



Bayer AG
Communications
51368 Leverkusen
Germany
Phone +49 214 30-1
www.bayer.com/en/media

News Release

Not intended for UK Media

Bayer starts Phase I study with GIRK4 inhibitor for treatment of patients with atrial fibrillation

- BAY 3670549 is an investigational highly selective G-protein-coupled inwardly rectifying potassium channel 4 (GIRK4) inhibitor with potential to help control the electrical activity of cardiomyocytes in patients with atrial fibrillation (AFib)
 - With GIRK4 inhibitor Bayer explores an opportunity to address the high medical need for developing a fast-acting and well tolerated treatment option, offering high value for patients and physicians
 - This approach for rapid cardioversion to normal sinus rhythm aims to enable immediate treatment without the need for anesthesia/sedation and external defibrillator, thus reducing the patients' time spent in hospital
 - Derived from the strategic research alliance with the Broad Institute of MIT and Harvard, BAY 3670549 is further strengthening Bayer's cardiovascular development portfolio
-

Berlin, May 21, 2025 – Bayer announced today initiation of a Phase I clinical trial with BAY 3670549, an investigational highly selective G-protein-coupled inwardly rectifying potassium channel 4 (GIRK4) inhibitor, which has the potential to help control the electrical activity of heart cells in patients with atrial fibrillation (AFib). This investigative approach for rapid cardioversion to normal sinus rhythm is aiming to enable immediate treatment without the need for anesthesia/sedation and electrical shock and to significantly reduce the patients' time spent in hospital. The first-in-human dose escalation study in a randomized, double-blind, placebo-controlled, group-comparison design will investigate the safety, tolerability, pharmacokinetics and pharmacodynamics of BAY 3670549 in healthy participants. AFib is the most common type of cardiac arrhythmia

(irregular heart rhythm), affecting more than 60 million people worldwide, and a significant risk factor for stroke and heart failure.^{1,2,3}

“Initiating clinical development of our investigational GIRK4 inhibitor marks an important milestone of our ambition transforming atrial fibrillation treatment with a fast-acting, effective and well tolerated first-line pharmacological therapy for acute cardioversion, alleviating the burdens of electrical cardioversion on patients, physicians and healthcare systems”, said Andrea Haegebarth, Ph.D., Global Head of Research and Early Development for Cardiovascular, Renal, Immunology at Bayer’s Pharmaceuticals Division. “We look forward to advancing the program through clinical development, which will strengthen Bayer’s cardiovascular portfolio and advance research efforts to the benefit of a broad patient population in need for novel and better medicines.”

The current gold standard to treat acute AFib episodes is electric cardioversion (ECV). This is an effective but resource-intensive and logistically challenging procedure, which is normally scheduled in advance and typically requires sedation or even anesthesia to safely deliver an electrical shock to the patient and restore the heart to its normal sinus rhythm.^{4,5} On the other hand, currently available anti-arrhythmic drugs (AADs), which are commonly used for the management of symptomatic AFib, can’t be applied to broad patient populations due to a number of contraindications (such as for patients with structural heart disease) and safety risks, including abnormal heart rhythms and sudden death. Additionally, they show limited, short-term efficacy, require close monitoring and bear the risk of serious side effects.^{6,7}

Investigational GIRK4 inhibitor (BAY 3670549) is derived from Bayer’s strategic research alliance with the Broad Institute.

About GIRK4 inhibitor (BAY 3670549)

BAY 3670549 is an investigational highly selective G-protein-coupled inwardly rectifying

¹ Atrial fibrillation: epidemiology, screening and digital health, Linz, Dominik et al., The Lancet Regional Health – Europe, Volume 37, 100786

² American Heart Association, [Why Atrial Fibrillation Matters | American Heart Association](#)

³ Kornej J, Benjamin EJ, Magnani JW, Atrial fibrillation: global burdens and global opportunities, *Heart* 2021;107:516-518.

⁴ Nusair M, Flaker GC, Chockalingam A. Electric cardioversion of atrial fibrillation. *Mo Med*. 2010 Jan-Feb;107(1):59-64. PMID: 20222298; PMCID: PMC6192814.

