion of this session, participants should be better able to:
1. Describe the anatomical and physiological changes in the gut of patients with Parkinson's disease
2. List the array of gastrointestinal manifestations of Parkinson's disease
3. Contrast the gastrointestinal system with additional potential portals of entry (olfactory, pulmonary, or other systems), for neurotoxins into the brain

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 2203 Parallel Session

### Rare Movement Disorders Not to Miss
**14:30 – 16:30**

Location: Trianon
Chairs: Steven Frucht, *USA*
Helio Teive, *Brazil*

14:30 Metabolic Disorders Presenting as Movement Disorders
Jeff Waugh, *USA*

15:10 Movement Disorders with Metals in the Brain: The Pan American Experience
Helio Teive, *Brazil*

15:50 Recognizing Treatable Forms of Pediatric Parkinsonism and Dystonia
Naomi Lubarr, *USA*

PAS CSPC Liaison: Steven Frucht, *USA*

At the conclusion of this session, participants should be better able to:
1. Describe metabolic disorders presenting as movement disorders
2. Identify movement disorders related to metal depositions in the brain
3. Recognize treatable forms of pediatric parkinsonism and dystonia

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

# Saturday, February 15, 2020

## 2204 Parallel Session

### Ethnic and Regional Topics in Movement Disorders
**14:30 – 16:30**

Location: Versailles
Chairs: William Fernandez, *Colombia*
Carlos Singer, *USA*

14:30 The First GWAS in Latino Parkinson's Disease Patients: The LARGE-PD Consortium
Ignacio Mata, *USA*

15:10 Hereditary Movement Disorders in People of African Ancestry
Ruth Walker, *USA*

15:50 Spinocerebellar Ataxias in Latin America
Mario Cornejo Olivas, *Peru*

PAS CSPC Liaison: Oscar Gershanik, *Argentina*

At the conclusion of this session, participants should be better able to:
1. Describe the efforts to understand the genetic component of Parkinson's disease in Latinos
2. Describe the spectrum of hereditary movement disorders in people of African ancestry
3. Recognize the prevalence and phenotypes of different spinocerebellar ataxias in Latin America

Recommended Audience: Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 2205 Parallel Session

### Biomarkers in Parkinsonism
**14:30 – 16:30**

Location: Chopin Ballroom
Chairs: Maria Cecilia Peralta, *Argentina*
Antonio Strafella, *Canada*

14:30 Clinical Biomarkers for Prodromal Parkinson's Disease
Ron Postuma, *Canada*

15:10 Fluid and Tissue Biomarkers to Diagnose Parkinsonian Disorders
David Standaert, *USA*

15:50 Imaging Biomarkers to Distinguish Among Parkinsonian Disorders
Maria Cecilia Peralta, *Argentina*

PAS CSPC Liaison: Susan Fox, *Canada*

At the conclusion of this session, participants should be better able to:
1. Define biomarkers that may be useful in early diagnosis or risk of developing Parkinson's disease
2. Identify the challenges in distinguishing types of parkinsonian disorders with current serum biomarkers
3. Determine the value of imaging biomarkers in the differential diagnosis of Parkinsonism

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Students/Residents/Trainees

## 2306 Skills Workshop

### Challenges in Optimizing Deep Brain Stimulation
**17:00 – 18:30**

Location: Versailles
Alfonso Fasano, *Canada*
Lauren Schrock, *USA*

PAS CSPC Liaison: Helen Bronte-Stewart, *USA*

*In this interactive session, the complications and adverse effects of DBS will be highlighted and discussed.*

At the conclusion of this session, participants should be better able to:
1. List risks for intra-operative complications of deep brain stimulation procedures
2. Recognize and manage potential complications of combined medical and deep brain stimulation therapy in the early stages after DBS activation
3. Identify the adverse effects associated with sub-optimal lead placement in deep brain stimulation and strategies to minimize these

Recommended Audience: Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 2307 Video Session

### Recognizing Functional Movement Disorders
**17:00 – 18:30**

Location: Trianon
Aikaterini Kompoliti, *USA*
Sarah Lidstone, *Canada*

PAS CSPC Liaison: William Fernandez, *Colombia*

*In this interactive session, the diagnosis, examination techniques and management of functional movement disorders will be highlighted.*

At the conclusion of this session, participants should be better able to:
1. Visually identify movement patterns of functional disorders
2. Demonstrate the exploratory maneuvers to detect functional movement disorders
3. Review the management of functional disorders

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Students/Residents/Trainees

## 2308 Skills Workshop

### Case-Based Approaches to Pediatric Movement Disorders
**17:00 – 18:30**

Location: Chopin Ballroom
Marcelo Masruha, *Brazil*
Jill Ostrem, *USA*

PAS CSPC Liaison: Steven Frucht, *USA*

*In this interactive session, a spectrum of pediatric movement disorders will be highlighted with the emphasis on diagnosis and treatment.*

At the conclusion of this session, participants should be better able to:
1. Recognize the phenotypic spectrum of movement disorders presenting in childhood
2. Decide the appropriate medical treatment
3. Select the appropriate interventional treatments in pediatric movement disorders

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## Challenging Case MDS-PAS Rounds

**19:30 – 22:00**

Location: Versailles
Chair: Alberto Espay, *USA*

MDS Experts: William Fernandez, *Columbia*
Rachel Saunders-Pullman, *USA*
Oksana Suchowersky, *Canada*

PAS CSPC Liaison: Francisco Cardoso, *Brazil*
Cynthia Comella, *USA*

*Witness clinical experts present and discuss a case by phenomenology, syndromic classification and differential diagnosis.*

Recommended Audience: Basic scientists, Clinical academicians, Practitioners, Students/Residents/Trainees

# Sunday, February 16, 2020

## 3101 Plenary Session

### Hot Topics in Movement Disorders: The Pan American Perspective

**8:00 – 9:45**

Location: Versailles
Chairs: E. Ray Dorsey, *USA*
Irene Litvan, *USA*

8:00 Neuroprotection Therapies for Parkinson's Disease: "One Drug Does Not Fit All"
Anthony Lang, *Canada*

8:35 Gene Editing as a Therapy for Movement Disorders
Patricia De Carvalho Aguiar, *Brazil*

9:10 What is the Role of Telemedicine in Movement Disorders?
E. Ray Dorsey, *USA*

PAS CSPC Liaison: Susan Fox, *Canada*

At the conclusion of this session, participants should be better able to:

1. Discuss the challenges of developing disease-modifying therapies due to the heterogeneity of Parkinson's disease
2. Recognize hereditary movement disorders that could potentially be treated with gene editing techniques
3. Evaluate the benefits and challenges of telemedicine in the management of movement disorders

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

## 3102 Plenary Session

### Controversies in Movement Disorders

**10:15 – 12:00**

Location: Versailles
Chairs: Henrique Ferraz, *Brazil*
Christopher Goetz, *USA*

10:15 Is it Useful in Clinical Practice to Identify Prodromal Parkinson's Disease? (YES)
Matthew Stern, *USA*

Is it Useful in Clinical Practice to Identify Prodromal Parkinson's Disease? (NO)
Oscar Gershanik, *Argentina*

10:50 Cell-Based Therapy: Ready for Prime-Time? (YES)
Jeffrey Kordower, *USA*

Cell-Based Therapy: Ready for Prime-Time? (NO)
Steven Frucht, *USA*

11:25 Transcranial Focused Ultrasound: Is This the Next Break-Through Treatment for Parkinson's Disease?(YES)
Andres Lozano, *Canada*

Transcranial Focused Ultrasound: Is This the Next Break-Through Treatment for Parkinson's Disease? (NO)
William Jeffrey Elias, *USA*

PAS CSPC Liaison: Henrique Ferraz, *Brazil*

At the conclusion of this session, participants should be better able to:

1. Decide whether identifying prodromal Parkinson's disease is clinically useful or not, taking into account scientific and patient-based considerations
2. Examine the positive and negative aspects of cell based-therapy in Parkinson's disease
3. Identify the advantages and disadvantages of focused ultrasound as a treatment for Parkinson's disease

Recommended Audience: Basic Scientists, Clinical Academicians, Practitioners, Non-Physician Health Professionals, Students/Residents/Trainees

# Faculty Listing

**Charles Adler,** *USA*
2102

**Daniela Alburquerque,** *Chile*
1203

**Helen Bronte-Stewart,** *USA*
1102, 1203

**Francisco Cardoso,** *Brazil*
2101

**Maria Cersosimo,** *Argentina*
2102

**Cynthia Comella,** *USA*
2101

**Mario Cornejo-Olivas,** *Peru*
2204

**Patricia De Carvalho Aguiar,** *Brazil*
3101

**E. Ray Dorsey,** *USA*
3101

**William Elias,** *USA*
3102

**Alberto Espay,** *USA*
Challenging Case MDS-PAS Rounds

**Stewart Factor,** *USA*
2101

**Stanley Fahn,** *USA*
1307

**Alfonso Fasano,** *Canada*
1102, 2306

**Andrew Feigin,** *USA*
1204

**William Fernandez,** *Colombia*
2204, Challenging Case MDS-PAS Rounds

**Henrique Ferraz,** *Brazil*
1101, 3102

**Susan Fox,** *Canada*
1101

**Steven Frucht,** *USA*
2203, 3102

**Emilia Gatto,** *Argentina*
1101

**Oscar Gershanik,** *Argentina*
2102, 3102

**Christopher Goetz,** *USA*
1307, 3102

**Jennifer Goldman,** *USA*
1203

**Carlos Guerra Galicia,** *Mexico*
1205

**Mark Hallett,** *USA*
1205

**Joseph Jankovic,** *USA*
1205

**Aikaterini Kompoliti,** *USA*
2307

**Jeffrey Kordower,** *USA*
3102

**Anthony Lang,** *Canada*
3101

**Blair Leavitt,** *Canada*
1204

**Peter LeWitt,** *USA*
1102

**Sarah Lidstone,** *Canada*
2307

**Irene Litvan,** *USA*
3101

**Jose Lopez-Contreras,** *El Salvador*
2101

**Andres Lozano,** *Canada*
3102

**Naomi Lubarr,** *USA*
2203

**Marcelo Masruha,** *Brazil*
2308

**Ignacio Mata,** *USA*
2204

**Marcelo Merello,** *Argentina*
1102

**Janis Miyasaki,** *Canada*
1203

**Jill Ostrem,** *USA*
2308

**Maria Peralta,** *Argentina*
2205

**Ron Postuma,** *Canada*
2205

**Stephen Reich,** *USA*
1306

**Mayela Rodriguez Violante,** *Mexico*
1205, 1307

**Janet Rucker,** *USA*
1306

**Cristina Sampaio,** *USA*
1204

**Rachel Saunders-Pullman,** *USA*
Challenging Case MDS-PAS Rounds

**Lauren Schrock,** *USA*
2306

**Kathleen Shannon,** *USA*
2102

**Laura Silveira-Moriyama,** *Brazil*
1308

**Carlos Singer,** *USA*
2204

**Harvey Singer,** *USA*
1308

**David Standaert,** *USA*
2205

**Matthew Stern,** *USA*
3102

**Antonio Strafella,** *Canada*
2205

**Oksana Suchowersky,** *Canada*
1204, Challenging Case MDS-PAS Rounds

**David Sulzer,** *USA*
1101

**Caroline Tanner,** *USA*
1307

**Helio Teive,** *Brazil*
2203

**Ruth Walker,** *USA*
2204

**Jeff Waugh,** *USA*
2203

# Award Information

## 2020 MDS-PAS Leadership Award

In recognition as an outstanding leader and contributor in the field of Movement Disorders within the MDS-Pan American Section, the PAS Congress Scientific Program Committee is pleased to honor Christopher G. Goetz, MD, with the 2020 MDS-PAS Leadership Award.

