

CURRICULUM VITAE

PROFESSOR MESSOUD ASHINA, MD, PhD, DMSci

Professor of Neurology, University of Copenhagen

Senior Consultant of Neurology, Copenhagen University Hospital – Rigshospitalet

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EXECUTIVE PROFILE

Internationally recognised clinical neurologist and translational neuroscientist whose work has reshaped the biological understanding and treatment of migraine. Professor Ashina pioneered controlled human provocation models as a platform for causal target validation, identified PACAP-related signalling, intracellular second-messenger pathways and potassium-channel activation as key migraine-generating mechanisms, and translated mechanistic discoveries into novel preventive therapies with demonstrated phase II efficacy. He leads an integrated research programme spanning experimental medicine, advanced neuroimaging, biomarker discovery, clinical trials, real-world evidence and comparative treatment effectiveness, bridging fundamental human neuroscience with therapeutic innovation and clinical practice.

ACADEMIC IMPACT

473	36,297	97	DKK 153.0M
PubMed-Indexed Publications	Google Scholar Citations	Google Scholar <i>h</i> -index	Research Funding Awarded, 2008–2025
2023–2025 Clarivate Highly Cited Researcher Neuroscience & Behavior		2025 ScholarGPS Highly Ranked Scholar Neurology, Past 5 Years — Ranked #11 Worldwide	

CURRENT LEADERSHIP & APPOINTMENTS

2014 – Present	Professor of Neurology, University of Copenhagen
2007 – Present	Senior Consultant of Neurology, Copenhagen University Hospital – Rigshospitalet
2025 – Present	Founding Director, Center of Excellence for Discoveries in Migraine
2019 – Present	Director & Founder, Danish National Knowledge Center on Headache Disorders
2023 – Present	Chair, Science & Research Committee, International Headache Society

EDUCATION & CAREER

2007 – 2014	Associate Professor of Neurology, University of Copenhagen
2006 – 2007	Consultant of Neurology, Glostrup Hospital
2003	DMSci, University of Copenhagen
2000	PhD, University of Copenhagen
1988	MD, Azerbaijan Medical University

CORE RESEARCH DOMAINS

Human Experimental Migraine Models | PACAP & CGRP Biology | cAMP/cGMP Signalling | K_{ATP} & BK_{Ca} Channels | Trigemino-vascular Vessel-to-Neuron Signalling | Migraine Aura | Neuroimaging | Biomarkers | Experimental Pharmacology | Acute & Preventive Therapeutics.

HONORS & DISTINCTIONS

2023 —	Kirsten and Freddy Johansen Clinical Medical Research Prize
2021 —	TÜBA Academy Prize in Health and Life Sciences
2021 —	Monrad Krohn Prize, Norwegian Neurological Society
2005 —	Roche Prize, Danish Neurological Society
2003 —	Research Prize, Danish Headache Society
2000 —	Research Prize, GlaxoSmithKline
1998 —	Mogens Fog Prize, Danish Neurological Society

DISCOVERY & TRANSLATIONAL IMPACT

Professor Ashina established controlled human experimentation as a powerful method for determining whether specific molecular pathways can causally initiate migraine attacks. This strategy created a direct bridge from biological mechanism to therapeutic target validation in patients.

His PACAP programme exemplifies this translational trajectory: PACAP was identified as a human molecular migraine trigger, its downstream biology was characterised experimentally, and the pathway was subsequently advanced to a PACAP-targeted monoclonal antibody that demonstrated preventive efficacy in a phase 2 trial published in the New England Journal of Medicine in 2024.

His research has also established vascular K_{ATP} channel activation and intracellular second messenger signalling as migraine-generating mechanisms. In parallel, his clinical research has contributed to randomized Phase 1–4 trials, registries, real-world studies and evidence synthesis. The 2024 BMJ network meta-analysis of 137 randomized trials involving 89,445 participants provided clinically actionable comparative evidence for acute migraine treatment selection.

MAJOR SCIENTIFIC CONTRIBUTIONS

- **Causal Human Experimental Medicine:** Established pharmacological provocation as a rigorous platform for testing migraine mechanisms and validating therapeutic targets directly in patients.
- **Target Discovery & Translation:** Advanced PACAP from human trigger discovery to mechanistic validation and successful phase II preventive therapy.
- **Ion Channel & Second-Messenger Signalling:** Defined K_{ATP}/BK_{Ca} channels and cAMP/cGMP pathways as key mechanisms of migraine initiation.
- **Trigeminovascular Mechanisms:** Advanced vessel-to-neuron models linking vascular signalling to activation and sensitisation of trigeminal afferents.
- **Clinical Therapeutics:** Contributed to pivotal trials, international treatment recommendations, real-world evidence and comparative-effectiveness research informing clinical practice.

MAJOR COMPETITIVE FUNDING & GRANT LEADERSHIP

Grant Portfolio: 2008–2025: Totalling DKK 153.0 million.

Current Grant Portfolio:

- **2024 — Danish National Research Foundation**
Center for Discoveries in Migraine — Center of Excellence | Founding Director / Principal Investigator | DKK 60.0 million

- **2020 — Lundbeck Foundation**
LF Professorship | Principal Investigator | DKK 40.0 million
- **2025 — Novo Nordisk Foundation**
NNF Tandem Grant | Principal Investigator | DKK 11.8 million

Clinical research leadership: Principal Investigator of multiple Phase 1, Phase 2, Phase 3 and Phase 4 migraine trials and founder/leader of integrated human experimental, imaging, biomarker and registry research platforms.

