

IPND 2025 Diagnostic Criteria: Goals and Progress

Dean M. Wingerchuk, MD, MSc, FRCP(C)

Professor and Chair, Department of Neurology

Mayo Clinic, Phoenix/Scottsdale, Arizona

International consensus diagnostic criteria for neuromyelitis optica spectrum disorders

OPEN

Dean M. Wingerchuk,
MD, FRCP(C)
Brenda Banwell, MD,
FRCP(C)
Jeffrey L. Bennett, MD,
PhD
Philippe Cabre, MD
William Carroll, MD
Tanuja Chitnis, MD
Jérôme de Seze, MD
Kazuo Fujihara, MD
Benjamin Greenberg,
MD
Anu Jacob, MD
Sven Jarius, MD

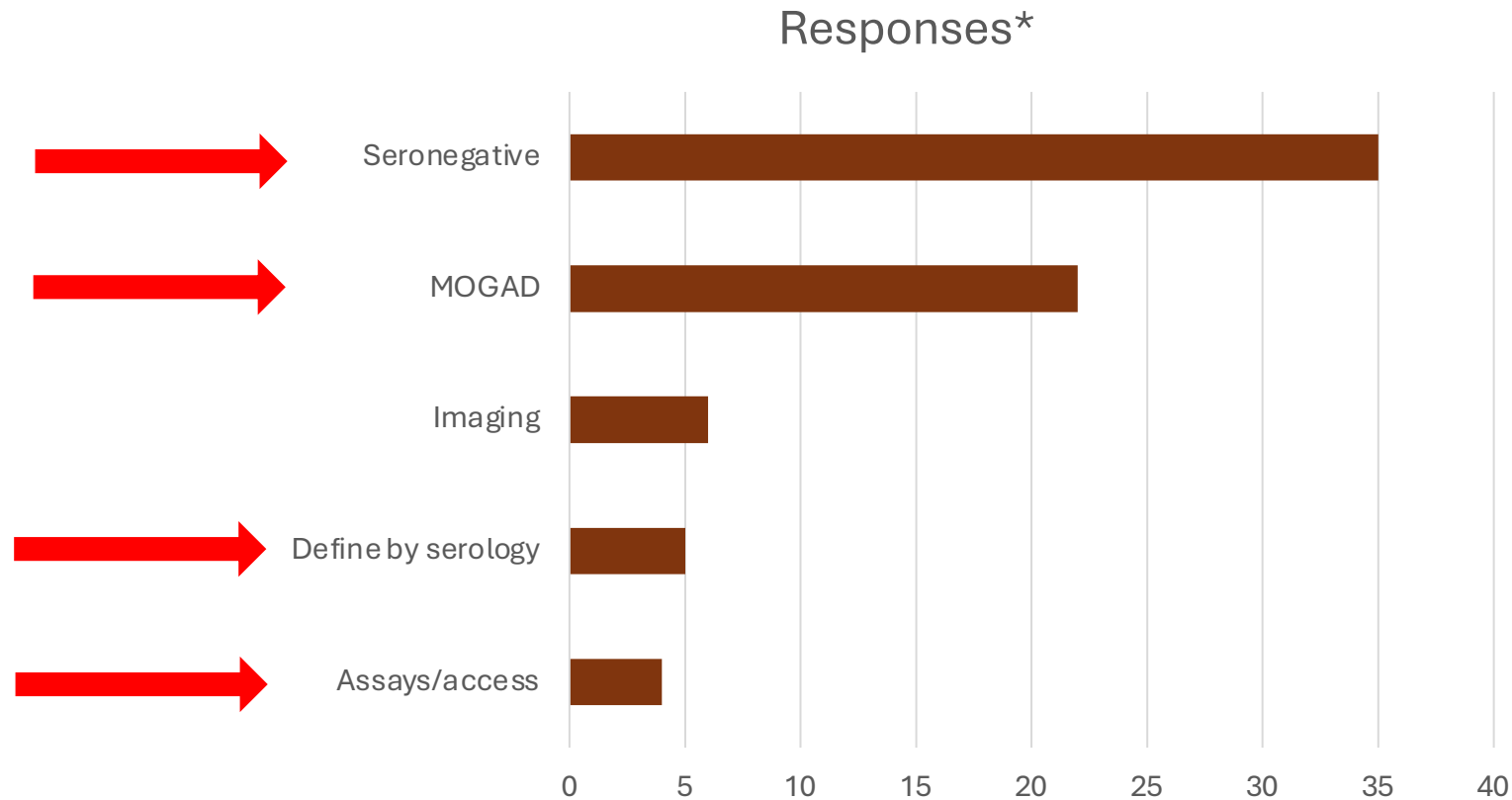
ABSTRACT

Neuromyelitis optica (NMO) is an inflammatory CNS syndrome distinct from multiple sclerosis (MS) that is associated with serum aquaporin-4 immunoglobulin G antibodies (AQP4-IgG). Prior NMO diagnostic criteria required optic nerve and spinal cord involvement but more restricted or more extensive CNS involvement may occur. The International Panel for NMO Diagnosis (IPND) was convened to develop revised diagnostic criteria using systematic literature reviews and electronic surveys to facilitate