SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER
PURSUANT TO RULE 13a-16 OR 15d-16 OF
THE SECURITIES EXCHANGE ACT OF 1934

For the month of May 2026

Commission file number: 001-35223

BioLineRx Ltd.

(Translation of registrant's name into English)

2 HaMa'ayan Street
Modi'in 7177871, Israel
(Address of Principal Executive Offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F:

Form 20-F ☒ Form 40-F ☐

On May 22, 2026, the registrant issued the press release which is filed as Exhibit 1 to this Report on Form 6-K.

The first paragraph of the press release attached to this Form 6-K as Exhibit 1 is hereby incorporated by reference into all effective registration statements filed by the registrant under the Securities Act of 1933.

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BioLineRx Ltd.

By: /s/ Philip A. Serlin
Philip A. Serlin
Chief Executive Officer

Dated: May 22, 2026

Exhibit 1

For Immediate Release

BioLineRx and Hemispherian AS Highlight New Data on GLIX1 at the American Society of Clinical Oncology (ASCO) 2026 Annual Meeting

TEL AVIV, Israel, and OSLO, Norway – May 22, 2026 – BioLineRx Ltd. (NASDAQ/TASE: BLRX), a clinical-stage biopharmaceutical company pursuing life-changing therapies in oncology and rare diseases, and Hemispherian AS, a clinical-stage oncology company developing novel small molecule therapeutics, today announced that two abstracts featuring GLIX1 will be published at the American Society of Clinical Oncology (ASCO) 2026 Annual Meeting, which is being held May 29-June 2, 2026, in Chicago, IL.

"We are very pleased to have the opportunity to feature these compelling GLIX1 data during this year's ASCO Annual Meeting," stated Philip Serlin, Chief Executive Officer of BioLineRx. "Our first-in-human Phase 1/2a clinical trial of GLIX1 in glioblastoma (GBM) was initiated in March, and we are excited to highlight the wealth of pre-clinical data that both support its novel mechanism of action and provide strong rationale for the development of GLIX1 in GBM as well as in other cancers."

Dr. Adam Robertson, Ph.D., Chief Scientific Officer of Hemispherian AS, added, "Following years of dedicated research and discovery into the field of the cellular DNA damage response, we are very excited with the progress of the GLIX1 development program to date. This oral small molecule enhances TET2 activity, a novel mechanism of action designed to induce tumor-selective DNA strand breaks in a broad range of cancers. The ASCO abstracts describe the potential of GLIX1 as monotherapy as well as possible therapeutic synergies when combined with PARP inhibitors."

Abstract Details:

Title: GLIX1: A first-in-class oral molecule targeting the DNA damage response by restoring TET2 activity

Abstract Number: e14072

Session Title: Publication Only: Central Nervous System Tumors

This abstract describes GLIX1, a first-in-class oral small molecule designed to target the DNA damage response by restoring activity of the TET2 enzyme, which is typically suppressed in cancer. TET2 plays a key role in DNA demethylation, and its inhibition in tumors contributes to abnormal DNA hypermethylation. By reactivating TET2, GLIX1 increases DNA demethylation and triggers excessive base excision repair, leading to the accumulation of single-strand DNA breaks that ultimately convert into lethal double-strand breaks in cancer cells. This mechanism is applicable across tumor types and is particularly relevant in glioblastoma, where TET2 activity is significantly impaired.

Preclinical studies have shown that GLIX1 effectively increases TET2 activity and downstream 5hmC production in biochemical assays, cell models, and *in vivo* animal systems. The high potency of GLIX1 was observed *in vitro* in a broad range of cancer cell lines. The drug demonstrated strong antitumor activity in multiple glioblastoma xenograft models (including U87-MG and SNB-19) and was able to penetrate the brain efficiently after oral dosing, with brain exposure corresponding to 68-85% of plasma levels in mice. Safety studies in animals indicated that GLIX1 is well-tolerated even at the highest feasible doses tested: 2000mg/kg in rats and 1000mg/kg in dogs. These findings, together with the fact that high-grade gliomas are characterized by markedly reduced genomic levels of 5hmC compared with normal tissue, reflecting impaired TET2 activity and potential therapeutic vulnerability, support clinical evaluation of GLIX1 in GBM as the first indication. A first-in-human Phase 1/2a clinical trial is currently enrolling (NCT07464925).

