Wave Life Sciences Highlights Growth Strategy for Building the Leading RNA Medicines Company in Annual R&D Day

September 28, 2023

Presented preclinical proof-of-concept data for new, wholly owned program targeting INHBE for metabolic disorders, including obesity, which uses Wave's best-in-class GalNAc-siRNA capabilities and novel genetic insights from GSK

WVE-006 – industry's first-ever RNA editing clinical candidate – on track for dosing in RestorAATion clinical trial in 4Q 2023 and first human proof-of-mechanism data in 2024

Advancing multiple, wholly owned RNA editing targets using correction and upregulation approaches; leveraging proprietary deep-learning model to unlock additional targets across the "edit-verse"

Wave platform chemistry enabling extra-hepatic delivery in RNA editing and siRNA

Wave expects to select five new clinical candidates by year-end 2025, including INHBE in 4Q 2024

CAMBRIDGE, Mass., Sept. 28, 2023 (GLOBE NEWSWIRE) -- Wave Life Sciences Ltd. (Nasdaq: WVE), a clinical-stage RNA medicines company committed to delivering life-changing treatments for people battling devastating diseases, today held a virtual analyst and investor R&D Day, which highlighted the company's growth strategy for building the leading RNA medicines company. The event also featured comments from Tony Wood, PhD, Chief Scientific Officer at GSK, and Carolyn Buser-Doepner, PhD, Vice President of the Novel Human Genetics Research Unit at GSK, regarding GSK's strategic collaboration with Wave. An archived recording of the webcast and presentation is available here.

"Today, we are witnessing a new era in human genetics, where emerging insights on both rare and prevalent diseases are unlocking new target opportunities. Wave is uniquely positioned to capitalize on these insights with our multimodal platform and we are advancing an innovative pipeline with potential to drive significant value for patients and families, as well as for investors," said Paul Bolno, MD, MBA, President and Chief Executive Officer at Wave Life Sciences. "We are bringing an exciting, genetics-based approach to the metabolic disease and obesity space with our first siRNA program targeting INHBE. This program is designed to deliver healthy, sustainable weight loss to tens of millions of patients in the US and Europe alone, while also avoiding drawbacks of current therapies. In addition to high-impact silencing targets like INHBE, we have a near-term pipeline focus on protein restoration and repair with our RNA editing and splicing capabilities. We anticipate advancing five new clinical candidates by year-end 2025, which will illustrate how Wave is reimagining what's possible in the treatment of human disease."

"Following on the heels of WVE-006, the industry's first-ever RNA editing clinical candidate, we are making great progress building a pipeline of wholly owned RNA editing programs using correction and mRNA upregulation. The targets shared today are all indicative of our ability to reach new areas of disease biology, both within the liver and beyond. Moreover, we are leveraging our deep learning model to expand the universe of novel A-to-G targets where we can address diseases with reduced protein expression," said Chandra Vargeese, PhD, Chief Technology Officer at Wave Life Sciences. "Today we also announced significant progress in siRNA, where our data demonstrate best-in-class silencing for both GalNAc-siRNA in liver and unconjugated siRNA in CNS. Finally, we are excited about new clinical data suggesting WVE-N531 reached satellite cells in boys from the Part A WVE-N531 study, which underscores the power of our novel chemistry and potential for a leading exon skipping franchise in Duchenne muscular dystrophy. Together these data indicate we are at the precipice of a transformative period for Wave."

Highlights from Wave's R&D Day:

First wholly owned siRNA program driven by clinical genetics:

- Today, Wave announced its first GalNAc-conjugated small interfering RNA (siRNA) program targeting INHBE to treat metabolic disorders, including obesity, which impacts an estimated 47 million individuals in the US and Europe.
- INHBE leverages novel genetic insights from GSK as part of the Wave/GSK collaboration.
- INHBE loss-of-function heterozygous carriers exhibit a healthy metabolic profile, including reduced waist-to-hip circumference and reduced odds ratio of Type 2 Diabetes.
- Reduction in INHBE of 50% or greater is expected to restore a healthy metabolic profile.
- In a preclinical study, Wave demonstrated that 62% INHBE knockdown in diet-induced obese (DIO) mice led to 16% lower body weight as compared to control at five weeks. In a subsequent eight-week study, Wave demonstrated further reduction of visceral fat resulting from INHBE knockdown, which recapitulated phenotypes of heterozygous loss-of-function carriers with healthy metabolic profiles.
- Wave expects to select an INHBE clinical candidate in the fourth quarter of 2024.
- Wave also shared data demonstrating best-in-class potential of its next-generation siRNA constructs, driven by Wave's proprietary chemistry, including tunable PN variants that enable delivery to a variety of extra-hepatic tissues.

WVE-006 clinical program for alpha-1 antitrypsin deficiency (AATD):

- Wave has initiated clinical development of WVE-006 for AATD and recently announced submission of its first clinical trial application (CTA).
- The current clinical development plan for WVE-006, called RestorAATion, includes healthy volunteers (RestorAATion-1) as well as individuals with AATD who have the homozygous PiZZ mutation (RestorAATion-2), and is designed to provide an efficient path to proof-of-mechanism as measured by restoration of M-AAT protein in serum.
- Wave expects to initiate dosing with WVE-006 in healthy volunteers in the fourth quarter of 2023 and deliver proof-of-mechanism data in AATD in 2024.