consensus. The new nomenclature defines the unifying term NMO spectrum disorders (NMOSD), which is stratified further by serologic testing (NMOSD with or without AQP4-IgG). The core clinical characteristics required for patients with NMOSD with AQP4-IgG include clinical syndromes or MRI findings related to optic nerve, spinal cord, area postrema, other brainstem, diencephalic, or cerebral presentations. More stringent clinical criteria, with additional neuroimaging findings, are required for diagnosis of NMOSD without AQP4-IgG or when serologic testing is unavailable. The IPND also proposed validation strategies and achieved consensus on pediatric NMOSD diagnosis and the concepts of monophasic NMOSD and opticospinal MS. *Neurology*® 2015;85:177-189

- *The International Panel for NMO Diagnosis (IPND) was convened and charged with revising NMO diagnostic criteria for clinical decision-making...*

IPND 2025 Survey

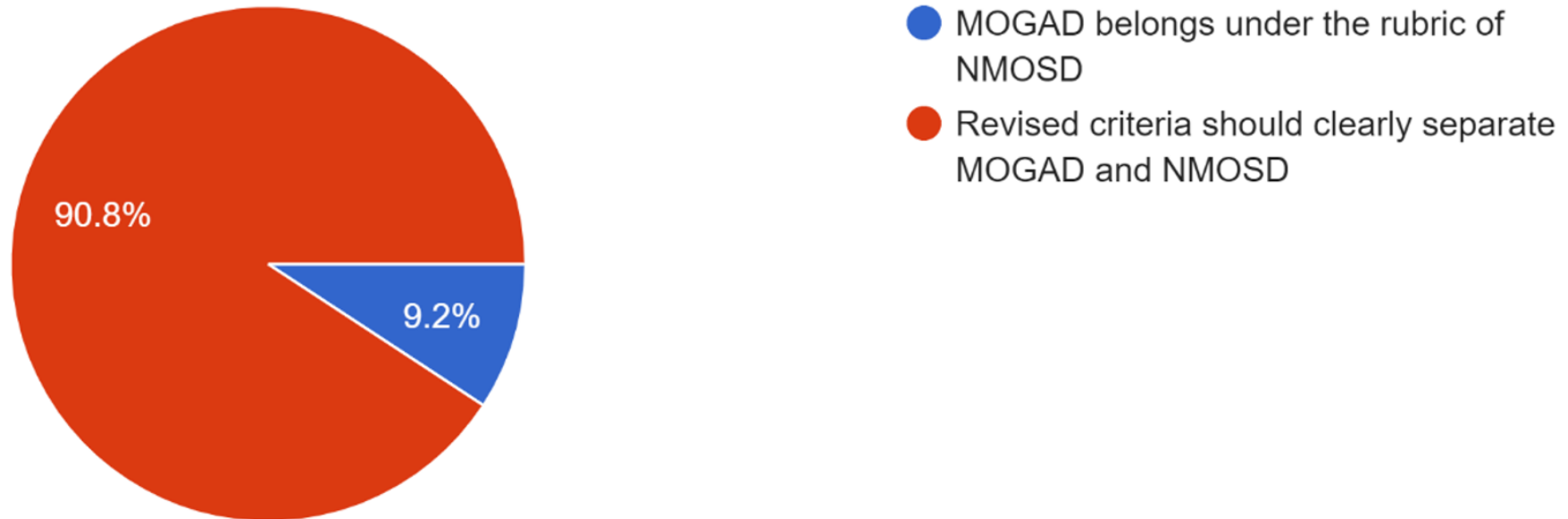
What is the most important issue you would like to see updated in revised IPND criteria?