Christopher G. Goetz, MD, is Professor of Neurological Sciences and Professor of Pharmacology at Rush University, Chicago, IL, USA. He has served as Co-Editor in Chief of *Movement Disorders*, the Chair of the Task Force for the Development of the MDS-UPDRS, the MDS Rating Scales Task Force, and served as a member of the MDS International Executive Committee. He served as Treasurer of MDS from 2013-2015 and President of MDS from 2017-2019.

Dr. Goetz has also had leadership roles in the American Academy of Neurology and the American Neurological Association, and is a member of the French Neurological Society. His research focus is on hallucinations in Parkinson's disease and measurement tools used in the assessment of movement disorders.

## 2020 PAS Congress Travel Grant Award Recipients

Maria-Elena Avale, *Argentina*
Cristian Calandra, *Argentina*
Andrea Paola Camargo, *Colombia*
Thiago Cardoso Vale, *Brazil*
Talyta Cortez Grippe, *Brazil*
Ahmed Draoui, *Morocco*
Ganesh Elumalai, *Guyana*
Juan Ferrario, *Argentina*
Lilian Gobbi, *Brazil*
Natalia Gonzalez Rojas, *Argentina*
Wael Ibrahim, *Egypt*
Joyce Lima, *Brazil*
Jorge Jesus Llibre Guerra, *Cuba*
Daniela Munoz, *Chile*
Rachel Paes Guimaraes, *Brazil*
Sergio Rodriguez Quiroga, *Argentina*
Irene Taravini, *Argentina*
Tamine Teixeira Da Costa Capato, *Brazil*
Juan Diego Vargas Jaramillo, *Colombia*
Lucia Zavala, *Argentina*

## 2020 PAS Congress Fellowship Scholarship Recipients

Rodolfo Arturo Abundes Corona, *Mexico*
M. Waseem Anjum, *USA*
Omar Cardenas, *Mexico*
Maria Contreras, *Chile*
Deepa Dash, *Canada*
Emmanuel Jesús Escobar Valdivia, *Mexico*
André Felipe Ferreira de Souza, *Brazil*
Milagros Galecio-Castillo, *Peru*
Chandler Gill, *USA*
Viviana Giselle Gomez, *Argentina*
Pavel Hernandez, *Argentina*
Fanny Vanessa Herrera Rodriguez, *Mexico*
Adriana Juárez, *Mexico*
Alana Kirby, *USA*
Abhimanyu Mahajan, *USA*
Yamil Matuk, *Mexico*
Adeel Memomn, *USA*
Shahnaz Miri, *USA*
Fernanda Miyahara, *Brazil*
Leila Montaser, *USA*
Lynda Nwabuobi, *USA*
Roshni Patel, *USA*
Laura Pesantez Pacheco, *USA*
Prarthana Prakash, *USA*
Moises Rubio-Hernandez, *Mexico*
Maria Constanza Segamarchi, *Argentina*
Eduardo Silva, *Brazil*
Daniel Vargas, *Mexico*
Anant Wadhwa, *USA*
Gabriela Ziegler, *Argentina*

# Guided Poster Tours

Location: Biscayne Ballroom, Level 2
Meet at the first listed poster to join the tour.
Guided Poster Tours include the top scoring abstracts in the following categories:

## Friday, February 14, 2020 (13:30 - 14:15)

### GPT 1: Clinical Trials and Pharmacology
### Leader: Henrique Ferraz

| Poster # | Poster Title |
|---|---|
| 30 | A Phase 2 Study of the Efficacy, Durability, and Safety of Ampreloxetine (TD-9855), a Norepinephrine Reuptake Inhibitor, Given Once-Daily to Treat Symptomatic Neurogenic Orthostatic Hypotension |
| 32 | Improvements in Dyskinesia with Levodopa-Carbidopa Intestinal Gel in Advanced Parkinson's Disease Patients in a 'Real-World' Study: Interim Results of the Multinational DUOGLOBE Study With up to 24 Months Follow-Up |
| 39 | Nilotinib Increases Brain Dopamine and Lowers CSF Tau and Oligomeric Alpha-Synuclein in Parkinson's Disease |
| 43 | A Randomized Clinical Trial of Multimodal Balance Training with Rhythmical Cues: Effects on Freezing of Gait in Parkinson's Disease |
| 44 | Efficacy of Melatonin for Sleep Disorders in Parkinson's Disease |

### GPT 2: Genetics and Hyperkinesias
### Leader: Oksana Suchowersky

| Poster # | Poster Title |
|---|---|
| 12 | Non-Motor Symptoms in Patients with Primary Craniocervical Dystonia |
| 14 | Overwhelming Genetic Heterogeneity and Exhausting Molecular Diagnostic Process in Chronic and Progressive Ataxias: Facing Up with an Algorithm, a Gene, a Panel at the Same Time |
| 22 | Gender Influences on Anosognosia Severity in Huntington's Disease |
| 25 | Huntington Disease (HD)-Like Presentation of Spinocerebellar Ataxia 17 (SCA17) in a Patient with 45 CAG Repeats |
| 80 | Novel LRRK2 Variants Contributing to Parkinson Disease in Hispanic Patients |

## Saturday, February 15 (13:30 - 14:15)

### GPT 3: Parkinson's Disease
### Leader: William Fernandez

| Poster # | Poster Title |
|---|---|
| 132 | Male Gender and the Risk of Parkinson's Disease in an Essential Tremor Population |
| 140 | Barriers to Exercise in Patients with Parkinson's Disease |
| 143 | Is There a Freezing of Gait Gene in Parkinson's Disease (PD)? |
| 147 | Efficacy and Safety of Once-Daily Opicapone 50 mg in Patients with Parkinson's Disease and Motor Fluctuations: Pooled Analysis of Two Randomized, Double-Blind, Placebo-Controlled Studies |

### GPT 4: Parkinson's Disease
### Leader: Jennifer Goldman

| Poster # | Poster Title |
|---|---|
| 148 | Comparison of Selected Non-Motor Symptoms Between PD Subtypes: Tremor Dominant vs Postural Instability/ Gait Difficulty Groups |
| 151 | Delay in Diagnosis of Parkinson's Disease: Who is to Blame? |
| 157 | Home Videos Made on Smart Phone Supplements Paper Based Diary for Correct Identification of Motor Complications in Parkinson's Disease |
| 170 | Efficacy of Transcranial Direct Current Stimulation in Patients with Parkinson's Disease: A Systematic Review and Meta-Analysis |

# Poster Sessions

Poster sessions give each delegate an opportunity to view posters on the most current research in the field of Movement Disorders. Authors will be present for 90 minutes during scheduled poster sessions to explain their work and answer questions. All accepted abstracts are presented as a printed poster at the 2020 PAS Congress.

## Poster Session Schedule

### Friday, February 14, 2020

Poster Session: 13:00 - 14:30
Poster Viewing Hours: 8:00 – 16:30
Location: Biscayne Ballroom

| | |
|---|---|
| 1 – 12 | Dystonia |
| 13 – 20 | Ataxia |
| 21 – 24 | Huntington's Disease |
| 25 – 26 | Choreas (Non-Huntington's Disease) |
| 27 – 28 | Myoclonus |
| 29 – 44 | Clinical Trials and Pharmacology |
| 45 – 46 | Clinicopathological Correlations |
| 47 – 48 | Drug-Induced Movement Disorders |
| 49 | Behavioral Disorders |
| 50 – 52 | Cognition and Cognitive Disorders |
| 53 – 58 | Dyskinesia |
| 59 – 62 | Non-Motor Symptoms |
| 63 | Neuropharmacology |
| 64 – 67 | Neurodegeneration |
| 68 – 76 | Neuroimaging and Neurophysiology |
| 77 – 83 | Genetics |
| 84 – 87 | Health Professional (Non-Physician) Focus |
| 88 – 92 | Epidemiology |
| 93 | Emerging and Experimental Therapeutics |
| 94 – 98 | Education in Movement Disorders |
| 99 – 100 | Other |

### Saturday, February 15, 2020

Poster Session: 13:00 - 14:30
Poster Viewing Hours: 8:00 – 16:30
Location: Biscayne Ballroom

| | |
|---|---|
| 101 – 111 | Surgical Therapy (Parkinson's Disease and Other Movement Disorders) |
| 112 – 116 | Therapy in Movement Disorders |
| 117 – 121 | Therapeutics of Movement disorders in the Americas (Theme) |
| 122 – 126 | Quality of Life/Caregiver Burden in Movement Disorders |
| 127 – 128 | Rare Genetic and Metabolic Diseases |
| 129 – 183 | Parkinson's Disease |
| 184 – 188 | Parkinsonism (Secondary and Parkinsonism-Plus) |
| 189 – 190 | Tics/Stereotypies |
| 191 – 196 | Tremor |
| 197 – 199 | Pediatric Movement disorders |
| 200 | Sleep Disorders and Restless Legs Syndrome |
| 201 – 203 | Psychiatric Manifestations |
| 204 | Phenomenology and Clinical Assessment of Movement Disorders |
| 205 – 206 | Rating Scales |

**Late-Breaking Abstracts will be presented from 13:30 – 14:30 on Saturday, February 15, 2020.**

## Abstract Publication

All regular accepted abstracts are published as an electronic supplement to the *Movement Disorders Clinical Practice* journal, online edition, as of February 14, 2020. Please visit www.movementdisorders.org to access *Movement Disorders Clinical Practice*, where you can download a PDF of accepted abstracts.

Late-Breaking Abstracts are published as an online PDF on the 2020 PAS Congress website at www.pascongress.org and are available for download as of February 14, 2020.