⁵ [Why Atrial Fibrillation Matters | American Heart Association](#)

⁶ Andrade JG. Ablation or drug therapy for initial atrial fibrillation. *Ann Cardiothorac Surg* 2024;13(1):71-76. doi: 10.21037/acs-2023-afm-0159

⁷ Journal Article, Zimetbaum, Peter, Antiarrhythmic Drug Therapy for Atrial Fibrillation 2012, *Circulation* 381-389, 125, N 2 doi:10.1161/CIRCULATIONAHA.111.019927, <https://www.ahajournals.org/doi/abs/10.1161/CIRCULATIONAHA.111.019927>

potassium channel 4 (GIRK4) inhibitor with potential to help control the electrical activity of heart cells in patients with atrial fibrillation (AFib).

GIRK4 channels are specialized proteins that regulate the electrical activity of heart cells by facilitating the flow of potassium ions (K+) in response to the neurotransmitter acetylcholine (ACh). This mechanism is particularly crucial during the later phases of the heart's electrical signaling, specifically during so-called atrial effective refractory period (AERP). Increased activity of these channels shortens the AERP in the atria (the upper chambers of the heart), thereby reducing the recovery time after each heartbeat. This alteration in recovery time can contribute to the onset and persistence of AFib.

About Atrial fibrillation

AFib is one of the most common sustained cardiac rhythm disorders (arrhythmias). It results from rapid, disorganized electrical signals in the upper chambers (atria) of the heart, causing them to quiver and contract quickly and irregularly. As a result, the atria do not empty completely, and blood does not flow properly, causing blood clots to form. These blood clots can break loose and travel to the brain, resulting in a stroke.

The prevalence of AFib continues to increase globally. Projection studies show that the number of people with AFib will rise to 15.9 million in 2050 in America and 17.9 million in 2060 in Europe.⁸ People with AFib are 5 times more likely to suffer a stroke than people without AFib.⁹ AFib-related strokes are also associated with a 50% likelihood of death within one year.¹⁰

About Bayer's Commitment in Cardiovascular Diseases

Bayer is a leader in cardiology and is advancing a portfolio of innovative treatments in cardiovascular (CV) diseases of high unmet medical need. The strategy is to unlock the strong potential of the future CV market by transforming Bayer's portfolio into precision cardiology, addressing the high CV disease burden, and driving the long-term growth. Bayer's portfolio already includes several innovative products as well as compounds in various stages of preclinical and clinical development.

⁸ Atrial fibrillation: epidemiology, screening and digital health, Linz, Dominik et al., The Lancet Regional Health – Europe, Volume 37, 100786

⁹ Singleton MJ, Imtiaz-Ahmad M, Kamel H, O'Neal WT, Judd SE, Howard VJ, Howard G, Soliman EZ, Bhavé PD. Association of atrial fibrillation without cardiovascular comorbidities and stroke risk: from the REGARDS study. *Journal of the American Heart Association*. 2020 Jun 16;9(12):e016380.

¹⁰ Alberts M, Chen YW, Lin JH, Kogan E, Twyman K, Milentijevic D. Risks of Stroke and Mortality in Atrial Fibrillation Patients Treated With Rivaroxaban and Warfarin. *Stroke*. 2020 Feb;51(2):549-555. doi: 10.1161/STROKEAHA.119.025554. Epub 2019 Dec 31. PMID: 31888412; PMCID: PMC7004448.

About Bayer

Bayer is a global enterprise with core competencies in the life science fields of health care and nutrition. In line with its mission, "Health for all, Hunger for none," the company's products and services are designed to help people and the planet thrive by supporting efforts to master the major challenges presented by a growing and aging global population. Bayer is committed to driving sustainable development and generating a positive impact with its businesses. At the same time, the Group aims to increase its earning power and create value through innovation and growth. The Bayer brand stands for trust, reliability and quality throughout the world. In fiscal 2024, the Group employed around 93,000 people and had sales of 46.6 billion euros. R&D expenses amounted to 6.2 billion euros. For more information, go to www.bayer.com.

Bayer Media Contact:

Anna Kanmaz, phone +49 1741463541

Email: anna.kanmaz@bayer.com

Contact for media inquiries Bayer U.S.:

Elaine Colon, phone +1 732 236 1587

Email: elaine.colon@bayer.com

Find more information at <https://pharma.bayer.com/>

Follow us on Facebook: <http://www.facebook.com/bayer>

aka (2025-0094)

Forward-Looking Statements

This release may contain forward-looking statements based on current assumptions and forecasts made by Bayer management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Bayer's public reports which are available on the Bayer website at www.bayer.com. The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.