



Repare Therapeutics Unveils Two Programs Expected to Enter Clinical Trials in 2024: RP-1664, an Oral PLK4 Inhibitor, and RP-3467, an Oral Polθ Inhibitor

November 15, 2023

RP-1664 demonstrated potent and selective inhibition of PLK4 and synthetic lethality in TRIM37-high tumor cells in preclinical studies

RP-3467 demonstrated complete, sustained regressions preclinically in combination with PARPi, and compelling anti-tumor activity in combination with radioligand therapy (RLT) and chemotherapy

Company expects to initiate clinical trials of RP-1664 in 1H 2024 and RP-3467 in 2H 2024

Repare to host conference call and webcast today at 8:00 a.m. ET

CAMBRIDGE, Mass. & MONTREAL--(BUSINESS WIRE)--Nov. 15, 2023-- Repare Therapeutics Inc. ("Repare" or the "Company") (Nasdaq: RPTX), a leading clinical-stage precision oncology company, today disclosed polo-like kinase 4 (PLK4) as the target of its RP-1664 development program and reported comprehensive preclinical data for both RP-1664 and the Company's Polθ inhibitor, RP-3467.

RP-1664 is a potential first-in-class, selective, oral PLK4 inhibitor that is synthetic lethal with TRIM37 amplification or overexpression in solid tumors. Tumors rely on PLK4 for survival in the presence of high levels of TRIM37. Preclinical studies demonstrate RP-1664 drives potent synthetic lethality in TRIM37-high tumor models, both *in vitro* and *in vivo*. Elevated TRIM37 is a feature found across a range of solid tumors and in nearly all high-grade neuroblastomas.

RP-3467 is a potential best-in-class inhibitor of DNA polymerase theta, or Polθ. Polθ is a synthetic lethal target associated with homologous recombination deficiency (HRD) tumors, including those with BRCA1/2 mutations or other genomic alterations. Data suggest that RP-3467 works synergistically with therapies that result in double stranded DNA breaks, such as PARP inhibition, radioligand therapy and multiple chemotherapies and antibody-drug conjugates (ADCs). Additionally, initial data suggest that Polθ inhibition may interfere with mechanisms central to the development of PARPi resistance.

"We are excited to announce the initial clinical approach for RP-1664 based on highly compelling preclinical data supporting its potential for treating TRIM37-high tumors," said Lloyd M. Segal, President and CEO of Repare. "We are also pleased to share preclinical data from our RP-3467 program supporting its significant potential across multiple high-value therapeutic opportunities. These programs represent our third and fourth internally developed clinical candidates and provide further confirmation of Repare's powerful discovery platform. We look forward to advancing both RP-1664 and RP-3467 into Phase 1 clinical trials in 2024."

RP-1664 Highlights

- RP-1664 is a highly potent, selective and bioavailable PLK4 inhibitor that is synthetic lethal with TRIM37 gain of function.
- RP-1664 demonstrated robust and dose-dependent monotherapy activity in multiple TRIM37-high preclinical models across a variety of tumor types, including breast cancer, non-small cell lung cancer (NSCLC) and neuroblastoma.
- The Company plans to initiate a Phase 1 dose escalation study of RP-1664 in adult and adolescent patients with TRIM37-high solid tumors in the first half of 2024.

RP-3467 Data Highlights

- RP-3467 is a highly potent and selective inhibitor of the Polθ helicase domain.
- RP-3467 demonstrates synergy with PARP inhibitor activity, resulting in durable, complete tumor regressions in multiple preclinical models.
- Preclinical studies also show combination potential with multiple other modalities, including RLT, chemotherapy and ADCs.
- The Company plans to initiate a Phase 1 dosing finding clinical trial of RP-3467 in the second half of 2024.

"Preclinical data for RP-1664 demonstrate early and promising activity in TRIM37-high tumors, including breast cancer, NSCLC and neuroblastoma," said Michael Zinda, Ph.D., EVP, Chief Scientific Officer of Repare. "The durable, complete regressions observed in the preclinical RP-3467 and PARPi combination studies are also extremely exciting and demonstrate the broad combination potential of our potent and selective Polθ helicase inhibitor. Repare plans to investigate RP-3467 with a focus on its potential as a combination partner across agents that induce double stranded DNA breaks, including RLT, ADCs, and a range of chemotherapies."