# Abstracts by Topic

## Ataxia

13 Cerebellar Ataxias: Clinical and Molecular Description – A Case Series in a Center of Buenos Aires
Gonzalez Rojas, Natalia; Cesarini, Martin; Da Prat de Magalhaes, Gustavo Andres; Etcheverry, Jose Luis; Gatto, Emilia (La Plata, Argentina)

14 Overwhelming Genetic Heterogeneity and Exhausting Molecular Diagnostic Process in Chronic and Progressive Ataxias: Facing Up with an Algorithm, a Gene, a Panel at the Same Time
Rodriguez Quiroga, Sergio; Perez Maturo, Josefina; Zavala, Lucia; Vega, Patricia; Medina, Nancy; González Morón, Dolores; Salinas, Valeria; Rosales, Julieta; Cordoba, Marta; Arakaki, Tomoko; Garretto, Nélida; Kauffman, Marcelo (Buenos Aires, Argentina)

15 Outcomes After Weighted Lumbosacral Orthosis (LSO) and Exercises in Patients with Progressive Cerebellar Ataxia
Mele, Sabrina (Philadelphia, PA, USA)

16 Adult Ataxia-Telangiectasia: A Case Report and Description of Genetic and Functional Findings
Perez Maturo, Josefina; Zavala, Lucia; Vega, Patricia; González Morón, Dolores; Medina, Nancy; Gonzalez Cid, Marcela; Rodriguez Quiroga, Sergio; Kauffman, Marcelo (Beunos Aires, Argentina)

17 Neuronal Ceroid Lipofuscinosis Type 2 as a Form of Early Onset Ataxia: Another Potentially Treatable Cause in the Spectrum of Recessive Ataxias
Zavala, Lucia; Perez Maturo, Josefina; Vega, Patricia; González Morón, Dolores; Rodriguez Quiroga, Sergio; Kauffman, Marcelo (Buenos Aires, Argentina)

18 Novel Recessive NDUFS3 Mutation Causing Leigh's Syndrome with Dystonia, Tremor and Ataxia
Barton, Brandon; Toro, Camilo (Chicago, IL, USA)

19 Prevalence and Distribution of Autosomal Dominant Spinocerebellar Ataxia at the University of Miami
Margolesky, Jason; Jordan, Elizabeth; Marmol, Sarah; Feldman, Matthew; Shpiner, Danielle; Luca, Corneliu; Moore, Henry; Singer, Carlos (Miami, FL, USA)

20 Atypical Presentation of a Patient with SCA-2
Ziegler, Gabriela; Hernandez, Pavel; Rodriguez Quiroga, Sergio; Arakaki, Tomoko; Zavala, Lucia; Perez Maturo, Josefina; Medina, Nancy; Kauffman, Marcelo; Garretto, Nélida (Buenos Aires, Argentina)

## Behavioral Disorders

49 The Impact of Deep Brain Stimulation in Parkinson Disease for Depression, Quality of Life, Activities of Daily Living, and Subjective Memory
Rakhimov, Feruzjon (Tashkent, Uzbekistan)

## Choreas (Non-Huntington's Disease)

25 Huntington Disease (HD)-like Presentation of Spinocerebellar Ataxia 17 (SCA17) in a Patient with 45 CAG Repeats
Gill, Chandler; Fleisher, Jori; Afshari, Mitra (Chicago, IL, USA)

26 Case Report: Pseudoatetosis as Manifestation of the Vitamin B12 Deficit
Vargas Jaramillo, Juan (Bogota, Colombia)

## Clinical Trials and Pharmacology

29 Pharmacokinetics of Isradipine in Participants with Parkinson's Disease from the Phase 3 STEADY-PD Clinical Trial
Venuto, Charles; Surmeier, D. James; Watts, Arthur; Biglan, Kevin; Hauser, Robert; Henderson, Sue; Hodgeman, Karen; Holloway, Robert; Kayson, Elise; Kinel, Daniel; Lang, Anthony; Lungu, Codrin; Lowell, Jillian; Oakes, David; Sharma, Saloni; Shoulson, Ira; Tarolli, Christopher; Simuni, Tatyana (Rochester, NY, USA)

30 A Phase 2 Study of the Efficacy, Durability, and Safety of Ampreloxetine (TD-9855), a Norepinephrine Reuptake Inhibitor, Given Once-Daily to Treat Symptomatic Neurogenic Orthostatic Hypotension
Kaufmann, Horacio; Biaggioni, Italo; Panneerselvam, Ashok; Haumann, Brett; Vickery, Ross (New York, NY, USA)

31 Effects of Once-Daily Ampreloxetine (TD-9855), a Norepinephrine Reuptake Inhibitor, on Blood Pressure in Subjects with Symptomatic Neurogenic Orthostatic Hypotension
Kaufmann, Horacio; Biaggioni, Italo; Panneerselvam, Ashok; Haumann, Brett; Vickery, Ross (New York, NY, USA

32 Improvements in Dyskinesia with Levodopa-Carbidopa Intestinal Gel in Advanced Parkinson's Disease Patients in a 'Real-World' Study: Interim Results of the Multinational DUOGLOBE Study With up to 24 Months Follow-Up
Standaert, David; Kovács, Norbert; Pontieri, Francesco; Aldred, Jason; Bourgeois, Paul; Davis, Thomas; Cubo Delgado, Esther; Anca-Herschkovitsch, Marieta; Iansek, Robert; Siddiqui, Mustafa; Simu, Mihaela; Bergmann, Lars; Kukreja, Pavnit; Robieson, Weining; Chaudhuri, K. Ray (Birmingham, AL, USA)

33 Utilization of Monotherapy and Combination Therapies in Advanced Parkinson Disease Patients During Levodopa-Carbidopa Intestinal Gel Treatment from the COSMOS Study
Fasano, Alfonso; Parra Riaza, Juan; Gurevich, Tanya; Jech, Robert; Kovács, Norbert; Svenningsson, Per; Szasz, Jozsef; Bergmann, Lars; Johnson, Anita; Sanchez-Soliño, Olga; Tang, Zhongwen; Vela, Lydia (Toronto, ON, Canada)

34 Percutaneous Gastrojejunostomy Tubing Utilization and Safety with Levodopa-Carbidopa Intestinal Gel in Advanced Parkinson's Disease Patients: Interim Results of the DUOGLOBE Observational Study
Draganov, Peter; Wilcox, C Mel; Lee, Michelle; Robieson, Weining; Kukreja, Pavnit; Bergmann, Lars; Peter, Shajan; Symington, Kenneth (Chicago, IL, USA)

35 Efficacy and Safety of Levodopa-Carbidopa Intestinal Gel in Advanced Parkinson's Disease Patients Stratified by Baseline Hoehn and Yahr Stage: Data from the DUOGLOBE Study
Aldred, Jason; Boyd, James; Bergmann, Lars; Kukreja, Pavnit; Yu, Lily; Cubo Delgado, Esther; Kovács, Norbert (Spokane, WA, USA)

# Abstracts by Topic



## Clinicopathological Correlations



## Cognition and Cognitive Disorders



## Drug-Induced Movement Disorders



## Dyskinesia

# Abstracts by Topic

56 Frequency of Dyskinesia as a Function of Baseline Dyskinesia in Patients With Parkinson's Disease Treated With Istradefylline, an Adenosine A2A Receptor Antagonist
Hattori, Nobutaka; Nomura, Takanobu; Salzman, Phyllis; Kitabayashi, Hiroki; Ishiuchi, Masatake; Toyama, Keizo; Mori, Akihisa (Tokyo, Japan)

57 Paroxysmal Non-kinesigenic Dyskinesia Disorder Secondary to Systemic Lupus Erythematosus. A Case Report
Oropeza, Dante; Juárez Nájera, Adriana; Velazquez Vaquero, Maricruz (Puebla, Mexico)

58 Epidemiological Characteristics of Levodopa-Induced Dyskinesia in a Mexican-Mestizo Population
Abundes-Corona, Arturo; Esquivel-Zapata, Oscar; Lopez-Alamillo, Susana; Cervantes, Amin; Rodriguez Violante, Mayela (Mexico City, Mexico)

## Dystonia

1 Choreoatetosis and Writer's Cramp Associated with Radicular Compression by Cervical Hernia
Gonzalez Rojas, Natalia; Ziliani, Javier (La Plata, Argentina)

2 Man Carrying a Diagnosis of "Parkinson Disease" with a Prolonged History of Stuttering Speech - A Case Report
Natteru, Prashant; Huang, Juebin (Jackson, MS, USA)

3 A New Treatment for Cervical Vertigo with Botulinum Toxin
Odderson, Ib (Seattle, WA, USA)

4 Remission in Oromandibular Dystonia
Perez Parra, Sahyli; Scorr, Laura; Jinnah, Hyder; Factor, Stewart (Atlanta, GA, USA)

5 Measuring the Brain Activity in Upper Limb Dystonia During the Finger-Tapping Task: A Comparison Between Functional Magnetic Resonance And Near Infrared Spectroscopy
Paulo, Artur José; De Faria, Danilo; Balardin, Joana; Lucca, Renata Proa; Baltazar, Carlos; Sato, Joao Ricardo; Borges, Vanderci; de Azevedo Silva Moura MagalhÃ, Sonia Maria Cesar; Ferraz, Henrique; Carvalho Aguiar, Patricia Maria (Santo Andre, Brazil)

6 Dystonia-parkinsonism syndrome in GM1 Type 3 Gangliosidosis
Franklin, Gustavo; Lima, Nayra; Teive, Helio (Curitiba, Brazil)

7 Deep Brain Stimulation (DBS) as Treatment of Childhood Onset Dystonia: Experience of 13 Chilean Patients
Munoz, Daniela; Troncoso, Monica; Aguirre, David; Zambrano, Emilia; Zepeda, Ramiro; Monsalves, Sebastian; Mendez, David; Catalan, Rodrigo; De La Cerda, Andres; Benavides Canales, Olga; Villagra, Roque; Naranjo, Valentina; Hidalgo, Maria Jose; Ruiz, Isadora; Retamales, Alvaro; Gittermann, Kay; Jeldres, Eliana (Santiago, Chile)

8 Childhood Onset of Spinocerebellar Ataxia 3: Tongue Dystonia as an Early Manifestation
Mitchell, Nester; LaTouche, Gaynel; Nelson, Beverly; Figueroa, Karla; Walker, Ruth; Sobering, Andrew (Grenville, Grenada)

9 Delay in Diagnosis and Impact of Dystonia in Patient's Disability
Vargas, Renata Gabriela; Grippe, Talyta; Bachtold, Gustavo; Pereira, Flavio; Lobo, Marcelo; Borges, Ariely; Cardoso, Francisco (Brasilia, Brazil)

10 Striatal Injury in Early X-Linked Dystonia Parkinsonism Affects Both Matrix and Striosomes.
Waugh, Jeff; Brueggemann, Norbert; Sharma, Nutan; Breiter, Hans; Blood, Anne (Dallas, TX, USA)

11 Hyperexcitability Neurophisiological Measures in Dystonic Patients
Cunha, Natália; Grippe, Talyta; Fernandez, Rubens; Cardoso, Francisco; Boechat, Raphael (Brasilia, Brazil)

12 Non-Motor Symptoms in Patients with Primary Craniocervical Dystonia
Grippe, Talyta; Bachtold, Gustavo; Moreno, Matheus; Cunha, Natália; Cardoso, Francisco (Brasilia, Brazil)

## Education in Movement Disorders

94 The Use of Levodopa-Carbidopa Intestinal Gel in Parkinson Disease: Impact of MedicalClinician-Patient Medical Education on Knowledge and Confidence Among Neurologists
Finnegan, Thomas; Murray, Catherine; Okun, Michael; Malaty, Irene (Glenside, PA, USA)

95 Central American Movement Disorders Work Group (CAMDWG)/MDS-PAS Affiliate Society, and the impact in the MDS-PAS Educational Programs: 2011-2019
Lopez-Castellanos, Jose Ricardo; Lopez-Contreras, Jose; Cornejo-Valse, Ernesto; Gracia, Fernando; Roman-Garita, Norbel; Diaz, Walter; Medina, Alex; Hesse, Heike; Lopez-Contreras, Jose; Castillo, Marcia (Little Rock, AR, USA)