Title: Synergistic antitumor activity of GLIX1, a small molecule TET2 activator, in combination with PARP inhibition across multiple cancers

Abstract Number: e13129

Session Title: Publication Only: Breast Cancer—Metastatic

Summary: This abstract explores the potential of combining GLIX1, a small-molecule activator of TET2, with PARP inhibitors (PARPi) to enhance cancer cell killing. PARP normally detects and helps repair single-stranded DNA breaks, and PARP inhibitors work by blocking this repair process, leading to cell death, particularly in tumors already deficient in homologous recombination (HR) repair. However, their effectiveness is limited in many cancers that retain this repair capability. GLIX1 is designed to increase tumor-selective DNA damage by restoring TET2 activity, which generates single-stranded DNA breaks through base excision repair. When paired with PARP inhibition, these breaks are not properly repaired, creating a mechanistic basis for enhanced antitumor activity.

In preclinical *in vitro* studies across a wide range of cancer cell lines, the combination of GLIX1 with multiple PARP inhibitors produced strong and consistent cytotoxic effects, including in tumor types typically less responsive to PARP inhibition. This synergy was observed across different PARP inhibitors with varying properties, suggesting a class-wide effect rather than dependence on a specific agent. Overall, the findings provide a compelling mechanistic rationale for combining GLIX1 with PARP inhibitors and warrant further investigation of this strategy across diverse cancers.

About Glioblastoma
Glioblastoma is the most common primary brain tumor and remains one of the most aggressive and treatment-resistant cancers, urgently in need of breakthrough innovations and more effective treatment. The standard of care for newly diagnosed GBM established since 2005 consists of surgery, followed by radiotherapy and treatment with temozolomide (TMZ), with no established standard of care for recurrent GBM. However, patients with unmethylated MGMT[1] promoter status (who represent more than half of all GBM patients) have demonstrated a limited response to TMZ.

About GLIX1
GLIX1 is a first-in-class, orally administered, brain penetrating, small molecule activator of the Ten-Eleven Translocation 2 (TET2) pathway that is commonly inhibited in cancer. Activating the novel TET2 pathway by GLIX1 overwhelms the DNA repair capacity of cancer cells, resulting in apoptotic cancer cell death.

About the Phase 1/2a Trial with GLIX1
The Phase 1/2a trial is an open-label, multicenter trial. Part 1 of the trial is a dose escalation study where patients receive GLIX1 daily as monotherapy. This part is expected to recruit up to 30 patients with recurrent and progressive GBM and other high-grade gliomas. The primary objective is to establish a maximum tolerated dose (MTD) and/or a recommended dose based on safety, PK/PD and preliminary efficacy. Updates to the Phase 1/2a trial are anticipated during H2 2026, with full results on the dose escalation part expected in 2027.

The Phase 2a expansion part of the trial is planned to include additional indications, including newly diagnosed GBM, as well as select cancers, with GLIX1 as monotherapy or in combination with standard of care (including in combination with PARP inhibitors). These cohorts are expected to identify preliminary efficacy, PD assessments and dose optimization data, serving as the basis for a rapid and effective advanced clinical development plan.

For more information on the Phase 1/2a trial, please visit NCT07464925.

About Hemispherian
Hemispherian AS is a clinical-stage pharmaceutical company developing first-in-class small-molecule cancer therapies. Its lead program, GLIX1, is being advanced in partnership with BioLineRx for the treatment of glioblastoma and a broad range of solid tumors.

The company is headquartered in Oslo, Norway, and collaborates with leading academic and clinical institutions worldwide.

Learn more at www.hemispherian.com or on LinkedIn.

[1] MGMT stands for O6-methylguanine-DNA methyltransferase, a DNA repair enzyme.