Conference Call and Webcast

Repare will host a conference call and webcast today, November 15, 2023, at 8:00 a.m. ET. To access the call, please dial (877) 870-4263 (U.S. and Canada) or (412) 317-0790 (international) at least 10 minutes prior to the start time and ask to be joined to the Repare Therapeutics call. A live webcast will be available in the Investor section of the Company's website at <https://ir.reparerx.com/events-and-presentations/events>. A webcast replay will also be archived for at least 30 days.

About Repare Therapeutics' SNIPRx® Platform

Repare's SNIPRx® platform is a genome-wide CRISPR-based screening approach that utilizes proprietary isogenic cell lines to identify novel and known synthetic lethal gene pairs and the corresponding patients who are most likely to benefit from the Company's therapies based on the genetic profile of their tumors. Repare's platform enables the development of precision therapeutics in patients whose tumors contain one or more genomic

alterations identified by SNIPRx® screening, in order to selectively target those tumors in patients most likely to achieve clinical benefit from resulting product candidates.

About Repare Therapeutics Inc.

Repare Therapeutics is a leading clinical-stage precision oncology company enabled by its proprietary synthetic lethality approach to the discovery and development of novel therapeutics. The Company utilizes its genome-wide, CRISPR-enabled SNIPRx® platform to systematically discover and develop highly targeted cancer therapies focused on genomic instability, including DNA damage repair. The Company's pipeline includes lunresertib (also known as RP-6306), a PKMYT1 inhibitor currently in Phase 1 clinical development; camonsertib (also known as RP-3500 or RG6526), a potential leading ATR inhibitor currently in Phase 1/2 clinical development and partnered with Roche; RP-3467, a preclinical Polθ inhibitor program; RP-1664, a preclinical PLK4 inhibitor; as well as several additional, undisclosed preclinical programs. For more information, please visit www.reparerx.com and follow @Reparerx on X (formerly Twitter) and LinkedIn.

SNIPRx® is a registered trademark of Repare Therapeutics Inc.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 and securities laws in Canada. All statements in this press release other than statements of historical facts are "forward-looking statements. These statements may be identified by words such as "aims," "anticipates," "believes," "could," "estimates," "expects," "forecasts," "goal," "intends," "may," "plans," "possible," "potential," "seeks," "will" and variations of these words or similar expressions that are intended to identify forward-looking statements, although not all forward-looking statements contain these words. Forward-looking statements in this press release include, but are not limited to, statements regarding: the design, objectives, initiation, timing, progress and results of the Company's current and future preclinical studies and clinical trials, including specifically the clinical development of RP-1664 and RP-3467 programs; the tolerability, efficacy and clinical progress of RP-1664 and RP-3467; the potential of RP-1664 as a first-in-class oral PLK4 inhibitor and RP-3467 as a best-in-class Polθ inhibitor; and the benefits and ability to discover further targets and clinical candidates from the Company's discovery platform. These forward-looking statements are based on the Company's expectations and assumptions as of the date of this press release. Each of these forward-looking statements involves risks and uncertainties that could cause the Company's clinical development programs, future results or performance to differ materially from those expressed or implied by the forward-looking statements. Many factors may cause differences between current expectations and actual results, including: success in preclinical testing and earlier clinical trials does not ensure that later clinical trials will generate the same results or otherwise provide adequate data to demonstrate the efficacy and safety of a product candidate; the impacts of macroeconomic conditions, including the COVID-19 pandemic, the conflict in Ukraine and the conflict between Israel and Hamas, rising inflation, and uncertain credit and financial markets on the Company's business, clinical trials and financial position; unexpected safety or efficacy data observed during preclinical studies or clinical trials; clinical trial site activation or enrollment rates that are lower than expected; changes in expected or existing competition; changes in the regulatory environment; the uncertainties and timing of the regulatory approval process; and unexpected litigation or other disputes. Other factors that may cause the Company's actual results to differ from those expressed or implied in the forward-looking statements in this press release are identified in the section titled "Risk Factors" in the Company's Annual Report on Form 10-K for the year ended December 31, 2022 filed with the Securities and Exchange Commission ("SEC") and the Québec Autorité des Marchés Financiers ("AMF") on February 28, 2023, and its other documents subsequently filed with or furnished to the SEC and AMF including the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2023 filed with the SEC on November 9, 2023. The Company expressly disclaims any obligation to update any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise, except as otherwise required by law. For more information, please visit reparerx.com and follow Repare on Twitter at @RepareRx and on LinkedIn at <https://www.linkedin.com/company/repare-therapeutics/>.

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