96 The Long-Term Effects of a Multidisciplinary Program Based on Centered People Care Model for Health Education of People Living with Parkinson's disease
Piemonte, Maria Elisa; Dias, Cynthia; Costa, Andressa; Okamoto, Erika; Sartori, Adélia; Silva, Camila (Sao Paulo, Brazil)

97 Experience with a Pro-Bono Movement Disorders Clinic in a Low-Income Country in the West Indies
Sobering, Andrew; Mitchell, Nester; Yearwood, Ashley; Noel, Dolland; Walker, Ruth (St. George's, Grenada)

98 Development and Impact of the Hispanic Parkinson's Advisory Council on the Education and Recruitment of the Hispanic PD Population in Clinical Research
Naito, Anna; DeLeon, Rebeca; Cubillos, Fernando; Martinez-Rubio, Clarissa; Gadala-Maria, Camila; Schroeder, Karlin; Rendon, Ruby; Beck, James; Fernandez Mata, Ignacio (Cleveland, OH, USA)

## Emerging and Experimental Therapeutics

93 Mechanistic PK/PD Model of Neuroactive Steroid GABAA Positive Allosteric Modulation and Effects on TETRAS Assessment in Essential Tremor
Nguyen, David; Smith, Anne; Qin, Min; Hoffmann, Ethan; Paskavitz, James; Wehr, Angela; Malhi, Suki; Bullock, Amy; Sankoh, Abdul; Robichaud, Albert; Kanes, Stephen; Doherty, James; Quirk, Michael (Cambridge, MA, USA)

# Abstracts by Topic

## Epidemiology

88 Screening of Risk Factors Associated with Movement Disorders in the Population of Santo Domingo de Heredia, Costa Rica
Roman, Norbel; Boza, Carolina (San Jose, Costa Rica)

89 Withdrawn by Author

90 Utilization of Public Health Services by People with Parkinson's Disease
Gregório, Elaine; Myra, Rafaela; Dos Santos, Bárbara; Kuhn, Talita; Kanabben, Rodrigo; Koerich, Micheline Henrique; Swarowsky, Alessandra (Florianópolis, Brazil)

91 Parkinsonism and Parkinson's Disease in Latin America. A 10/66 Group Population Base Study
Llibre Guerra, Jorge; Jimenez, Ivonne; Guerra, Mariella; Acosta, Daysi; Sosa Ortiz, Ana Luisa; Salas, Aquiles; Rodriguez Salgado, Ana; Llibre-Guerra, Juan; Prima, Matthew; Prince, Martin; Libre-Rodriguez, Juan (La Habana, Cuba)

92 Influences of White Matter Changes in Parkinsonian Signs in an Elderly Community-Dwelling Brazilian Population: The Pietà Study
Vale, Thiago; Barbosa, Maira; França Resende, Elisa; Carmona, Karoline; Guimarães, Henrique; Beato, Rogerio; Santos, Ana Paula; Cardoso, Francisco; Caramelli, Paulo (Juiz de Fora, Brazil)

## Genetics

77 Gaucher and Parkinsonism: Description of a Canadian Cohort
Gros, Priti; Nimmo, Graeme; Amato, Dominick; Kalia, Lorraine (Toronto, ON, Canada)

78 Whole Exome Sequencing for Atypical or Combined Movement Disorders
Ruiz Yanzi, Maria; Millar-Vernetti, Patricio; Rossi, Malco; Merello, Marcelo (Buenos Aires, Argentina)

79 Northwestern University Feinberg School of Medicine Parkinson's Disease and Movement Disorders Center Biorepository: Bringing the Clinic and Lab Together
Hernandez, Alejandro; Modiest, Robert; Burbulla, Lena; Shetty, Neil; Friedeck, Heidi; Bega, Danny; Opal, Puneet; Malkani, Roneil; Blackburn, Joanna; Taylor, Carolyn; Kinsley, Lisa; Mencacci, Niccolo; Lubbe, Steven; Krainc, Dimitri; Simuni, Tatyana (Chicago, IL, USA)

80 Novel LRRK2 Variants Contributing to Parkinson Disease in Hispanic Patients
Nuytemans, Karen; Rajabli, Farid; Scott, William; Luca, Corneliu; Singer, Carlos; Vance, Jeffery (Miami, FL, USA)

81 Impact of Offering Genetic Testing and Counseling to People with Parkinson's Disease in a Clinical Setting
Naito, Anna; Beck, James; Hall, Anne; Marder, Karen; Nance, Martha; Schwarzschild, Michael; Simuni, Tatyana; Wills, Anne Marie; Alcalay, Roy (Miami, FL, USA)

82 Mitochondrial Membrane Protein-Associated Neurodegeneration (MPAN) Caused by a Heterozygous C19orf12 Mutation
Pesantez Pacheco, Laura; Chandra, Shivika (Houston, TX, USA)

83 A Rare Case of Heterozygous Aceruloplasminemia Presenting with Tremors and Abducens Nerve Palsy
Thottempudi, Neeharika; Wu, Laura (Galveston, TX, USA)

## Health Professional (Non-Physician) Focus

84 Withdrawn by Author

85 The Influence of Physical Activities on Cognition in Small Groups of Parkinson's Disease Patients
Guimaraes, Rachel; Pereira, Marcelo; Piovesana, Luiza; Azevedo, Paula; Ramalho, Luciana; Gobbi, Lilian; Cendes, Fernando (Campinas, Brazil)

86 Expiratory Strength Assessment Using PEAK FLOW in Parkinson's Disease
Guimaraes, Rachel; Diogo, Mirian; Sattolo, Maria Fernanda; Durans, Lorena; Paiva, Lidiane; Cendes, Fernando (Campinas, Brazil)

87 The Effect a Six Months Physical Activity Program in a Small Group of Parkinson's Disease Patients
Sattolo, Maria Fernanda; Durans, Lorena; Paiva, Lidiane; Diogo, Mirian; Cendes, Fernando; Guimaraes, Rachel (Campinas, Brazil)

## Huntington's Disease

21 Withdrawn by Author

22 Gender Influences on Anosognosia Severity in Huntington's Disease
Massruha, Karina (Sao Paulo, Brazil)

23 Phenotypic Variants of Huntington's Disease Patients in Santa Clara, Cuba
Batule Dominguez, Miriam; Crespo Rodríguez, Luis R; Castro Ortiz, Elién Tatiana (Santa Clara, Cuba)

24 "Hung-Up Knee Jerk Reflex" Description in a Population of Colombian Patients with Huntington's Disease
Vargas Jaramillo, Juan (Bogota, Colombia)

## Myoclonus

27 Limb-Shaking Associated with Cortical Myoclonus as a Manifestation of a Glioblastoma
Vargas Jaramillo, Juan (Bogota, Colombia)

28 Focal Oromandibular Myoclonus Associated to Cochlear Stimulation
Gonzalez Rojas, Natalia; Da Prat de Magalhaes, Gustavo Andres; Cesarini, Martin; Etcheverry, Jose Luis; Palavecino, Alfredo; Gatto, Emilia (La Plata, Argentina)

# Abstracts by Topic

## Neurodegeneration

64 Prevalence of Neurodegenerative Movement Disorders in Different Clinical Practices of Hyderabad, Pakistan
Arain, Mudassar (Jamshoro, Pakistan)

65 The Effect of Cancer on Parkinson's Disease Progression
Mahajan, Abhimanyu; Chirra, Martina; Dwivedi, Alok; Sturchio, Andrea; Keeling, Elizabeth; Marsili, Luca; Espay, Alberto (Cincinnati, OH, USA)

66 An Unusual Presentation of a Misidentification Syndrome in a Patient with Lewy Body Dementia
Ajam, Yousaf; Lu, Lei; Wu, Laura (Galveston, TX, USA)

67 Abnormal Contents of the Microtubule Associated Protein Tau Mediates Deficits in Motor Coordination and Basal Ganglia Neuronal Dysfunction
Avale, Maria-Elena; Damianich, Ana; Mininni, Camilo; Facal, Carolina; Loch, Delfina; Zanutto, Silvano; Ferrario, Juan (Buenos Aires, Argentina)

## Neuroimaging and Neurophysiology

68 Dynamic Functional Connectivity Patterns in Parkinson's Disease Patients with Depressive Symptomatology
Diez-Cirarda, Maria; Gabilondo, Iñigo; Ibarretxe-Bilbao, Naroa; Gomez, Juan Carlos; Kim, Jinhee; Lucas-Jiménez, Olaia; Cho, Sang Soo; Del Pino, Rocio; Peña, Javier; Ojeda, Natalia; Acera, Marian; Mihaescu, Alexander; Valli, Mikaeel; Cabrera-Zubizarreta, Alberto; Gómez-Beldarrain, María Ángeles; Strafella, Antonio (Toronto, ON, Canada)

69 Hypomimia in Progressive Parkinson's Disease: Neural Strutural Correlations with Abberations in Ponto-Cortical Connectivity
Elumalai, Ganesh; Maiti, Panchanan; Vadiyala, Christina; Vinodhanand, Geethanjali; Singuru, Prathiksha (Kakinada, India)

70 Diffusion Fiber Tractography Connectivity Analysis for Olfactory Neural Networks Associated with Cognitive Impairment in Parkinson's Disease
Elumalai, Ganesh; Maiti, Panchanan; Chatterjee, Harshita; Vinodhanand, Geethanjali (Kakinada, India)

71 Temporal-Parietal Junction Neural Connectivity Analysis in Olfactory Spatial Attention Deficit in the Progression of Parkinson's Disease
Elumalai, Ganesh; Maiti, Panchanan; Chatterjee, Harshita; Vinodhanand, Geethanjali (Kakinada, India)

72 A Rare Observation on the Primary Gustatory Cortex Neural Connectivity Analysis in Parkinson's Disease Progression
Elumalai, Ganesh; Maiti, Panchanan; Chatterjee, Harshita; Vinodhanand, Geethanjali (Kakinada, India)

73 Decline in Cholinergic Basal Forebrain Volume in Early Parkinson Disease
Barrett, Matthew; Murphy, Justin; Zhang, Jeffrey; Blair, Jamie; Flanigan, Joseph; Sperling, Scott; Patrie, James; Druzgal, Thomas (Charlottesville, VA, USA)

74 Cortical Activity During the Writing Task in Dystonia - A Study with Functional Near Infrared Spectroscopy (fNIRS)
Dalle Lucca, Renata; Balardin, Joana; De Faria, Danilo; Paulo, Artur José; Sato, Joao Ricardo; Baltazar, Carlos; Borges, Vanderci; Silva, Sonia; Ferraz, Henrique; De Carvalho Aguiar, Patricia (São José dos Campos, Brazil)

75 Unraveling the Cellular Mechanism Involved in the Neuroprotective Effect Mediated by Ilex Paraguariensis (Yerba Mate)
Ferrario, Juan; Anesetti, Soledad; Hauche, Hernan; Bernardi, Alejandra; Ballestero, Pedro; Bordone, Melina; Gershanik, Oscar (Buenos Aires, Argentina)

76 Prefrontal Cortex Activation is Facilitated by Levodopa During Dual Task Walking in Parkinson's Disease
Gobbi, Lilian; Orcioli-Silva, Diego; Vitorio, Rodrigo; Nóbrega-Sousa, Priscila; Conceição, Núbia; Beretta, Victor; Lirani-Silva, Ellen (Rio Claro, Brazil)