*some respondents endorsed >1 issue

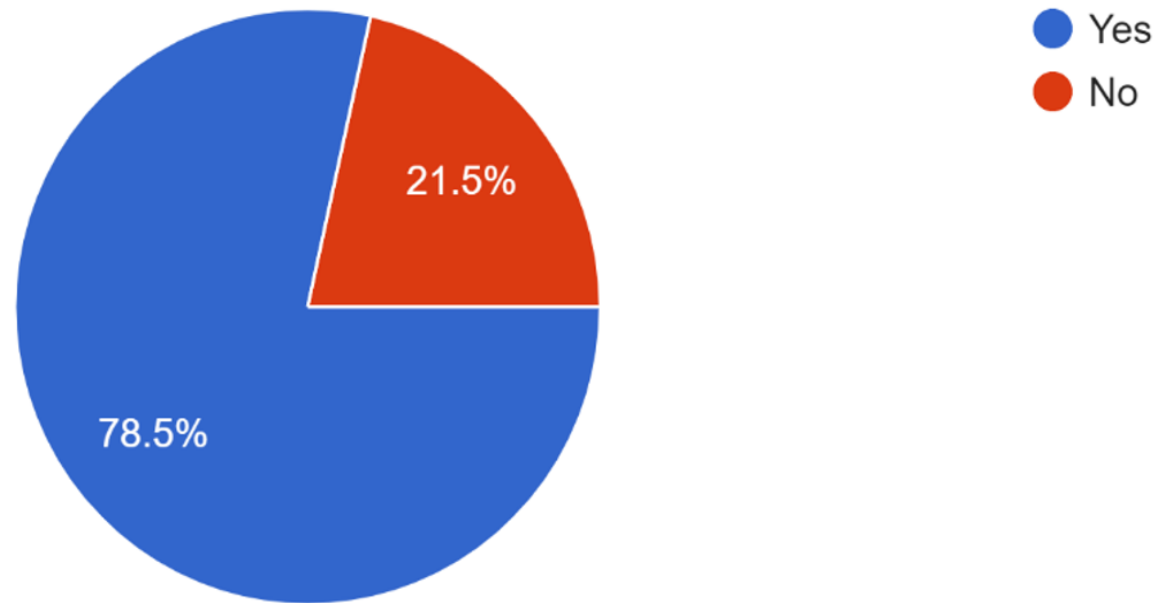
IPND 2025

Do you believe that MOGAD belongs under the rubric of NMOSD (e.g., that MOGAD is a subset or specific type of NMOSD) or do you favor the concept that MOGAD and NMOSD are distinct diseases and that revised criteria should clearly separate them?



IPND 2025

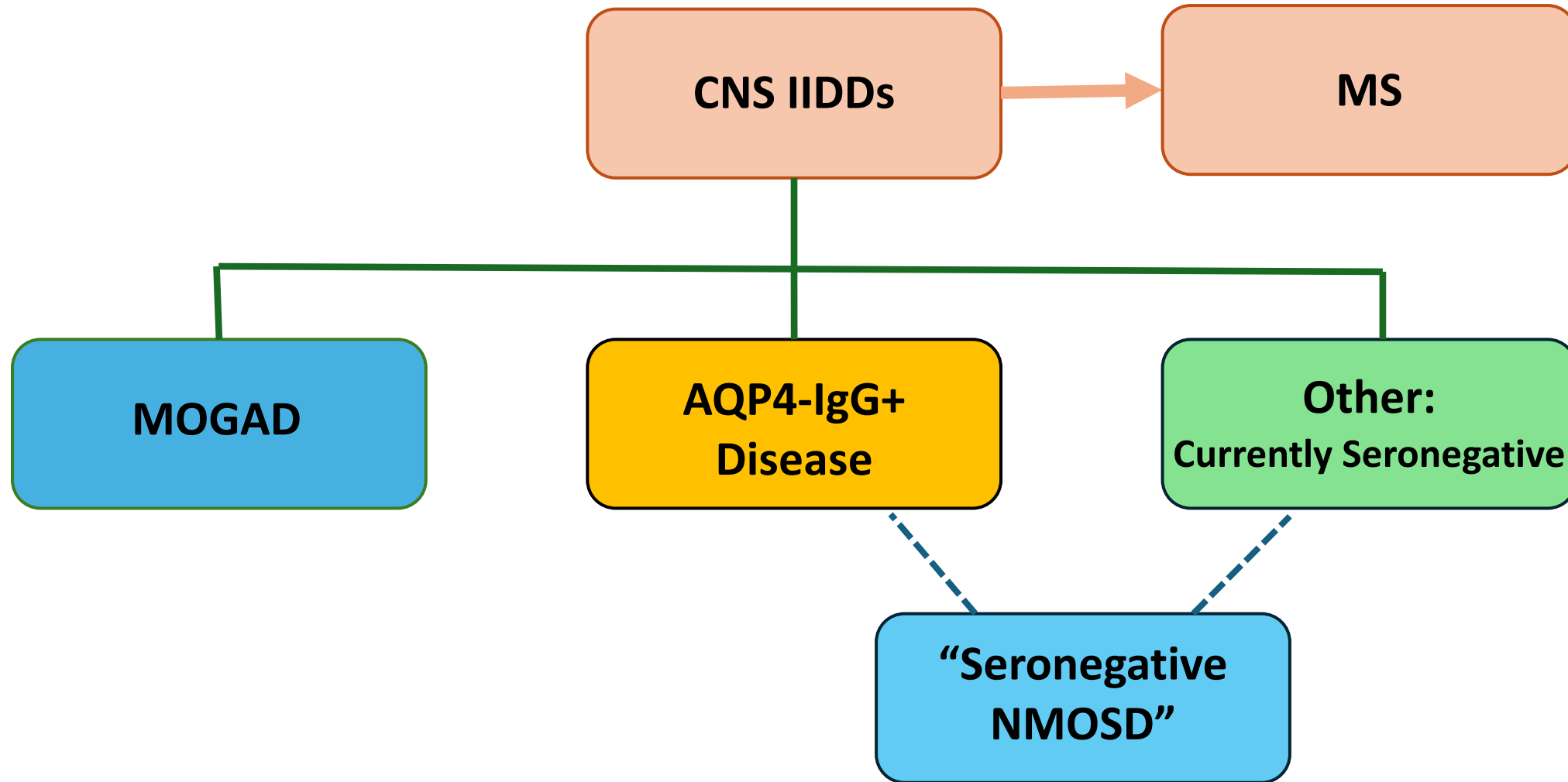
Should “NMOSD without AQP4-IgG” (the current IPND definition term) or so-called “double-seronegative NMO/NMOSD” be included in new diagnostic criteria?



