ERA-NET NEURON

NEWSLETTER 49

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Announcements from Neuron Cofund2

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NEURON's EPNA2025 Calls:

"Excellent Paper in Neuroscience" Awards in:

Mechanisms of Resilience and Vulnerability to Environmental Challenges in Mental Health

&

Ethical, legal and social aspects of neuroscience

If you are a first author of an outstanding scientific article on the above topics - you may be eligible to apply with a chance to win 3000€ and an invitation for a special lecture

Submission deadline: 15 Oct 2025 | 19:00 CEST

STAY TUNED!

EP BrainHealth JTC2026

2 calls coming up soon...

MORE INFORMATION HERE

From the desk of the coordinator | September 2025

Dear Readers,

Welcome to the 49th edition of the NEURON newsletter, where we highlight the latest advancements and challenges in the area of biological, social and environmental protective and risk factors that protect or threaten brain health across the lifespan, as discussed by leading experts at our recent foresight symposium. This May, we had the pleasure of hosting the annual Foresight Symposium in Riga, Latvia, organised by the CSA BrainHealth. The event featured presentations from distinguished expert speakers in neurology and mental health and brought together researchers, patient representatives and members of the CSA BrainHealth Scientific Advisory Board for a rich discussion on the

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determinants of brain health and their implications for future research. Video interviews with the symposium experts are now available on our YouTube channel. For more details on the Foresight Symposium, see page 3.

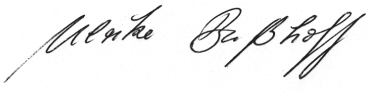
We are also pleased to announce the launch of the ERA-Net NEURON Excellent Paper in Neuroscience Award (EPNA) 2025. This prestigious award, aimed at supporting and recognizing early-career researchers, will this year focus on two fields: biomedical research related to "Mechanisms of Resilience and Vulnerability to Environmental Challenges in Mental Health" and the "Ethical, Legal, and Social Aspects" (ELSA) of neuroscience. We encourage eligible ECRs to apply and showcase their contributions to these important areas of research.

This summer, NEURON also published three success stories that illustrate the diversity, impact, and collaborative spirit of our multinational projects. MulioBio (JTC2019, Biomarkers) advanced a biology-informed approach to psychiatry. Rather than relying solely on traditional diagnostic labels, the project grouped patients by symptom dimensions and illness trajectories, identifying biological markers such as microRNA profiles and inflammation-related proteins. This collaborative effort between clinicians and researchers across Europe opens the way toward earlier detection and more personalised interventions for severe mental illness. ENTRUST-PE (Networking Group Call 2022, Chronic Pain) united clinicians, patient advocates, and methodologists to co-create a framework for trustworthy pain research. The team developed practical tools-including a white paper, factsheets, and an explainer video-built on values of transparency, methodological rigour, and meaningful patient involvement. The collaborative process has already gained recognition from journals and professional societies, supporting real-world uptake of the framework. FUTUREBODY (ELSA-JTC2017) explored how emerging neurotechnologies reshape concepts of the body, identity, and mind, combining philosophical analysis with participatory engagement and innovative public dialogue formats. Together, these projects exemplify the multinational collaboration at the heart of NEURON and the value of bringing together diverse expertise and perspectives to advance brain research.

Looking ahead, NEURON will continue to share the achievements of its funded projects, with further success stories, communication activities, and highlights from the network to come over the next year.

With this we wish you a lovely and productive autumn and invite you to explore our accomplishments and stay up to date with our activities on our website and by following us on X, Bluesky and LinkedIn.