Growing pipeline with high-value RNA editing targets:

- Beyond WVE-006, Wave highlighted several undisclosed RNA editing targets which span prevalent and rare liver, kidney and lung diseases. As Wave advances its wholly owned pipeline of RNA editing programs, it is leveraging a proprietary map of the "edit-verse" to gain novel insights into the editable gene-disease network and a proprietary deep learning model to identify new targets and novel edit sites.
- Wave has the potential to advance any combination of these targets into preclinical development to support its goal of delivering five new clinical candidates by year-end 2025. All targets leverage easily accessible biomarkers, offer efficient paths to proof-of-concept in humans, and represent meaningful commercial opportunities.
- The targets represent opportunities to correct endogenous proteins, similarly to WVE-006 in AATD, or to upregulate mRNA to increase endogenous protein levels. mRNA upregulation is an application of RNA editing being pioneered at Wave, and one of its advantages is the potential to address a range of common diseases.
- Wave demonstrated *in vivo* or *in vitro* proof-of-concept with several of these new targets, achieving at least 2-fold upregulation in liver and kidney targets and more than 60% correction in liver and lung targets.

WVE-N531 for Duchenne muscular dystrophy (DMD) and future pipeline updates:

- Today Wave shared a new analysis of muscle biopsy data from Part A of the Phase 1b/2a study of WVE-N531. The data indicates that WVE-N531 was present in myogenic satellite cells, which is important for potential muscle regeneration. To Wave's knowledge, these are the first clinical data in DMD to demonstrate uptake in satellite cells at this early time point (after three biweekly doses). In general, data for approved and investigational DMD therapeutics that demonstrate satellite cell uptake in humans is extremely limited.
- WVE-N531 will be investigated in a potentially registrational Phase 2 trial called FORWARD-53. Success in this trial would unlock a multiexon strategy where Wave can potentially address up to 40% of the DMD population with its current DMD pipeline, which includes discovery programs for skipping exons 51, 52, 44 and 45 in addition to WVE-N531.
- Data from FORWARD-53 are expected in 2024.

WVE-003 clinical program for Huntington's disease (HD):

- WVE-003 is currently being investigated in the Phase 1b/2a SELECT-HD clinical trial in individuals with HD, and is the most advanced investigational HD therapeutic designed to reduce mutant huntingtin (mHTT) protein while sparing healthy, wild-type huntingtin (wtHTT) protein.
- The multidose portion of the SELECT-HD clinical trial is ongoing and has been enrolling with high demand.
- Wave expects to deliver complete data from the first multidose cohort with extended follow-up in the second quarter of 2024 to enable decision-making, in addition to the update on single dose and available multidose data in the second half of this year.

About Wave Life Sciences
Wave Life Sciences (Nasdaq: WVE) is a clinical-stage RNA medicines company committed to delivering life-changing treatments for people battling devastating diseases. Wave aspires to develop best-in-class medicines across multiple therapeutic modalities using PRISM, the company's proprietary discovery and drug development platform that enables the precise design, optimization, and production of stereopure oligonucleotides. Driven by a resolute sense of urgency, the Wave team is targeting a broad range of genetically defined diseases so that patients and families may realize a brighter future. To find out more, please visit www.wavelifesciences.com and follow Wave on X (formerly Twitter) @WaveLifeSci.

Forward-Looking Statements
This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, without limitation, our expectations around advancing our pipeline of RNA editing programs and our understanding on the anticipated therapeutic benefits thereof, including the anticipated timing of delivering five new clinical candidates; our understandings about metabolic disorders, including obesity, along with our understandings of INHBE and its correlation to a healthy metabolic profile; our expectations for our GalNAc-conjugated small interfering RNA (siRNA) program targeting INHBE, and the anticipated therapeutic benefits thereof, including the potential to treat metabolic disorders, such as obesity, including the anticipated timing of announcing an INHBE candidate for metabolic disorders; our expectations for our GalNAc-conjugated RNA editing oligonucleotides, and the anticipated therapeutic benefits thereof, including the potential of WVE-006 to treat AATD and the anticipated timing to deliver proof-of-mechanism data in AATD; our expectations for the Phase 2 study of WVE-N531 (FORWARD-53), including the anticipated timing of such data, and the potential multiexon strategy that may arise as a result thereof, including the potential of our DMD franchise; our expectations on timing to deliver the multidose data from our SELECT-HD trial to enable decision-making; the future performance and results of our clinical programs; our expectations regarding the ability of our AIMers to address diseases of many different tissues and cell types; the potential benefits of our AIMers compared with other RNA base editing approaches; and our expectations regarding the continued progress of our GSK collaboration. The words "may," "will," "could," "would," "should," "expect," "plan," "anticipate," "intend," "believe," "estimate," "predict," "project," "potential," "continue," "target" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Any forward-looking statements in this press release are based on management's current expectations and beliefs and are subject to a number of risks, uncertainties and important factors that may cause actual events or results to differ materially from those expressed or implied by any forward-looking statements contained in this press release and actual results may differ materially from those indicated by these forward-looking statements as a result of these risks, uncertainties and important factors, including, without limitation, the risks and uncertainties described in the section entitled "Risk Factors" in Wave's most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission (SEC), as amended, and in other filings Wave makes with the SEC from time to time. Wave undertakes no obligation to update the information contained in this press release to reflect subsequently occurring events or circumstances.

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Source: Wave Life Sciences USA, Inc.