IPND Objectives

- Develop contemporary definition, nosology, and nomenclature of NMOSD
- Distinguish NMOSD from MOGAD
- “Refresh” definition of NMOSD with AQP4-IgG
- Define “seronegative” phenotype and associated features
- Prospectus

General Nosology



IPND 2025 Steering Committee

EXECUTIVE BRANCH:

- Brenda BANWELL
- Kazuo FUJIHARA
- Romain MARIGNIER
- Jackie PALACE
- Friedemann PAUL
- Brian WEINSHENKER
- Dean WINGERCHUK
- Michael YEAMAN

COORDINATING BRANCH:

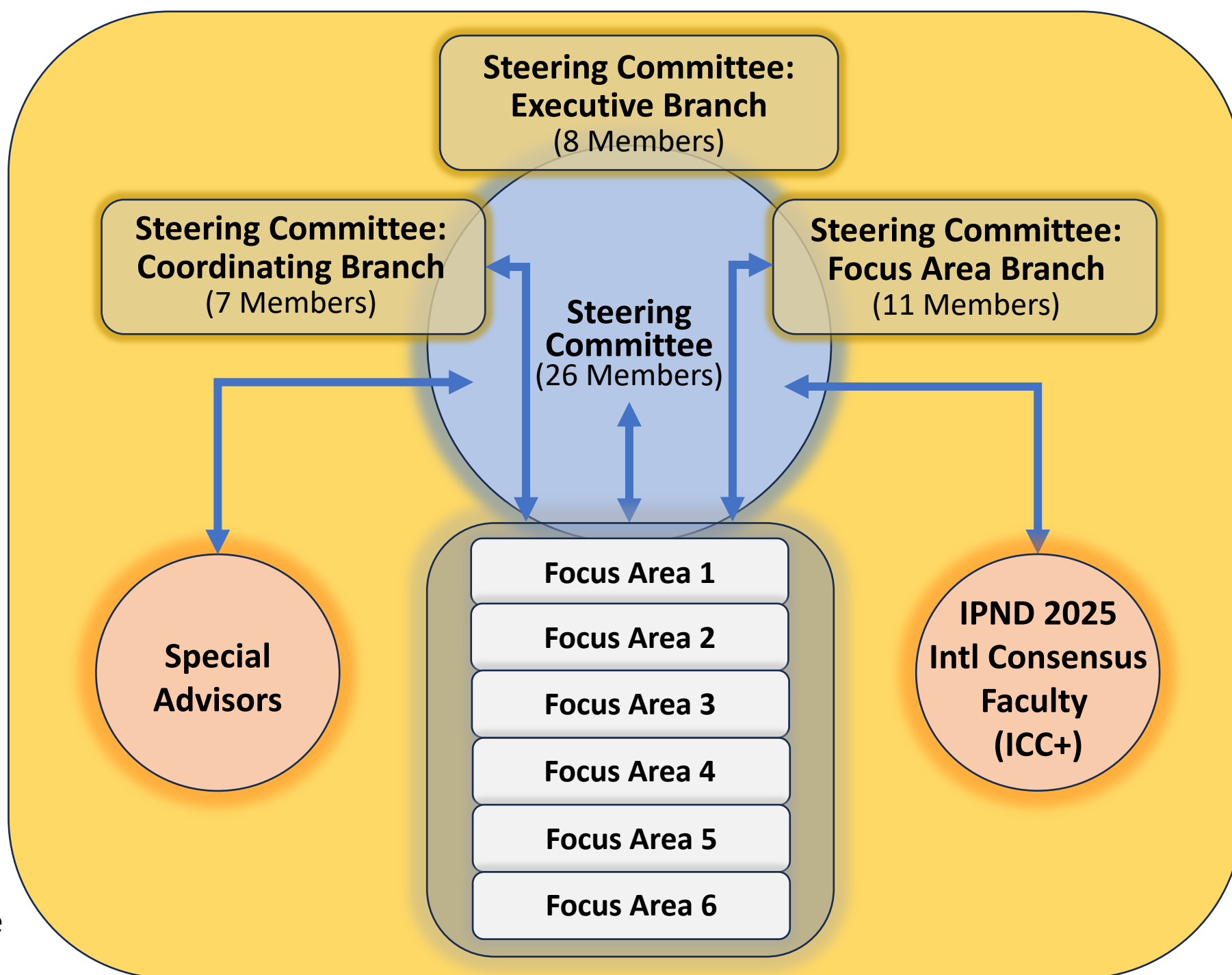
- Jeff BENNETT
- Najib KISSANI
- Ben GREENBERG
- Lekha PANDIT
- May HAN
- Darshi RAMANATHAN
- Silvia TENEMBAUM