## Neuropharmacology

63 Chlorogenic Acid Protects Dopaminergic Neurons in Parkinsonian Mouse Model Through Suppressing Mitochondrial Dysfunction and Preventing Apoptotic Cascade
Singh, Saumitra; Singh, Surya (Varanasi, India)

## Non-Motor Symptoms

59 Non-Motor Symptoms of Parkinson's Disease: The Role of Physical Activity Assessed by Phone-FITT Questionnaire
Lima, Joyce; Pinto, Sâmmara; Rolim, Flavia; Gomes, Andre; Mesquita, Vivia; Marinho, Antonia Rosivalda; Maia Carvalho, Fernanda (Fortaleza, Brazil)

60 Dyssynergic Defecation is at the Root of Constipation and Other GI Issues in Parkinson's Disease: Preliminary Results of Comprehensive Neurogastroenterology Evaluation
Sharma, Amol; Yan, Yun; Xiang, Xuelian; Fielder, Shashana; Parr, Rachel; Herekar, Anam; Kurek, Julie; Morgan, John; Rao, Satish (Augusta, GA, USA)

61 Discovering the Roadblocks in Parkinson's Disease: Preliminary Results of Comprehensive Bidirectional Brain-Gut Investigations
Sharma, Amol; Yan, Yun; Xiang, Xuelian; Fielder, Shashana; Parr, Rachel; Herekar, Anam; Jimenez, Enoe; Kurek, Julie; Morgan, John; Rao, Satish (Augusta, GA, USA)

62 The Impact of Three Distinct Exercise Types on Fatigue, Anxiety, and Depression in Parkinson's Disease
Feldman, Mary; Paul, Ashley; Tomeny, John; Andrew, Angeline; Lee, Stephen (Dayton, OH, USA)

## Other

99 Variability in the Frequency of Micrograph in Parkinson's Disease
Garcia Fernandez, Cynthia; Ziliotto, Adriana; Raina, Gabriela; Calandra, Cristian; Maiola, Ricardo; Morera, Nicolas; Cersosimo, Graciela (Brasília, Brazil)

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100 Alpha-Synuclein Level in Plasma Extracellular Vesicles in Dementia with Lewy Bodies
Senkevich, Konstantin; Nikolaev, Mikhail; Kulabukhova, Daria; Kopytova, Alena; Usenko, Tatiana; Emelyanov, Anton; Beltseva, Yulia; Zalutskaya, Natalia; Pchelina, Sofya (Saint-Petersburg, Russia)

## Parkinson's Disease

129 The Pharmacokinetics and Pharmacodynamics of Once-Daily Opicapone 50 mg in Patients with Parkinson's Disease on Levodopa/Carbidopa: Results of a Phase 1 Study
Loewen, Gordon; LeWitt, Peter; Olanow, C. Warren; Kieburtz, Karl; Liang, Grace; Jimenez, Roland; Olson, Kurt; Roberts, Eiry (San Diego, CA, USA)

130 Risk for Psychiatric Manifestations After Deep Brain Stimulation Surgery in Patients with Parkinson's Disease
Seritan, Andreea; Parad, Jason; Wang, Sarah; Ostrem, Jill; Iosif, Ana-Maria (San Francisco, CA, USA)

131 Withdrawn by Author

132 Male Gender and the Risk of Parkinson's Disease in an Essential Tremor Population
Sandulescu, Mihai Cosmin; Vanenkevort, Erin; Gupta, Mudit; Zand, Ramin (Danville, PA, USA)

133 An Outlook: Palliative Care for Patients with Parkinsonism Syndrome
Arain, Mudassar (Jamshoro, Pakistan)

134 Neuroprotective Effect of Quercetin in Combination with Piperine Against Rotenone and Iron Supplement Induced Parkinson's Disease in Experimental Rats
Singh, Shamsher (Moga, India)

135 'Poised for Parkinson's': Alexander Technique Group Course Improves Posture, Balance and Mobility for People Living With PD
Gross, Monika; McInnis, Mary; Norcia, Monica; Ravichandra, Ramyaa; Basye, Malori; Abdelrahman, Allaa; Cohen, Rajal (Candler, NC, USA)

136 Diphasic Pattern of Worsening of Freezing Gait (FOG)
Perez Parra, Sahyli; McKay, Johnathan; Factor, Stewart (Atlanta, GA, USA)

137 Blepharoclonus in Parkinson's Disease: S Meaningful Finding?
Fleming, Nicholas; Shpiner, Danielle; Luca, Corneliu; Singer, Carlos; Moore, Henry; Margolesky, Jason (Miami, FL, USA)

138 CVT-301 Utilization in Clinical Studies
Ondo, William; Saint-Hilaire, Marie; Klingler, Michael; Kenney, Christopher (Houston, TX, USA)

139 Assessing Knowledge and Awareness of Parkinson's Disease through a Community Farmer's Market
Nwabuobi, Lynda; Delaney, Elizabeth; Shah, Hiral (New York, NY, USA)

140 Barriers to Exercise in Patients with Parkinson's Disease
Prakash, Prarthana; Schramke, Carol; Baser, Susan; Leichliter, Timothy; Scott, Thomas; Kelly, Kevin (San Francisco, CA, USA)

141 Patient-Reported Motor Responses to Apomorphine Sublingual Film Based on Home Dosing and Response Diaries
Hauser, Robert; Mehta, Shyamal; Maulis, Matthew; Bhargava, Parul; Navia, Bradford; Blum, David; Pappert, Eric (Tampa, FL, USA)

142 Possible Neuroprotective Propensity of Bioactive Natural Phenolic Acids Combinational Strategy Against Rotenone Induced Parkinsonism in Rodents
Yadav, Ekta (Prayagraj, India)

143 Is There a Freezing of Gait Gene in Parkinson's Disease (PD)?
Wallen, Zachary; Hill-Burns, Erin; Molho, Eric; Zabetian, Cyrus; Payami, Haydeh; Factor, Stewart (Atlanta, GA, USA)

144 Emergence of Speech and Language Symptons in Stages of Parkinson's Disease: Study Conducted in a Group of People with Parkinson's Disease in Venezuela
Cano Villagrasa, Alejandro; Suárez Torres, Martha; Valles-González, Beatriz (Valencia, Spain)

145 The Impact of Fatigue and Depressive Symptoms in the Quality of Life in Parkinson's Disease
Sanchez-Luengos, Itsasne; Lucas-Jiménez, Olaia; Peña, Javier; Ojeda, Natalia; Gomez, Juan Carlos; Gómez-Beldarrain, María-Ángeles; Vazquez-Picon, Raquel; Foncea-Beti, Nerea; Ibarretxe-Bilbao, Naroa (Bilbao, Spain)

146 Motor Responses to Apomorphine Sublingual Film Compared With Levodopa in Patients with Parkinson's Disease and "OFF" Episodes
Hui, Jennifer; Fox, Susan; Neeson, William; Bhargava, Parul; Pappert, Eric; Blum, David; Navia, Bradford (Los Angeles, CA, USA)

147 Efficacy and Safety of Once-Daily Opicapone 50 mg in Patients with Parkinson's Disease and Motor Fluctuations: Pooled Analysis of Two Randomized, Double-Blind, Placebo-Controlled Studies
Hauser, Robert; Lew, Mark; Kremens, Daniel; Poewe, Werner; Rascol, Olivier; Lees, Andrew; Ferreira, Joaquim; Olson, Kurt; Farahmand, Khodayar; Rocha, Jose-Francisco; Soares-da-Silva, Patrício (Tampa, FL, USA)

148 Comparison of Selected Non-Motor Symptoms Between PD Subtypes: Tremor Dominant vs Postural Instability/ Gait Difficulty Groups
Mehta, Shyamal; Zhang, Nan; Knox, Molly; Shill, Holly; Driver Dunckley, Erika; Davis, Kathryn; Beach, Thomas; Adler, Charles (Scottsdale, AZ, USA)

149 How Parkinson's Disease Affects Value-Based Decisions
Montaser Kouhsari, Leila; Bakkour, Akram; Gerraty, Raphael; Shohamy, Daphna (New York, NY, USA)

150 Fabrication, Characterization of PLGA Loaded Nanoformulation of Umbelliferone Exert 6-Hydroxydopamine Induced Parkinson's Disease via Alteration of Genetic Backgrounds
Kumar, Vikas; Anwar, Firoz (Allahabad, India)

# Abstracts by Topic

# Abstracts by Topic

172 The Quality of Life-Related to Social Stigma is Worse in the Less Developed Region in Comparison More Developed Region in Brazil
Landre, Cleuton; Iosimuta, Natalia; Nóbrega, Kátia; Melim, Lorane; Miyahara, Fernanda; Piemonte, Maria Elisa (Sao Paulo, Brazil)

173 Clinical correlations of Parkinson's Disease and Vascular Parkinsonism: Retrospective Review from Uzbekistan.
Umarov, Azamatjon; Bakhodirov, Nodirjon; Tursunbaeva, Dilnoza (Tashkent, Uzbekistan)

174 Timing of Diabetes Diagnosis and its Influence on the Age of Parkinson's Disease Onset
Esquivel-Zapata, Oscar; Escobar-Valdivia, Emmanuel; Garcia Romero, Jose David; Alcocer Salas, Angel; Cervantes, Amin; Rodriguez Violante, Mayela; Sarabia-Tapia, Cynthia; Lopez-Alamillo, Susana; Rios, Yazmin; Cardenas, Omar; Abundes-Corona, Arturo; Herrera, Fanny (Monterrey, Mexico)

175 The Lower-Extremity Strength and Perceived Exertion are Less Impaired in People Living with Parkinson's Disease in the Amazon Region Than in More Urbanized Areas of Brazil
Freire, Renato; Landre, Cleuton; Azamor, Rafael; Iosimuta, Natalia; Rodrigues, Rafaella; Nóbrega, Kátia; Dos Santos, Rayanara; Melim, Lorane; Miyahara, Fernanda; Piemonte, Maria Elisa (Sao Paulo, Brazil)

176 Neuroleptic-Like Malignant Syndrome in a Patient with Deep Brain Stimulation for Parkinson Disease for Battery Depletion: Case Report
Bejarano, Juliana; Ayala, MIguel; Moreno Lopez, Claudia; Garcia, Xiomara (Bogota, Colombia)

177 Impact of Safinamide on Non-Motor Experiences of Daily Living: Interim Findings from a Prospective, Observational Study
Isaacson, Stuart; Clinch, Thomas; Farbman, Eric; Pahwa, Rajesh (Boca Raton, FL)

178 Niacin Reduces Inflammatory Cytokine Load in Parkinson's Disease
Wakade, Chandramohan (Augusta, GA,USA)

179 Does Dopamine Precursor Interfere in Action Prediction Function in Parkinson Disease?
Nogueira-Campos, Anaelli; Chagas, Amanda; Faria, Isabella; Navarrete, Ruben Ernesto; Vale, Thiago; Saunier, Ghislain (Juiz de Fora, Brazil)