Sincerely yours



Foresight Symposium on Biological, Social and Environmental Protective and Risk Factors that Protect or Threaten Brain Health Across the Lifespan

May 14th, 2025

On May 14, 2025, the CSA BrainHealth, convened a one-day Foresight Symposium on "Biological, Social and Environmental Protective and Risk Factors that Protect or Threaten Brain Health Across the Lifespan." The meeting-organised by Denis Vivien (Inserm) and Emmanuel Brouillet (CNRS-brought together leading scientists, patient representatives Astri Arnesen, President of the European Federation of Neurological Associations (EFNA), and Raluca Nica from the Global Alliance of Mental Illness Advocacy Networks-Europe (GAMIAN-Europe), as well as members of the CSA BrainHealth Scientific Advisory Board (SAB). Together, they engaged in a full day of lectures and in-depth discussions, where scientific expertise and patients' experience complemented one another, underscoring the importance of collaborative dialogue in shaping perspectives on brain health across the lifespan.

The programme spanned a wide range of perspectives on brain health across the lifespan. Talks addressed protective and risk factors at all stages of life and their role in disease development, genetic and epigenetic influences, and environmental and social determinants such as urbanicity and stress. Speakers also explored how therapeutic interventions may modify disease trajectories, the importance of prevention across the life course, and approaches to building emotional resilience at individual, interpersonal, and societal levels. This comprehensive view highlighted both biological mechanisms and societal challenges, setting the stage for an integrative discussion on strategies to safeguard brain health.

This symposium served as an important consultation step, providing scientific insights that will shape the upcoming EP BrainHealth JTC2026 calls for proposals.

Following this introduction, you will find brief abstracts of the lectures presented by the symposium's speakers, offering a taste of the critical topics discussed.

Juan Lerma Gómez

Brain protective and risk factors at all stages of life and the development of disease: General overview

Prof. Juan Lerma Gómez

Institute of Neurosciences in Alicante, Spain

Biological factors play a central role in shaping brain health across the lifespan. Protective elements include a balanced diet, regular physical activity, cognitive engagement, and favorable socioeconomic conditions. In contrast, obesity, hypertension, and substance abuse are associated with increased risk for cognitive decline. Brain development is particularly sensitive during early life, with prenatal influences such as maternal care, folate, and Omega-3 fatty acid intake being essential. Adolescence and old age represent additional vulnerable periods where lifestyle and environmental exposures significantly impact neurological outcomes. The progression of neurodegenerative diseases in later life is closely linked to variations in these risk factors. Promoting healthy behaviors throughout life is therefore essential. Public policy and education serve as key tools for encouraging preventive action. A life-course approach offers a comprehensive framework for sustaining brain health and reducing long-term cognitive disability.

Stéphanie Debette

Genetics and epigenetic protective and risk factors

Prof. Stéphanie Debette

Paris Brain Institute; Centre Bordeaux Population Health Research Inserm UMR1219, Bordeaux, France

Brain health disorders affect one in three individuals, representing a considerable societal burden. Cerebral small vessel disease, one of the leading causes of stroke and dementia, is still underestimated. Genomic research has identified over 100 genetic variants associated with vascular brain lesions, revealing novel disease mechanisms. Coupled with advances in machine learning and neuroimaging, these insights are improving the precision of diagnosis and disease characterization. The early presence of vascular lesions in young adults suggests that risk accumulates across the lifespan, highlighting the importance of early detection. These findings point to the need for personalized, multi-targeted therapeutic and preventive strategies. Integrating genetic, clinical, and imaging data offers a promising path forward. A lifespan approach to vascular brain health could help reduce the burden of cognitive decline and neurovascular disease.

Andreas Meyer-Lindenberg

Environmental and social factors

Prof. Dr. Andreas Meyer-Lindenberg

Medical Faculty Mannheim, Heidelberg University, Germany

Brain disorders like mood disorders, dementia, psychosis, anxiety, and addiction carry immense socioeconomic costs in Europe. Among numerous environmental risk factors, urban living (known as urbanicity) stands out as a significant contributor to mental illness. People born or living in cities face up to a 30-50% increased risk for depression and 300 for schizophrenia. Urban environments often reduce happiness and increase social stress due to weaker, more impersonal social ties. Functional MRI studies reveal that city dwellers show heightened amygdala activation during social stress, a pattern absent in rural populations. This suggests a neurobiological mechanism linking urbanicity to psychiatric vulnerability. So, cities can be framed as chronic social stressors and called for further neuroscience research to understand how these factors shape brain networks. Identifying resilience mechanisms may help mitigate urban environmental risks and inform public health strategies.