FOCUS AREA BRANCH:

- Jorge CORREALE
- Maria Isabel LEITE
- Fabienne BRILOT
- Sean PITTOCK
- Eoin FLANAGAN
- Frederike OERTEL
- Orhan AKTAS
- Sara MARIOTTO
- Ho Jin KIM
- Maciej JURYNCHYK
- Ann-Katrin PRÖBSTEL

IPND 2025: Structure and Governance

- **Consensus-based process**
 - Balance practicality with inclusiveness
- **Steering committee**
 - Define scope, lead process
- **Advisory/Working Groups**
 - Representation
 - diversity, areas of expertise (clinical/MRI/serology/peds/etc)
 - equity & inclusivity (demography; international; career stage)
- **Contributors**
 - Derived from ICC
 - Additional feedback/expertise on select topics
- **Support**
 - Guthy Jackson Charitable Foundation



- Focus Areas:**
- 1. Clinical
 - 2. Serology
 - 3. Imaging
 - 4. Biomarkers
 - 5. Nosology
 - 6. Seronegative

Focus Areas

- **”Refresh” – Focus on AQP4+ Disease**

- 1 – Clinical Phenotype
- 2 - Serology
- 3 - Imaging
- 4 - Biomarkers

- **Contemporary issues**

- 5 - Nosology and Nomenclature
- 6 - Seronegative

FA1: Clinical Phenotype

- Clinical features of AQP4+ disease
 - Reappraise clinical definitions
- Attack/Relapse – temporal characteristics
- Site-specific
- Adult vs Pediatric
- Red flags
- Prospectus

Surname	First Name	Region	Nation
CORREALE	Jorge	S. America	Argentina
LEITE	Maria Isabel	Europe	UK
JACOB	Anu	Asia	UAE
KIM	Su-Hyun	Asia Pacific	S. Korea
QUAN	Chao	Asia Pacific	China
HACOHEN	Yael	Europe	UK
ABBOUD	Hesham	N. America	USA
ROTSTEIN	Dalia	N. America	Canada

FA2: Serology

- **AQP4-IgG assay methods**
 - Reference standard method
 - Other and emerging assays (e.g. immunodot)
- **Diagnostic accuracy**
 - Reference standard (CBA) vs commonly available assays
- **Seroconversion / Seroreversion rates**
- **Recommendations for clinicians**
 - Test interpretation
 - Retesting, etc.

Surname	First Name	Region	Nation
BRILOT	Fabienne	Asia Pacific	Australia
PITTOCK	Sean	N. America	USA
GASTALDI	Matteo	Europe	Italy
IORIO	Raffaele	Europe	Italy
REINDL	Markus	Europe	Austria
WATERS	Paddy	Europe	UK
KUNCHOK	Amy	N. America	USA
SATO	Douglas	S. America	Brazil

FA3: Imaging

- Update imaging features of NMOSD with AQP4-IgG
- Standard MRI sequences
- Use of MRI for disease monitoring
- Nonconventional MRI
- OCT

Surname	First Name	Region	Nation
FLANAGAN	Eoin	N. America	USA
OERTEL	Frederike	Europe	Germany
SALAMA	Sara	Africa	Egypt
LIU	Yaou	Asia Pacific	China
NAKASHIMA	Ichiro	Asia Pacific	Japan
FINKE	Carsten	Europe	Germany
MARGONI	Monica	Europe	Italy
MESSINA	Silvia	Europe	UK
CHEN	John	N. America	USA
FADDA	Giulia	N. America	Canada
CARNERO CONTENTTI	Edgar (Junior)	S. America	Argentina

FA4: Biomarkers

- Evaluate molecular and cellular biomarkers
- Conceptual use of biomarkers: AQP4+ disease vs seronegative
 - Initial focus on GFAP, NfL, IL-6, complement, routine CSF tests
- Potential near-term use in diagnosis
- Standardization

