

Lys Therapeutics Announces Significant Scientific Advances in Neurodegenerative and Neurovascular Diseases

With several publications and oral presentations at international medical conferences, Lys Therapeutics consolidates its scientific advances and demonstrates the quality of its research in the fields of stroke, Parkinson's disease, and multiple sclerosis.

Lyon & Caen, France, May 30, 2024 – Lys Therapeutics, a pioneering French biotechnology company revolutionizing the treatment of patients with neurodegenerative and neurovascular diseases, today announces a series of scientific advances made public during the first half of 2024. These include six events (plenary presentations, oral communications, publications, and posters) where Lys Therapeutics presented major preclinical results in its two strategic areas: emergency medicine (including strokes) and neurodegenerative diseases (such as Parkinson's disease and multiple sclerosis):

- An oral presentation and a poster at **the Gordon Research Conference (GRC) "Plasminogen Activation and Extracellular Proteolysis,"** in Ventura, California, USA, in February 2024.
- Participation and meetings with clinicians at the **International Stroke Conference (ISC) 2024,** in Phoenix, Arizona, USA, in February 2024.
- Participation and meetings with patient associations and clinicians at the **ACTRIMS Forum 2024 – Americas Committee for Treatment and Research in Multiple Sclerosis,** in West Palm Beach, Florida, USA, in February 2024
- A peer-reviewed scientific article published in the internationally renowned journal **Blood Advances** in March 2024.
- An oral presentation at the **AD/PD™ 2024 Alzheimer's & Parkinson's Diseases Conference** in Lisbon, Portugal, in March 2024.
- A poster presented at the **European Stroke Organisation Conference (ESOC) 2024** in Basel, Switzerland, in May 2024.

"We are delighted with these new results and the invitations received for various scientific communications at major international conferences, confirming the quality of our research and that of our French and international partners. After completing the preclinical phase, Lys Therapeutics will enter a major new stage of its development: preparing for its first clinical trials. This new phase begins with the launch of GMP-compliant production and regulatory toxicity studies for LYS241, our flagship molecule targeting neuroinflammation, a key element in the pathophysiology of ischemic stroke, demyelinating diseases, and many other neurodegenerative diseases" said Dr. Manuel Blanc, CEO and co-founder of Lys Therapeutics.

"Many international teams have demonstrated the involvement of the tPA - NMDAr interaction in the pathophysiology of various neurodegenerative and neurovascular diseases. We are extremely proud that the monoclonal antibody initially developed in our laboratory and for which Lys Therapeutics holds

exclusive exploitation rights has been humanized and can now accelerate towards its first clinical trials" said Prof. Denis Vivien, University Professor-Hospital Practitioner (PU/PH), and Director of the Blood and Brain @ Caen-Normandie Institute, France.

"Our studies have revealed a critical role of the interaction between tPA and the NMDA receptor in the progression of Parkinson's disease, particularly in the neuroinflammatory response leading to the neurodegeneration of dopaminergic neurons. Thus, using an antibody to inhibit this interaction presents a promising new target for treating this debilitating condition, as well as other neurological diseases where the tPA-NMDAR interaction plays a role in their pathophysiology, such as ischemic stroke and multiple sclerosis" explained Prof. Daniel A. Lawrence, from the Department of Internal Medicine and the Department of Molecular & Integrative Physiology at the University of Michigan, US.

Gordon Research Conference (GRC) « Plasminogen Activation and Extracellular Proteolysis »:

The company presented its preclinical results to international specialists in emergency stroke treatment. Lys Therapeutics' monoclonal antibody significantly reduces ischemic damage and promotes tissue recanalization while working synergistically with recombinant forms of tPA, alteplase (rtPA), and tenecteplase (TNK). A clinical trial in patients with ischemic stroke is in preparation. The conference was held in Ventura, California, USA, from February 18 to 23, 2024.

Ref : Gordon Research Conference - Extracellular Proteolysis in Human Disease: Cutting-Edge Research, Emerging Therapeutics, and Clinical Outcomes, February 18 - 23, 2024.

International Stroke Conference (ISC) 2024:

The International Stroke Conference is the world's leading event dedicated to the science and treatment of cerebrovascular diseases and brain health. The ISC provided an opportunity to meet with numerous opinion leaders in the stroke field and present the latest results from Lys Therapeutics' research teams and their partners, confirming the cytoprotective positioning of our antibody. The conference was held in Phoenix, Arizona, USA, from February 7 to 9, 2024.

Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2024:

The ACTRIMS forum provided an opportunity to meet with patient associations and clinicians in the field of demyelinating diseases, including multiple sclerosis, and to present the therapeutic efficacy results of Lys Therapeutics' antibody in these diseases. The conference was held in West Palm Beach, Florida, USA, from February 28 to March 1, 2024.