Urtė Neniškytė

Therapeutic interventions as trajectory modifiers

Prof. Urtė Neniškytė

Vilnius University, Lithuania

Brain health is influenced by genetic, societal, and environmental factors, but despite preventive efforts, many still develop neurological and neuropsychiatric disorders. In Europe, the prevalence is significant, with up to 60% of the population affected during their lifetime. Aging plays a major role, as neurodegenerative disorders increase with age, amplifying socioeconomic burdens. Despite the growing need, development of new treatments has stagnated. Over the last decade, neurology and psychiatry accounted for only 12% of FDA drug approvals. In contrast, fields with lower disease burden, like oncology, receive more drug development attention. Most widely used brain disorder medications were approved in the 1990s, pointing to a current innovation gap. However, there's hope in emerging therapies. Examples include the successful use of ketamine for treatment-resistant depression and ongoing clinical trials involving psychedelics such as psilocybin and LSD.

Tiia Ngandu

The importance of prevention throughout the whole life course

Prof. Tiia Ngandu

Finnish Institute for Health and Welfare, Finland

As modern work undergoes rapid shifts due to digital and environmental transformation, brain health has become essential for safety and productivity. Young adults increasingly report concentration issues linked to stress, sleep disturbances, and mental health challenges. Preventive strategies and early detection of risk factors in the workplace are urgently needed. However, more research is required to understand how psychological demands, environmental exposures, and shift work affect cognitive health. At the same time, aging populations face rising dementia rates (estimated to triple by 2050) with Alzheimer's disease being the most prevalent cause. Beyond diagnosed cases, many individuals show early symptoms or brain biomarkers long before clinical onset. Recent advances in blood-based biomarkers offer promise for detection and intervention.

Jennifer Lau

Building emotional resilience: intrapersonal, interpersonal and societal approaches

Prof. Jennifer Lau

Queen Mary, University of London, UK

In 2019, before the pandemic, an estimated 970 million people worldwide were living with mental health disorders, with anxiety and depression being the most common. These numbers rose significantly during the pandemic, as did experiences of loneliness (reported by nearly a third of adults globally). Mental health challenges often begin in late childhood through emerging adulthood, a period of major life transitions that can trigger or worsen symptoms. If left untreated these issues can lead to long term consequences like self-harm, substance use, and social or educational difficulties. Children and adolescents today express worries not only about school and relationships but also about health, global crises, and the future. The transition into adulthood has also become a particularly vulnerable time, marked by identity formation and increasing responsibility. As health systems struggle to meet growing needs, early prevention is crucial. Resilience (the capacity to adapt to stress) is now seen as both an individual trait and a dynamic process shaped by social and environmental factors. Supporting young people through a socio-ecological lens may offer the most promising path forward.

Masud Husain

Christophe Bernard

Wrap-up and future directions integrative & strategies for lifespan brain health

Prof. Christophe Bernard & Prof. Masud Husain

Editor in Chief, eNeuro & Editor in Chief, Brain

In the closing session, Prof. Christophe Bernard (Editor-in-Chief, eNeuro) and Prof. Masud Husain (Editor-in-Chief, Brain) synthesised the discussions. They noted that while brain health research has expanded rapidly in the past decade, much of it remains descriptive and correlational. The predominance of cross-sectional studies limits understanding of long-term effects and hinders the development of effective interventions. They stressed the crucial reminder that correlation is not causation: to establish true mechanisms, science must go beyond observation and actively intervene and demonstrate effects.

They called for a stronger emphasis on causal studies and mechanistic understanding, supported by longitudinal designs and experimental approaches. At the same time, they recognised the need to strike a balance between science and pragmatism-between uncovering the fundamental mechanisms that underlie brain health and implementing policies that can improve lives in the nearer term. A large-scale European collaboration, they argued, is essential to make this shift possible, enabling effective multimodal strategies.