Surname	First Name	Region	Nation
AKTAS	Orhan	Europe	Germany
MARIOTTO	Sara	Europe	Italy
VAKNIN-DEMBINSKY	Adi	Asia	Israel
MISU	Tatsuro	Asia Pacific	Japan
ARRAMBIDE	Georgina	Europe	Spain
COBO-CALVO	Alvaro	Europe	Spain
CHITNIS	Tanuja	N. America	USA
MELAMED	Esther	N. America	USA
MAO-DRAAYER	Yang	N. America	USA
SOTO DE CASTILLO	Ibis	S. America	Venezuela

FA6: Seronegative

- Evaluate performance/validity of 2015 criteria for AQP4-IgG negative/not available
- Determine if there are idiopathic non-MS/ AQP-/MOG- cohorts with AQP4+ biology (identical disease)
- Define seronegative NMO/SD clinical syndromes for practice and research
- Diagnostic guidance (testing/differential)
- Prospectus

Surname	First Name	Region	Nation
KIM	Ho Jin	Asia Pacific	S. Korea
JURYNCZYK	Maciej	Europe	Poland
PRÖEBSTEL	Ann-Katrin	Europe	Switzerland
APIWATTANAKUL	Mehta	Asia Pacific	Thailand
BROADLEY	Simon	Asia Pacific	Australia
SIRITHRO	Sasitom	Asia Pacific	Thailand
ALTINTAS	Ayse	Europe	Turkey
ASGARI	Nasrin	Europe	Denmark
DEIVA	Kumaran	Europe	France
HUDA	Saif	Europe	UK
KLEITER	Ingo	Europe	Germany
SECHI	Elia	Europe	Italy
RUPRECHT	Klemens	Europe	Germany
SEPULVEDA	Maria	Europe	Spain
SOTIRCHOS	Elias	N. America	USA
YEH	Ann	N. America	Canada
LANA-PEIXOTO	Marco	S. America	Brazil

FA5: Nosology and Nomenclature

EXECUTIVE BRANCH:

- Brenda BANWELL
- Kazuo FUJIHARA
- Romain MARIGNIER
- Jackie PALACE
- Friedemann PAUL
- **Brian WEINSHENKER**
- Dean WINGERCHUK
- **Michael YEAMAN**

COORDINATING BRANCH:

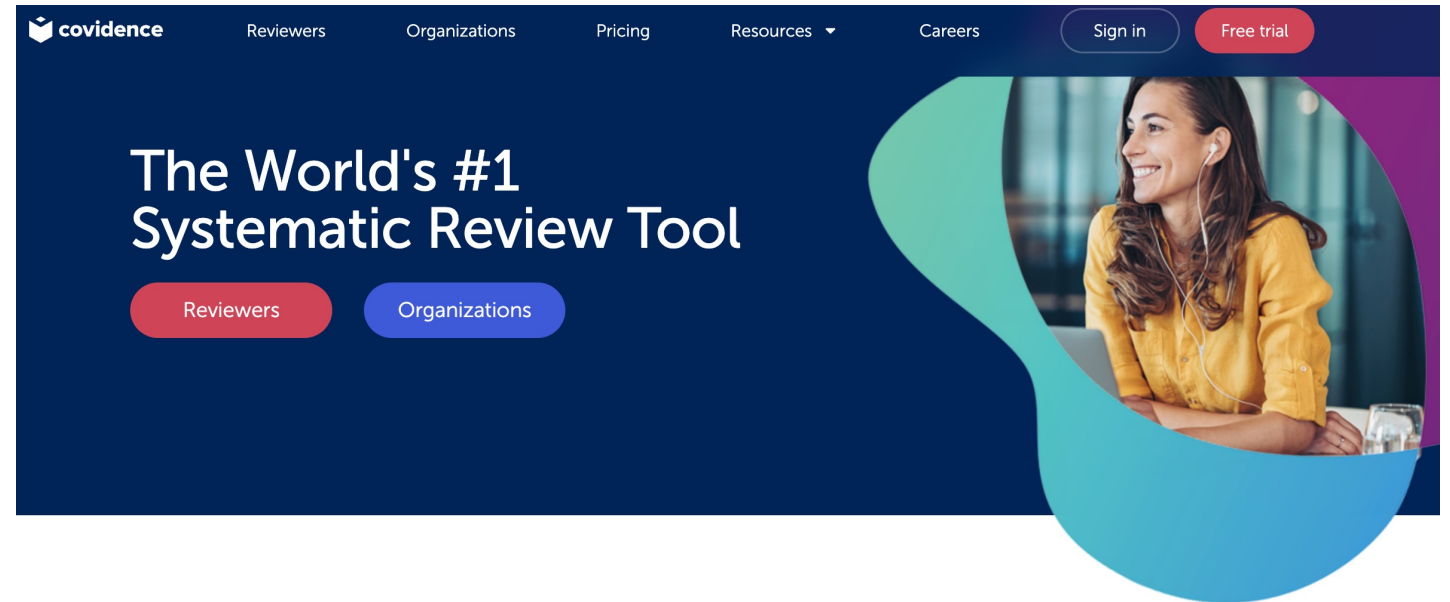
- Jeff BENNETT
- Najib KISSANI
- **Ben GREENBERG**
- Lekha PANDIT
- May HAN
- Darshi RAMANATHAN
- Silvia TENEMBAUM