180 Teraupetic Conduct and Response in Patients with Impulse Control Disorder, in Parkinson's Disease
Herrera, Fanny; Cervantes, Amin; Abundes-Corona, Arturo; Escobar-Valdivia, Emmanuel; Cardenas, Omar; Alcocer Salas, Angel; Lopez-Alamillo, Susana; Rios, Yazmin; Sarabia-Tapia, Cynthia; Esquivel-Zapata, Oscar; Rodriguez Violante, Mayela (San Pedro Sula, Honduras)

181 Cursive Versus Printed Letter for Diagnosis of Progressive Micrographia in Parkinson's Disease
Calandra, Cristian; Garcia Fernandez, Cynthia; Ziliotto, Adriana; Raina, Gabriela; Maiola, Ricardo; Morera, Nicolas; Cersosimo, Maria (Buenos Aires, Argentina)

182 Research Participation in Parkinson Disease
Garbin Di Luca, Daniel; Branson, Chantale; Sanchez, Angie; Holzworth, Meaghan; Luca, Corneliu; Willis, Allison (Miami Beach, FL, USA)

183 Metabolomic Analysis Identifies Caffeine and its Metabolites as Plasma Markers of Resistance to Parkinson's Disease Among LRRK2 Mutation Carriers in the LRRK2 Cohort Consortium (LCC)
Crotty, Grace; Wang, Junhua; Montalban, Manuel; Davis, Sonnet; Alkabsh, Jamal; Bakshi, Rachit; Chen, Xiqun; Ascherio, Alberto; Macklin, Eric; Maciuca, Romeo; Astarita, Giuseppe; Huntwork-Rodriguez, Sarah; Schwarzschild, Michael (Cambridge, MA, USA)

## Parkinsonism (Secondary and Parkinsonism-Plus)

184 Myoclonus and Parkinsonism in 22q11.2 Syndrome - Expanding the Phenotype
Meytin, Leon; Saunders-Pullman, Rachel; Swan, Matthew (New York, NY, USA)

185 Parkinsonism Due Dilated Virchow Robin Space
Segamarchi, Maria; Rodriguez Quiroga, Sergio; Arakaki, Tomoko; Garretto, Nélida (Buenos Aires, Argentina)

186 Parkinsonism Secondary to Mercury Poisoning in a Colombian Population
Vargas Jaramillo, Juan (Bogota, Colombia)

187 Withdrawn by Author

188 Early-Onset Parkinsonism: Clinical Characterization of a Serie of 27 Chilean Patients
Munoz, Daniela; Troncoso, Monica; Naranjo, Valentina; Hidalgo, Maria Jose; Ruiz, Isadora; Saez, Veronica; Lara, Susana; Santander, Paola; Tello, Javiera; Barrios, Andres (Santiago, Chile)

## Pediatric Movement Disorders

197 Movement Disorders in Patients with Childhood Autism
Voloshyn, Taras (Truskavets, Urkaine)

198 Delayed Diagnosis of Patients with Neurodegeneration with Brain Iron Accumulation
Larsh, Travis; Aldosari, Mohammed; Fernandez, Hubert (Seven Hills, OH, USA)

199 Clinical and Laboratory - Neurovisual Heterogeneity of Tic Disorders
Zalyalova, Zuleykha; Munasipova, Sabina (Moscow, Russia)

## Phenomenology and Clinical Assessment of Movement Disorders

204 Tinnitus Secondary to Stapedial Muscle Spam in Patients with Hemifacial Spasm: Clinical Characterization and Response to Botulinum Toxin Treatment
Raina, Gabriela; Morera, Nicolas; Folgar, Silvia; Calandra, Cristian; Maiola, Ricardo; Garcia Fernandez, Cynthia; Cersosimo, Maria (Buenos Aires, Argentina)

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## Psychiatric Manifestations

201 Examining Real World Treatment Pathways and Outcomes in Parkinson's Disease Psychosis: Early Findings From the INSYTE Observational Study
Isaacson, Stuart; Cummings, Jeffrey; Fox, Susan; Trotter, Jeffrey; Larsen, Niccole; LoVerme, Jesse; Shim, Andrew; Goldman, Jennifer (Boca Raton, FL, USA)

202 Chart Review Examining Outcomes in Patients Using Pimavanserin
Brillman, Salima (Menlo Park, CA, USA)

203 Medication-Induced QTc Prolongation in Parkinson's Disease-Related Psychosis: A Literature Review
Carwin, Amelia; Carolan, Jacob; Nakano, Steven; Miri, Shahnaz; Anjum, M. Waseem; Torres-Yaghi, Yasar; Moussa, Charbel; Pagan, Fernando (Arlington, VA, USA)

## Quality of Life/Caregiver Burden in Movement Disorders

122 Two Sides to a Story: Perspectives on Information of Patients and Caregivers Living with Multiple System Atrophy (MSA)
Langford, Beth; Miyasaki, Janis (Edmonton, AB, Canada)

123 The Impact of Parkinson's Disease on Quality of Life and Cognition in Older Adults
Chaves Dos Santos, Livia Caroline (Mogi Das Cruzes, Brazil)

124 Impact of Mindfulness Training on Quality of Life, Depression, Anxiety, Stress and Cognitive Function in Patients with Parkinson's Disease
Seifar, Fatemeh; Ayromlou, Hormoz; Najmi, Safa; Ghaemian, Neda; Shaafi, Sheida; Asadi, Roghayyeh (Tabriz, Islamic Republic of Iran)

125 Educational Text-Messaging for Parkinson's Disease and Caregivers to Promote Disease Specific Knowledge
Miri, Shahnaz; Alaoui, Adil; Torres-Yaghi, Yasar; Carwin, Amelia; Nakano, Steven; Anjum, M. Waseem; Pagan, Fernando (Washington, DC, USA)

126 'Partnering with Poise': Alexander Technique Group Classes Are a Promising Self-Care Intervention to Counter Loss-of-Self for Care Partners of People Living With Neurodegenerative Disease
Gross, Monika; Ravichandra, Ramyaa; Mello, Belinda; Abdelrahman, Allaa; Becker, Jordan; Smith, Sawyer; Cohen, Rajal (Candler, NC, USA)

## Rare Genetic and Metabolic Diseases

127 Valosin-Containing Protein Mutation in a Patient with Ataxia and Parkinsonism
Kirby, Alana; Kimonis, Virginia; Kompoliti, Aikaterini (Chicago, IL, USA)

128 Adult-Onset POLR3 Leukodystrophy: A Case Report
Patel, Roshni; Witek, Natalie; Afshari, Mitra (Chicago, IL, USA)

## Rating Scales

205 Item Response Theory Analysis of the MDS-UPDRS Part III
Tosin, Michelle; Goetz, Christopher; Luo, Sheng; Stebbins, Glenn (Santos, Brazil)

206 Brazilian Portuguese Version of the Frenchay Dysarthria Assessment (FDA-2): Preliminary Results in Parkinson's Disease
Britto, Ana Teresa; Attoni, Tiago; Quintas, Victor; Baracho, Larissa; de Resende, Hugo; Cardoso, Francisco; Rothe-Neves, Rui (Belo Horizonte, Brazil)

## Sleep Disorders and Restless Legs Syndrome

200 Comparison of Polisomnographic Features in Different Parkinsonisms
Cardenas, Omar; Rodriguez Violante, Mayela; Cervantes, Amin; Alatriste, Vanessa; Abundes-Corona, Arturo; Herrera, Fanny; Escobar, Emmanuel; Esquivel-Zapata, Oscar; Lopez-Alamillo, Susana; Alcocer Salas, Angel; Sarabia-Tapia, Cynthia; Rios, Yazmin; Arvizu, Fernando (Mexico City, Mexico)

## Surgical Therapy (Parkinson's Disease and Other Movement Disorders)

101 Vertically-Stacked Single Segment Activation (V-SSA) as a Programming Approach for Directional DBS in GPi: First Clinical Case Series
Anjum, M. Waseem; Fayed, Islam; Torres-Yaghi, Yasar; Pallavaram, Srivatsan; Zhang, Simeng; Amjad, Fahd; Kalhorn, Christopher; Pagan, Fernando (Germantown, MD, USA)

102 Use of a New Tool to Correlate the Clinical and Radiological Findings after Deep Brain Stimulation in Patients with Movement Disorders
Camargo, Andrea; Valldeoriola, Francesc; Sánchez-Gómez, Almudena (Bogota, Colombia)

103 Safety of Non-Contrast Imaging Guided DBS Electrode Placement in Parkinson's Disease
Graciolli Cordeiro, Joacir; Diaz, Anthony; Davis, Jenna; Farooq, Ghulam; Garbin Di Luca, Daniel; Luca, Corneliu; Jagid, Jonathan (Miami Beach, FL, USA)

104 Patient Characteristics and Safety of Deep Brain Stimulation Systems: Geographic Comparisons in a Real-World Population
Arellano Reynoso, Alfonso; Lopez-Rios, Adriana-Lucia; Piedimonte, Fabian; Roa, Sofia; Carmona, Hans; Xiong, Hui; Sandberg, Keisha; Weaver, Todd (Mexico City, Mexico)

105 Deep Brain Stimulation Systems: Geographic Comparisons of Procedural Information in a Real-World Population
Arellano Reynoso, Alfonso; Lopez-Rios, Adriana-Lucia; Piedimonte, Fabian; Roa, Sofia; Carmona, Hans; Sandberg, Keisha; Weaver, Todd (Mexico City, Mexico)

106 Adjustment of Stimulation to Dorsal Contacts Resolves STN Stimulation Induced Hypomania
Wadhwa, Anant; Patel, Amar; Schaefer, Sara (New Haven, CT, USA)

# Abstracts by Topic



## Therapeutics of Movement Disorders in the Americas (Theme)



## Therapy in Movement Disorders



## Tics/Stereotypies



## Tremor

# Abstracts by Topic

# Late-Breaking Abstracts

A Late-Breaking Abstract is any abstract reporting information that became available for public dissemination after the deadline of the regular abstract submission. It must be of critical importance to the clinical and/or scientific community and/or the public and should be newsworthy.

All accepted Late-Breaking Abstract posters are displayed in Biscayne Ballroom throughout the duration of the PAS Congress. Late-Breaking Abstract poster presentations will take place Saturday, February 15 from 13:00 – 14:30.