About BioLineRx

BioLineRx Ltd. (NASDAQ/TASE: BLRX) is a biopharmaceutical company pursuing life-changing therapies in oncology and rare diseases. The Company's lead development asset is GLIX1, a first-in-class, oral, small molecule targeting DNA damage response in glioblastoma and other solid tumors, for which a Phase 1/2a clinical trial has been initiated in the first quarter of 2026. GLIX1 is being developed under a collaboration with Hemispherian AS.

The Company's first approved product, APHEXDA® (motixafortide), is indicated in the U.S. for stem cell mobilization for autologous transplantation in multiple myeloma, and is being commercialized by Ayrmid Ltd. (globally, except Asia) and Gloria Biosciences (in Asia). BioLineRx has retained the rights to develop motixafortide in solid tumors, including metastatic pancreatic cancer (PDAC), and has a Phase 2b PDAC trial currently ongoing under a collaboration with Columbia University.

Learn more about who we are, what we do, and how we do it at www.biolinerx.com, or on LinkedIn.

Forward Looking Statement

Various statements in this release concerning BioLineRx's future expectations constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include words such as "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "will," and "would," and describe opinions about future events. These include statements regarding management's expectations, beliefs and intentions regarding, among other things, the expectations with regard to the planned Phase 1/2a GLIX1 clinical trial, expected timing of a clinical readout, and BioLineRx's business strategy. These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual results, performance or achievements of BioLineRx to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Factors that could cause BioLineRx's actual results to differ materially from those expressed or implied in such forward-looking statements include, but are not limited to: the clinical development, commercialization and market acceptance of GLIX1 and motixafortide including the degree and pace of market uptake of APHEXDA for the mobilization of hematopoietic stem cells for autologous transplantation in multiple myeloma patients; the initiation, timing, progress and results of BioLineRx's preclinical studies, clinical trials and other therapeutic candidate development efforts; BioLineRx's ability to advance GLIX1 and motixafortide into clinical trials or to successfully complete its preclinical studies or clinical trials; whether the clinical trial results for GLIX1 and motixafortide will be predictive of real-world results; BioLineRx's receipt of regulatory approvals for GLIX1 and motixafortide and the timing of other regulatory filings and approvals; whether access to GLIX1 and motixafortide is achieved in a commercially viable manner and whether GLIX1 and motixafortide receives adequate reimbursement from third.-party payors; BioLineRx's ability to establish, manage, and maintain corporate collaborations, as well as the ability of BioLineRx's collaborators to execute on their development and commercialization plans; BioLineRx's ability to integrate new therapeutic candidates and new personnel, as well as new collaborations; the interpretation of the properties and characteristics of BioLineRx's therapeutic candidates and of the results obtained with its therapeutic candidates in preclinical studies or clinical trials; the implementation of BioLineRx's business model and strategic plans for its business and therapeutic candidates; the scope of protection that BioLineRx's is able to establish and maintain for intellectual property rights covering its therapeutic candidates and its ability to operate its business without infringing the intellectual property rights of others; estimates of BioLineRx's expenses, future revenues, capital requirements and its need for and ability to access sufficient additional financing; risks related to changes in healthcare laws, rules and regulations in the United States or elsewhere; competitive companies, technologies and BioLineRx's industry; BioLineRx's ability to maintain the listing of its ADSs on Nasdaq; statements as to the impact of the political and security situation in Israel on BioLineRx's business which may exacerbate the magnitude of the factors discussed above. These and other factors are more fully discussed in the "Risk Factors" section of BioLineRx's most recent annual report on Form 20-F filed with the Securities and Exchange Commission on March 23, 2026. In addition, any forward-looking statements represent BioLineRx's views only as of the date of this release and should not be relied upon as representing its views as of any subsequent date. BioLineRx does not assume any obligation to update any forward-looking statements unless required by law.

Contacts:

For BioLineRx:
United States
Chuck Padala
LifeSci Advisors, LLC
IR@biolinerx.com

Israel
Moran Meir
LifeSci Advisors, LLC
moran@lifesciadvisors.com

For Hemispherian AS:
Zeno Albisser, CEO
zeno@hemispherian.com