FOCUS AREA BRANCH:

- Jorge CORREALE
- Maria Isabel LEITE
- Fabienne BRILOT
- Sean PITTOCK
- Eoin FLANAGAN
- Frederike OERTEL
- Orhan AKTAS
- Sara MARIOTTO
- Ho Jin KIM
- Maciej JURYNCZYK
- Ann-Katrin PRÖBSTEL

IPND 2025: Methods

- Focused systematic literature search and reviews
- Assembly of evidence
 - Full-text paper reviews
 - Coordination between Focus Areas
- Consensus development



See your systematic reviews like never before

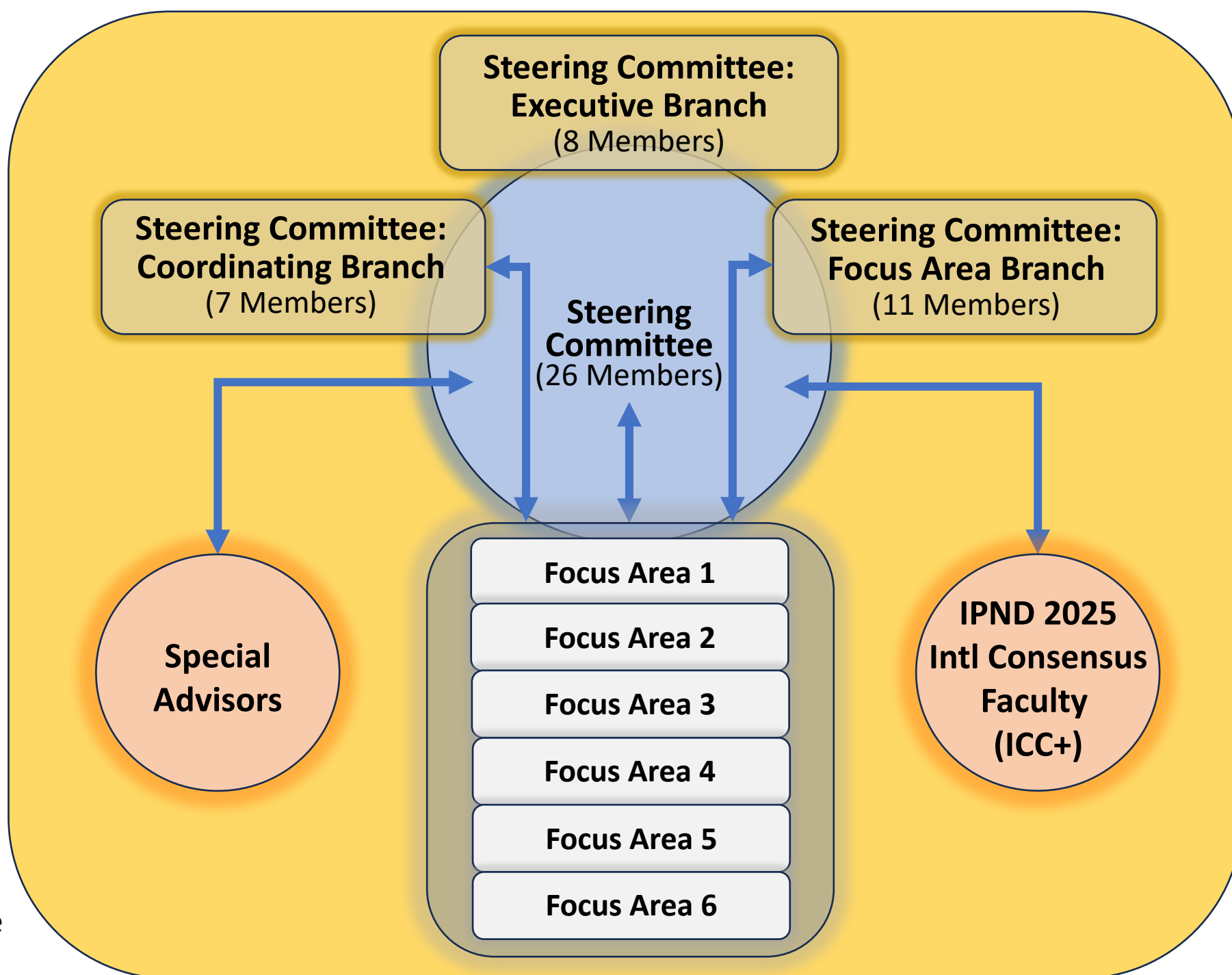
Faster reviews

An average 35% reduction in time spent per review, saving an average of 71 hours per review.