## Late-Breaking Abstract Poster Session

Saturday, February 15, 2020
Poster Session: 13:00 - 14:30
Location: Biscayne Ballroom, Level 2

LBA 1 Restless Limbs Syndrome (RLS): Natural History Vs. Augmentation
D. Dickoff (Yonkers, NY, USA)

LBA 2 Comparison of GBA K198E Mutation Prevalence in Colombian and Hispanic Populations
P. Tipton, A. Beasley, O. Ross, R. Walton, S. Soler-Rangel, O. Romero-Osorio, C. Diaz, C. Moreno-Lopez, S. Cerquera-Cleves, Z. Wszolek (Jacksonville, FL, USA)

LBA 3 Identification of Known Genes in Colombian and Ecuadorian Parkinson's Disease Patients
P. Tipton A. Beasley, O. Ross, R. Walton, S. Soler-Rangel, O. Romero-Osorio, C. Diaz, C. Moreno-Lopez, G.Jaramillo, F. Alarcon, S. Cerquera-Cleves, Z. Wszolek (Jacksonville, FL, USA)

LBA 4 Apomorphine Infusion for Advanced Parkinson's Disease: A Phase III, Long-Term, Openlabel Study
S. Isaacson, A.J. Espay, R. Pahwa, T. Clinch, P.A. LeWitt (Boca Raton, FL, USA)

LBA 5 Discrepancy of the Distribution of Alpha-Synuclein Oligomers and Lewy Bodies in Parkinson's Disease Brain
H. Sekiya, H. Kowa, Y. Hashimoto, M. Takata, R. Matsumoto, T. Toda (Kobe, Hyogo, Japan)

LBA 6 Sex-Based Differences in the Activation of Peripheral Blood Monocytes in Early Parkinson Disease
D. Standaert, S. Carlisle, C. Hendrickson, H. Qin, Z. Yan, T. Yacoubian, T. Benveniste, A. West, A. Harms (Birmingham, AL, USA)

LBA 7 Synergistic Anti-Dyskinetic Effects of Pridopidine and Amantadine in the 6-OHDA Lesioned Rat Model of Parkinson's Disease
T. Johnston, M. Geva, J.M. Brotchie, M. Hayden (Toronto, ON, Canada)

LBA 8 Phase 2a Open-Label Study to Evaluate the Safety, Tolerability and Efficacy of CAD-1883 in Essential Tremor (Cadence-1)
M. Curtis, R. Elble, S. Kuo, W. Ondo, A. Ellenbogen, A. Sadhwani, L. Simpson, L. Victor, S. O'Neill, C. Kenney, T. Piser (Cambridge, MA, USA)

LBA 9 Improvement in UPDRS Motor Scores after CVT-301 Treatment is Associated with Improved Scores in the Parkinson's Disease Questionnaire Activities of Daily Living
R. Hauser, M. Klingler, I. Abeynayake, H. Roberts (Tampa, FL, USA)

LBA 10 Improvement in SAPS-PD Assessment Over 10 Weeks of Pimavanserin Treatment for Parkinson's Disease Psychosis
S. Isaacson, B. Coate, J. Norton, V. Abler, S. Stankovic (Boca Raton, FL, USA)

LBA 11 Restless Legs Syndrome/Willis-Ekbom Disease in Obstructive Sleep Apnea: Prevalence and Association Factors Among Southern Brazilians
F. Stelzer, D. Palma Maia, L. Barea, H. Barros (São Leopoldo, Brazil)

LBA 12 Assessing Head Tremor Severity in Cervical Dystonia with Videorecordings and Computer Vision
J. Vu, R. Elble, G. Stebbins, C. Comella, D. Peterson (La Jolla, CA, USA)

## Late-Breaking Abstract Publication

Late-Breaking Abstracts are published as an online PDF on the 2020 PAS Congress website at www.pascongress.org and are available for download as of February 14, 2020.

# Corporate Therapeutic Symposia

These company-based informational sessions will provide attendees with non-CME educational opportunities to learn the latest in therapeutics.

## FRIDAY, FEBRUARY 14, 2020

### Sunovion

**From OFF to ON: Treating Levodopa-Induced OFF Episodes in Parkinson's Disease**
**12:15-13:15**
Location: Chopin Ballroom

### Lundbeck

**Patient Stands Up, Blood Pressure Goes Down: Diagnostic and Management Considerations for Symptomatic Neurogenic Orthostatic Hypotension**
**12:15-13:15**
Location: Trianon

## SATURDAY, FEBRUARY 15, 2020

### Acorda Therapeutics

**Rethinking the Approach to Managing OFF Periods**
**12:15-13:15**
Location: Chopin Ballroom

# Acknowledgements

The 3rd Pan American Parkinson's Disease and Movement Disorders Congress wishes to acknowledge the following commercial supporters

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# I'M AFRAID TO FAINT AGAIN

## Look carefully. This may be the face of neurogenic orthostatic hypotension (nOH).

If your patients with a pre-existing neurodegenerative disorder are suffering from dizziness or other symptoms that improve upon sitting, they could have nOH.[1-3] nOH and its associated symptoms may lead to serious consequences.[3-5]

## Visit nOHmattersHCP.com and sign up for emails to continue learning about nOH

**References: 1.** Kaufmann H, Malamut R, Norcliffe-Kaufmann L, et al. The Orthostatic Hypotension Questionnaire (OHQ): validation of a novel symptom assessment scale. *Clin Auton Res.* 2012;22(2):79-90. **2.** Freeman R. Neurogenic orthostatic hypotension. *N Engl J Med*. 2008;358(6):615-624. **3.** Freeman R, Wieling W, Axelrod FB, et al. Consensus statement on the definition of orthostatic hypotension, neurally mediated syncope and the postural tachycardia syndrome. *Clin Auton Res*. 2011;21(2):69-72. **4.** Low PA. Neurogenic orthostatic hypotension: pathophysiology and diagnosis. *Am J Manag Care*. 2015; 21(suppl 13):s248-s257. **5.** Maule S, Milazzo V, Maule MM, et al. Mortality and prognosis in patients with neurogenic orthostatic hypotension. *Funct Neurol.* 2012;27(2):101-106.

nOH MATTERS
neurogenic Orthostatic Hypotension

# From OFF to ON:
# Treating Levodopa-Induced OFF Episodes in Parkinson's Disease

*Organized And Supported By Sunovion Pharmaceuticals Inc.*

Friday, February 14, 2020
12:15 - 1:15pm

Chopin Ballroom

## Topic/Speakers:

Phenomenology, Clinical Significance and Risk Factors for the Development of OFF Episodes
*Speaker: Diego Torres-Russotto, M.D.*

Current and New Approaches to the Treatment of OFF Episodes
*Speaker: Robert Hauser, M.D.*

*Moderator: Hubert Fernandez, M.D.*

This is an educational, non-CME program sponsored by Sunovion Pharmaceuticals Inc. and the speakers are paid consultants of Sunovion.


Sunovion Pharmaceuticals Inc., 84 Waterford Drive, Marlborough, MA 01752

# MAKE A PARKINSON'S HOUSE CALL at the Sunovion Booth

Make a *Parkinson's House Call* to learn more about life with Parkinson's disease (PD) and OFF episodes through the eyes of Maggie,* a patient with moderate-to-severe PD.

*Actor portrayal

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While you're there, see what's new on Sunovion's exciting innovation platform, Little Big Things™, which celebrates the latest innovations, ideas, and events that could have a big impact on the Parkinson's community.

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# EXPLORE A DIFFERENT PATH

## NOW APPROVED

### The first and only adenosine $A_{2A}$ receptor antagonist for Parkinson's disease (PD)[1]

NOURIANZ™ (istradefylline) is an adenosine receptor antagonist indicated as adjunctive treatment to levodopa/carbidopa in adult patients with PD experiencing "off" episodes.

▶ For more information, visit **NourianzHCP.com/differentpath**

## Indication

NOURIANZ™ (istradefylline) is an adenosine receptor antagonist indicated as adjunctive treatment to levodopa/carbidopa in adult patients with Parkinson's disease (PD) experiencing "off" episodes.

## Important Safety Information

### Warnings and Precautions

**Dyskinesia:** NOURIANZ in combination with levodopa may cause dyskinesia or exacerbate pre-existing dyskinesia. In clinical trials, 1% of patients treated with either NOURIANZ 20 mg or 40 mg discontinued treatment because of dyskinesia, compared to 0% for placebo.

**Hallucinations / Psychotic Behavior:** Because of the potential risk of exacerbating psychosis, patients with a major psychotic disorder should not be treated with NOURIANZ. Consider dosage reduction or discontinuation if a patient develops hallucinations or psychotic behaviors while taking NOURIANZ.

**Impulse Control / Compulsive Behaviors:** Patients treated with NOURIANZ and one or more medication(s) for the treatment of Parkinson's disease (including levodopa) may experience intense urges to gamble, increased sexual urges, intense urges to spend money, binge or compulsive eating, and/or other intense urges, and the inability to control these urges. In clinical trials, 1 patient treated with NOURIANZ 40 mg was reported to have impulse control disorder, compared to no patient on NOURIANZ 20 mg or placebo.

### Drug Interactions

The maximum recommended dosage in patients taking strong CYP3A4 inhibitors is 20 mg once daily. Avoid use of NOURIANZ with strong CYP3A4 inducers.

### Specific Populations

**Pregnancy:** Based on animal data, may cause fetal harm.
**Hepatic impairment:** The maximum recommended dosage of NOURIANZ in patients with moderate hepatic impairment is 20 mg once daily. Avoid use in patients with severe hepatic impairment.

### Adverse Reactions

The most common adverse reactions with an incidence ≥5% and occurring more frequently than with placebo were dyskinesia (15%, 17%, and 8%), dizziness (3%, 6%, and 4%), constipation (5%, 6%, and 3%), nausea (4%, 6%, and 5%), hallucination (2%, 6%, and 3%), and insomnia (1%, 6%, and 4%) for NOURIANZ 20 mg, 40 mg, and placebo, respectively.

You are encouraged to report suspected adverse reactions to Kyowa Kirin, Inc. at 1-844-768-3544 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

**Please see Brief Summary of full Prescribing Information on the following pages.**

**Reference: 1.** NOURIANZ [package insert]. Kyowa Kirin, Inc., Bedminster, NJ, USA.

KYOWA KIRIN

NOURIANZ™ (istradefylline) tablets
20 mg | 40 mg

**Brief Summary of the Prescribing Information for**

# NOURIANZ™ (istradefylline) tablets, for oral use

## 1 INDICATIONS AND USAGE

NOURIANZ is indicated as adjunctive treatment to levodopa/carbidopa in adult patients with Parkinson's disease (PD) experiencing "off" episodes.

## 2 DOSAGE AND ADMINISTRATION

### 2.1 Dosing Information

The recommended dosage of NOURIANZ is 20 mg administered orally once daily. The dosage may be increased to a maximum of 40 mg once daily, based on individual need and tolerability. Initial dose titration is not required.

NOURIANZ can be taken with or without food.

### 2.2 Dosage Adjustment with Strong CYP 3A4 Inhibitors

The maximum recommended dosage of NOURIANZ with concomitant use of strong CYP3A4 inhibitors is 20 mg once daily.

### 2.3 Dosing with Strong CYP 3A4 Inducers

Avoid use of NOURIANZ with strong CYP3A4 inducers.

### 2.4 Dosage Adjustment in Patients with Hepatic Impairment

The maximum recommended dosage of NOURIANZ in patients with moderate hepatic impairment (Child-Pugh B) is 20 mg once daily. Closely monitor patients with moderate hepatic impairment for adverse reactions when on NOURIANZ treatment. Avoid use of NOURIANZ in patients with severe hepatic impairment (Child-Pugh C).

### 2.5 Dosage Adjustment for Tobacco Smokers

The recommended dosage of NOURIANZ in patients who use tobacco in amounts of 20 or more cigarettes per day (or the equivalent of another tobacco product) is 40 mg once daily.

## 4 CONTRAINDICATIONS

None.

## 5 WARNINGS AND PRECAUTIONS

### 5.1 Dyskinesia

NOURIANZ in combination with levodopa may cause dyskinesia or exacerbate pre-existing dyskinesia.