MENTORSHIP & ACADEMIC DEVELOPMENT

Faculty supervisor for 24 completed and 10 ongoing PhD programmes, with additional PhD co-supervision and mentorship of completed and ongoing postdoctoral/DMSc programmes. Extensive undergraduate, postgraduate, residency and international teaching in clinical neurology and headache science.

SELECTED LANDMARK & CLINICAL IMPACT PUBLICATIONS

1. Discovered PACAP as a Causal Human Migraine Trigger

Schytz HW, Birk S, Wienecke T, Kruuse C, Olesen J, **Ashina M**. PACAP38 induces migraine-like attacks in patients with migraine without aura. *Brain*. 2009;132:16–25. doi:10.1093/brain/awn307.

Provided pivotal human evidence identifying PACAP as a migraine-generating pathway and therapeutic target.

2. Identified KATP Channel Activation as a Powerful Migraine-Generating Mechanism

Al-Karagholi MA, Hansen JM, Guo S, Olesen J, **Ashina M**. Opening of ATP-sensitive potassium channels causes migraine attacks: a new target for the treatment of migraine. *Brain*. 2019;142:2644–2654. doi:10.1093/brain/awz199.

Established K_{ATP} channel signalling as a novel mechanistic pathway and potential drug target in migraine.

3. Revealed Migraine-Generating Second-Messenger Signaling

Do TP, Deligianni C, Amirgulyev S, Snellman J, Lopez CL, Al-Karagholi MA, Guo S, **Ashina M**. Second messenger signalling bypasses CGRP receptor blockade to provoke migraine attacks in humans. *Brain*. 2023;146:5224–5234. doi:10.1093/brain/awad261.

Demonstrated that intracellular signalling can trigger migraine independently of direct CGRP receptor activation, expanding the therapeutic target landscape.

4. Translated PACAP Discovery into Successful Preventive Therapy

Ashina M, Phul R, Khodaie M, Löf E, Florea I. A Monoclonal Antibody to PACAP for Migraine Prevention. *N Engl J Med*. 2024;391:800–809. doi:10.1056/NEJMoa2314577.

Completed a bench-to-bedside translational arc from human target discovery to phase II evidence of therapeutic efficacy.

5. Delivered Comparative Evidence with Direct Implications for Acute Migraine Care

Karlsson WK, Ostinelli EG, Zhuang ZA, Kokoti L, Christensen RH, Al-Khazali HM, Deligianni CI, Tomlinson A, Ashina H, Ruiz de la Torre E, Diener HC, Cipriani A, **Ashina M**. Comparative effects of drug interventions for the acute management of migraine episodes in adults: systematic review and network meta-analysis. *BMJ*. 2024;386:e080107. doi:10.1136/bmj-2024-080107.

Provided large-scale comparative evidence to inform acute treatment selection, clinical practice and access to effective migraine therapies.

SELECTED JOURNAL FOOTPRINT

2 New England Journal of Medicine	7 The Lancet	12 The Lancet Neurology	6 Nature Reviews Neurology
18 Brain	18 Neurology	5 Annals of Neurology	3 JAMA Neurology

INTERNATIONAL & NATIONAL SCIENTIFIC LEADERSHIP

2025 – Present	Elected Member, Royal Danish Academy of Sciences and Letters
2023 – Present	Chair, Science & Research Committee, International Headache Society
2022 – 2026	Member, Science Committee, European Academy of Neurology
2019 – 2021	President, International Headache Society
2017 – 2019	General Secretary, European Headache Federation
2011 – 2018	President, Danish Headache Society

EDITORIAL LEADERSHIP

- Associate Editor, Brain
- Associate Editor, The Journal of Headache and Pain
- Editorial Board, European Journal of Neurology
- Editor, Pathophysiology of Headaches, with Pierangelo Geppetti, Springer
- Past Associate Editor, Cephalalgia
- Ad Hoc Reviewer for The New England Journal of Medicine, Nature Medicine, JAMA, The Lancet Neurology, PNAS, Brain, Annals of Neurology, Neurology, and other leading journals

GLOBAL RESEARCH, GUIDELINE & CLINICAL TRIAL LEADERSHIP

Professor Ashina has built a global migraine research network linking human experimental medicine, neurovascular science, imaging, pharmacology and clinical trials. He has translated mechanistic discovery into international standards of care, including as last and corresponding author of the 2021 European consensus statement on the “Diagnosis and management of migraine in ten steps.” His leadership spans target discovery, therapeutic development and clinical implementation.

Professor Ashina has built an international research network spanning leading centres in North America, Europe, and East Asia. His collaborations integrate human experimental medicine, neurovascular neuroscience, imaging, molecular pharmacology and therapeutic development. He has contributed to international migraine treatment recommendations, clinical trial standards and guideline initiatives and to multicentre programmes translating mechanistic discoveries into clinical practice.

LANGUAGES & CONTACT

Languages: Danish, English, Russian & Azerbaijani

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