Expert, online support

Easy to learn and use, with 24/7 support from product experts who are also seasoned reviewers!

Literature search support: Lisa Marks, MLS, AHIP



Focus Areas:

- 1. Clinical
- 2. Serology
- 3. Imaging
- 4. Biomarkers
- 5. Nosology
- 6. Seronegative

IPND 2025: Special Advisors

SURNAME	First Name	Region	Nation
CARROLL	William	Asia Pacific	Australia
CREE	Bruce	N. America	USA
DE SEZE	Jerome	Europe	France
GRAVES	Jennifer	N. America	USA
HEMINGWAY	Cheryl	Europe	UK
JARIUS	Sven	Europe	Germany
LEVY	Michael	N. America	USA
SHI	Fu-Dong	Asia	China
TRABOULSEE	Tony	N. America	Canada
ZAMVIL	Scott	N. America	USA

IPND 2025: International Consensus Faculty

Surname	First Name	Region	Nation
ABDEL-MANNAN	Omar	Europe	UK
ALONSO	Ricardo	S. America	Argentina
ALROUGHANI	Raed	Asia	Kuwait
AMEZCUA	Lilyana	N. America	USA
ARMANGUE	Thais	Europe	Spain
AVASARALA	Jay	N. America	USA
BALABANOV	Roumen	N. America	USA
BICHUETTI	Denis	S. America	Brazil
BOYKO	Alexey	Europe	Russia
CARRUTHERS	Robert	N. America	Canada
DELGADO-GARCIA	Guillermo	N. America	Canada
DUJMOVIC	Irena	N. America	USA
BASUROSKI			
FLORES-RIVERA	Jose	N. America	Mexico
GALLEGUILLLOS	Lorna	S. America	Chile
GERALDES	Ruth	Europe	UK
GOODMAN	Andrew	N. America	USA
HAVLA	Joachim	Europe	Germany
HELLWIG	Kerstin	Europe	Germany
HOR	Jyh Yung	Asia	Malaysia
JIMENEZ	Jorge	S. America	Colombia
KATZ SAND	Ilana	N. America	USA
KIM	Sung Min	Asia	S. Korea
KIMBROUGH	Dorlan	N. America	USA

Surname	First Name	Region	Nation
KISTER	Ilya	N. America	USA
KUMPFEL	Tania	Europe	Germany
LUBLIN	Fred	N. America	USA
MAIGA	Youssoufa	Africa	Mali
MATIELLO	Marcelo	N. America	USA
MOMTAZEE	Callene	N. America	USA
NEALON	Nancy	N. America	USA
O'CONNOR	Kevin	N. America	USA
PAOLILO	Renate	S. America	Brazil
PLANCHON POPE	Sarah	N. America	USA
QIAN	Peiqing	N. America	USA
REPOVIC	Pavle	N. America	USA
RILEY	Claire	N. America	USA
RINGELSTEIN	Marius	Europe	Germany
RIVERA	Victor	N. America	USA
ROJAS	Juan	S. America	Argentina
SA	Maria	Europe	Portugal
SAIZ	Albert	Europe	Spain
SERGUERA	Che	Europe	France
SHOSHA	Eslam	N. America	Canada
SIVA	Aksel	Europe	Turkey
STUVE	Olaf	N. America	USA
VILLOSLADA	Pablo	Europe	Spain
WILLEKENS	Barbara	Europe	Belgium
YAMOUT	Bassem	Asia	Lebanon

IPND 2025 Timeline

- 2021 Discussions and formation of interest group
- 2022 Survey of GJCF ICC – ECTRIMS (Amsterdam)
- 2023 Q1-2 Organize Executive Committee, initiate project July 2023
- 2023 Q3 Solicit nominations/areas of interest
- 2023 Q4 Update at ECTRIMS (Milan) and develop project org structure
Develop process for committee leadership and membership
Draft IPND objectives
- 2024 Q1 Invite, appoint, and orient leaders and members
Finalize project objectives and timeline

IPND 2025 Timeline

- 2024 Q2
Endorse final project objectives and timeline
Complete literature search strategies
Abstract reviews / Full-text availability and review
- 2024 Q3
Assemble data summaries and consensus recommendations
- 2024 Q4
Establish FA conclusions / IPND consensus
- 2025 Q1
Primary manuscript submission

IPND 2025: Manuscripts

- **Primary manuscript**
 - Target: Lancet Neurology
 - Authorship
- **Spin-off manuscripts**
 - Facilitated by systematic literature reviews

Thank You! Onwards!

- **All 130 IPND contributors**

- 26 Steering Committee
- 43 Focus Area Members
- 12 Special Advisors
- 48 International Consensus Faculty
- 1 Library Science Specialist (Lisa Marks, Mayo Clinic)

- **Guthy Jackson Charitable Foundation**

- Jacinta Behne
- Megan Behne
- Terry Smith