A scientific article published in the international journal *Blood Advances*:

A scientific article published in the internationally renowned journal *Blood Advances* demonstrating the efficacy results of Lys Therapeutics' antibody in various preclinical models of stroke, either used alone or in combination with reference thrombolytics (rtPA and TNK).

Ref: "Improving stroke outcomes in hyperglycemic mice by modulating tPA/NMDAR signaling to reduce inflammation and hemorrhages." - Lebrun F, Levard D, Lemarchand E, Yetim M, Furon J, Potzaha F, Marie P, Lesept F, Blanc M, Haelewyn B, Rubio M, Letourneur A, Violle N, Orset C, Vivien D. Blood Adv. 2024 Mar 12;8(5):1330-1344. doi: 10.1182/bloodadvances.2023011744.PMID: 38190586

<https://ashpublications.org/bloodadvances/article/8/5/1328/515252/A-sweet-deal-blocking-NMDAR-for-safer-t-PA-in>

AD/PD 2024 Congress on Parkinson's Disease:

Our collaborator, Professor Daniel Lawrence from the University of Michigan, USA, presented recent therapeutic advances of Lys Therapeutics in Parkinson's disease during an oral presentation, highlighting the promising results obtained in the reference animal model of Parkinson's disease, marking a significant advancement in research against this devastating condition. The conference was held in Lisbon, Portugal, from March 5 to 9, 2024. This work is notably supported by the Michael J. Fox Foundation in the USA.

European Stroke Organisation Conference (ESOC) 2024

The company was selected on abstract by the Scientific Committee of the conference to present the latest stroke results of its first-in-class monoclonal antibody LYS241, including significant reduction of ischemic damage and tissue recanalization/revascularization. The conference was held in Basel, Switzerland, from May 15 to 17, 2024.

About LYS241

LYS241 is a full-length, Fc silent, fully humanized IgG1 monoclonal antibody designed to counteract mechanisms involved in the pathophysiology of numerous neurological diseases associated with blood-brain barrier (BBB) dysfunction. The opening of the BBB allows toxic and inflammatory molecules and cells to enter the central nervous system, causing neuroinflammation, excitotoxicity, and neuronal death.

In the context of **ischemic stroke**, LYS241 also mitigates the off-target side effects of standard thrombolytics (alteplase and tenecteplase) on the endothelial cells of blood vessels while improving blood recanalization. These side effects, ranging from disruption to rupture of the BBB, cause severe hemorrhages and inflammation that significantly impact patients' functional recovery.

The ability of LYS241 to restore BBB integrity and protect the brain is of major interest in **neurodegenerative diseases** such as **multiple sclerosis** and other **severe demyelinating diseases**, as well as **Parkinson's disease**. For these indications, Lys Therapeutics has an important clinical development plan in place.

About Lys Therapeutics

First-in-class biotherapies against neurological diseases.

Lys Therapeutics is a pioneering biotechnology company revolutionizing the treatment of patients with neurodegenerative or neurovascular diseases by targeting blood-brain barrier (BBB) dysfunctions.

In the pathophysiology of various neurological diseases such as **stroke, multiple sclerosis, and Parkinson's disease**, the hyperactivation of endothelial NMDA receptors (NMDAr) by tissue plasminogen activator (tPA) overexpressed in these patients leads to the degradation of tight junctions and BBB dysfunction, allowing the transmigration of inflammatory cells and toxic molecules into the brain parenchyma, triggering excitotoxicity and neuroinflammation, major contributors to neurodegeneration.

Lys Therapeutics' lead drug candidate, **LYS241**, is a **first-in-class monoclonal antibody** with a unique mechanism of action that effectively counteracts these pathological mechanisms. Specifically, LYS241 acts in blood vessels to prevent the binding of tPA to NMDAr without interfering with the physiological function of these receptors. By inhibiting this interaction, NMDAr can function normally, and the activation of deleterious downstream cellular pathways is stopped. Tight junctions are restored, endothelial cells return to their healthy state, and BBB function is restored, protecting the brain from neuro-inflammatory and neurodegenerative cascades.

Lys Therapeutics' approach to targeting neuroinflammation to combat neurodegeneration represents a promising pathway in the quest for effective treatments for these debilitating disorders.

More information on lystherapeutics.com

Follow us on [LinkedIn](#)

Press Contact:

Agence Acorelis – Gilles Petitot
+33 620 276 594 / +33 145 831 384
gilles.petitot@acorelis.com

Lys Therapeutics – Manuel BLANC
mblanc@lystherapeutics.com