In controlled clinical trials (Studies 1, 2, 3, and 4), the incidence of dyskinesia was 15% for NOURIANZ 20 mg, 17% for NOURIANZ 40 mg, and 8% for placebo, in combination with levodopa. One percent of patients treated with either NOURIANZ 20 mg or 40 mg discontinued treatment because of dyskinesia, compared to 0% for placebo.

### 5.2 Hallucinations/Psychotic Behavior

Because of the potential risk of exacerbating psychosis, patients with a major psychotic disorder should not be treated with NOURIANZ. Consider dosage reduction or discontinuation if a patient develops hallucinations or psychotic behaviors while taking NOURIANZ.

In controlled clinical trials (Studies 1, 2, 3, and 4), the incidence of hallucinations was 2% for NOURIANZ 20 mg, 6% for NOURIANZ 40 mg, and 3% for placebo. In patients treated with NOURIANZ 40 mg, 1% discontinued because of hallucinations, compared to 0% for placebo and 0% for patients treated with NOURIANZ 20 mg. The incidence of "abnormal thinking and behavior" (paranoid ideation, delusions, confusion, mania, disorientation, aggressive behavior, agitation, or delirium) reported as an adverse reaction was 1% for NOURIANZ 20 mg, 2% for NOURIANZ 40 mg, and 1% for placebo.

### 5.3 Impulse Control/Compulsive Behaviors

Patients treated with NOURIANZ and one or more medication(s) for the treatment of Parkinson's disease (including levodopa) may experience intense urges to gamble, increased sexual urges, intense urges to spend money, binge or compulsive eating, and/or other intense urges, and the inability to control these urges. In controlled clinical trials (Studies 1, 2, 3 and 4), one patient treated with NOURIANZ 40 mg was reported to have impulse control disorder, compared to no patient on placebo or NOURIANZ 20 mg.

In some postmarketing cases, these urges were reported to have stopped when the dose was reduced, or the medication was discontinued. Because patients may not recognize these behaviors as abnormal, it is important for prescribers to specifically ask patients or their caregivers about the development of new or increased gambling urges, sexual urges, uncontrolled spending, binge or compulsive eating, or other urges while being treated with NOURIANZ. Consider dose reduction or discontinuation if a patient develops such urges while taking NOURIANZ.

## 6 ADVERSE REACTIONS

The following clinically significant adverse reactions are discussed in greater detail in other sections of the labeling:

- Dyskinesia *[see Warnings and Precautions (5.1)]*
- Hallucinations/Psychotic Behavior *[see Warnings and Precautions (5.2)]*
- Impulse Control/Compulsive Behaviors *[see Warnings and Precautions (5.3)]*

### 6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of NOURIANZ was evaluated in 734 patients with Parkinson's disease (PD) taking a stable dose of levodopa and a DOPA decarboxylase inhibitor, with or without other PD medications, in four randomized, multicenter, double-blind, placebo-controlled trials 12 weeks in duration (Studies 1, 2, 3 and 4). Of the patient population exposed to NOURIANZ, 50% were male, 32% White, 67% Asian, and the mean age was 65 years (range: 33 to 84 years). Of Of these patients, 356 received NOURIANZ 20 mg and 378 received NOURIANZ 40 mg.

Adverse Reactions Leading to Discontinuation of Treatment

The incidence of patients discontinuing for any adverse reaction was 5% for NOURIANZ 20 mg, 6% for NOURIANZ 40 mg, and 5% for placebo. The most frequently reported adverse reaction causing study discontinuation was dyskinesia.

Common Adverse Reactions in Pooled Placebo-Controlled Trials

Table 1 shows adverse reactions with a frequency of at least 2% in patients treated with NOURIANZ 20 mg or 40 mg once daily. The most common adverse reactions in which the frequency for NOURIANZ was at least 5%, and greater than the incidence on placebo, were dyskinesia, dizziness, constipation, nausea, hallucination, and insomnia.

**Table 1: Adverse Reactions with an Incidence of at Least 2% in Patients Treated with NOURIANZ, and Greater than on Placebo, in Pooled Studies 1, 2, 3, and 4**

| Adverse Reactions | NOURIANZ 20 mg/day (N=356) % | NOURIANZ 40 mg/day (N=378) % | Placebo N=426 (%) |
|---|---|---|---|
| **Nervous system disorders** | | | |
| Dyskinesia | 15 | 17 | 8 |
| Dizziness | 3 | 6 | 4 |
| **Gastrointestinal disorders** | | | |
| Constipation | 5 | 6 | 3 |
| Nausea | 4 | 6 | 5 |
| Diarrhea | 1 | 2 | 1 |
| **Psychiatric disorders** | | | |
| Hallucination[1] | 2 | 6 | 3 |
| Insomnia | 1 | 6 | 4 |
| **Metabolism and nutrition disorders** | | | |
| Decreased appetite | 1 | 3 | 1 |
| **Investigations** | | | |
| Blood alkaline phosphatase increased | 1 | 2 | 1 |
| Blood glucose increased | 1 | 2 | 0 |
| Blood urea increased | 1 | 2 | 0 |
| **Respiratory, thoracic and mediastinal disorders** | | | |
| Upper Respiratory Tract Inflammation | 1 | 2 | 0 |
| **Skin and subcutaneous tissue disorders** | | | |
| Rash | 1 | 2 | 1 |

[1] Includes hallucinations, hallucinations visual, hallucinations olfactory, hallucinations somatic, hallucinations auditory.

***NOURIANZ Brief Summary is continued on next page.***

*Continued from previous page:*

**Brief Summary of the Prescribing Information for**

## NOURIANZ™ (istradefylline) tablets, for oral use

### 6.2 Postmarketing Experience

The following adverse reaction has been identified during post approval use of istradefylline outside of the United States. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure: increased libido.

### 7 DRUG INTERACTIONS

### 7.1 Effect of Other Drugs on NOURIANZ

Strong CYP3A4 Inhibitors

Coadministration of NOURIANZ with a strong CYP3A4 inhibitor (ketoconazole) increased istradefylline $AUC_{inf}$ by 2.5-fold. Therefore, the recommended maximum dosage of NOURIANZ in patients concomitantly using strong CYP3A4 inhibitors (e.g., itraconazole, ketoconazole, clarithromycin) is 20 mg once daily.

Strong CYP3A4 Inducers

Coadministration of NOURIANZ with a strong CYP3A4 inducer (rifampin) decreased istradefylline $C_{max}$ and $AUC_{inf}$ by 45% and 81%, respectively. Therefore, it is recommended to avoid use of NOURIANZ with strong CYP3A4 inducers (e.g., carbamazepine, rifampin, phenytoin, St. John's wort).

### 7.2 Effect of NOURIANZ on Other Drugs

CYP3A4 Substrates

Coadministration of NOURIANZ 20 mg with a CYP3A4 substrate (midazolam) did not affect the CYP3A4 substrate exposure, while concomitant administration of NOURIANZ 40 mg increased the CYP3A4 substrate (atorvastatin) $C_{max}$ and $AUC_{inf}$ by 1.5-fold. Monitor for an increase in adverse reactions of concomitant drugs that are CYP3A4 substrates when coadministering with NOURIANZ 40 mg.

P-glycoprotein (P-gp) Substrates

Coadministration of NOURIANZ with a P-gp substrate (digoxin) increased the P-gp substrate $C_{max}$ and $AUC_{inf}$ by 33% and 21%, respectively. Monitor for an increase in adverse reactions of concomitant drugs that are P-gp substrates when coadministering with NOURIANZ.

### 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

Risk Summary

There are no adequate data on the developmental risk associated with the use of NOURIANZ in pregnant women. In animal studies, oral administration of istradefylline during pregnancy resulted in teratogenicity (increased incidences of fetal structural abnormalities, embryofetal and offspring mortality and growth deficits) at clinically relevant exposures and in the absence of maternal toxicity. The teratogenic effects of istradefylline in pregnant rabbits were substantially greater when administered in combination with levodopa/carbidopa than when administered alone.

The estimated background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risks of major birth defects and miscarriage in clinically recognized pregnancies are 2-4% and 15-20%, respectively.

### 8.2 Lactation

Risk Summary

There are no data on the presence of istradefylline in human milk, the effects of istradefylline on the breastfed infant, or the effects of istradefylline on milk production. Istradefylline was present in the milk of lactating rats at concentrations up to 10 times that in maternal plasma.

The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for NOURIANZ, and any potential adverse effects on the breastfed infant from NOURIANZ or from the underlying maternal condition.

### 8.3 Females and Males of Reproductive Potential

Contraception

Use of NOURIANZ during pregnancy is not recommended. Women of childbearing potential should be advised to use contraception during treatment with NOURIANZ.

### 8.4 Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

### 8.5 Geriatric Use

No adjustment of NOURIANZ dosage is recommended on the basis of age. Of the total number of PD patients who received NOURIANZ in clinical trials, 53% were ≥65 years and 13% were ≥75 years of age. No overall differences in effectiveness were observed between these patients and younger patients.

### 8.6 Renal Impairment

No adjustment of NOURIANZ dosage is needed in patients with mild renal impairment (estimated creatinine clearance (CrCL) by Cockcroft-Gault equation: 60-89 mL/min), moderate renal impairment (CrCL 30-59 mL/min), or severe renal impairment (CrCL 15-29 mL/min). NOURIANZ has not been evaluated in patients with end-stage renal disease (ESRD) (CrCL <15 mL/min) or ESRD requiring hemodialysis.

### 8.7 Hepatic Impairment

No adjustment of NOURIANZ dosage is needed in patients with mild hepatic impairment (Child-Pugh Class A).

In patients with moderate hepatic impairment (Child-Pugh B), the steady-state exposures ($AUC_{0-24h}$) were predicted to be 3.3-fold higher than in healthy subjects, based on the estimated mean terminal half-life. Therefore, the maximum recommended dosage of NOURIANZ in patients with moderate hepatic impairment (Child-Pugh B) is 20 mg once daily. Closely monitor patients with moderate hepatic impairment for adverse events when on NOURIANZ treatment.

NOURIANZ has not been studied in patients with severe hepatic impairment (Child-Pugh Class C). Avoid use of NOURIANZ in patients with severe hepatic impairment.

### 8.8 Tobacco Smokers

Tobacco smoking decreased NOURIANZ steady-state systemic exposures by 38% to 54%, which may decrease efficacy. Therefore, the recommended NOURIANZ dosage in patients who smoke 20 or more cigarettes per day (or the equivalent amount of another tobacco product) is 40 mg once daily.

### 10 OVERDOSAGE

### 10.1 Human Experience

There is limited clinical experience regarding human overdosage with NOURIANZ. In clinical trials, one patient took 6 tablets (120 mg, 3 times the maximum recommended dosage) of istradefylline with alcoholic beverages and developed hallucinations, agitation, and worsening dyskinesia.

### 10.2 Management of Overdose

There are no known specific antidotes for NOURIANZ nor any specific treatment for istradefylline overdose. If an overdose occurs, NOURIANZ treatment should be discontinued and supportive treatment should be administered as clinically indicated. Consider the long terminal half-life of istradefylline (about 83 hours) and the possibility of multiple drug involvement.

Consult a Certified Poison Control Center for up-to-date guidance and advice.

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