New Preclinical Data Demonstrate Potential of Codiak's Engineered Exosomes as Novel, Targeted Approaches in Multiple Disease Areas

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Data at ASGCT 2021 show ability to design exosomes with specific features for immune evasion, tunable vaccine development, targeted cell tropism and potent target engagement

CAMBRIDGE, Mass., May 11, 2021 (GLOBE NEWSWIRE) -- Codiak BioSciences, Inc. (Nasdaq: CDAK), a clinical-stage biopharmaceutical company focused on pioneering the development of exosome-based therapeutics as a new class of medicines, today announced new preclinical data from programs from its engEx™ Platform showing the broad potential therapeutic applications of engineered exosomes. The data, which include results from the IND-enabling studies for exoASO™-STAT6, immune evasion data from Codiak's exoAAV™ gene therapy platform, data showing the versatility of Codiak's exoVACC™ vaccine platform, and Codiak's ability to engineer specific cell uptake were presented today at the virtual 24th Annual Meeting of the American Society of Gene and Cell Therapy (ASGCT).

"These data highlight the power and flexibility of our engineering platform to build on the natural biology of exosomes with distinct and intentionally-chosen features," said Douglas E. Williams, Ph.D., President and Chief Executive Officer of Codiak. "By using exosomes to enhance the therapeutic index, we can pursue previously undruggable pathways and targets in multiple disease areas. Our lead programs are in immuno-oncology where we currently have two clinical trials underway in patients, and based on our continuing preclinical work, we see potential to advance programs in a broad array of therapeutic applications."

Codiak's proprietary engEx Platform enables the company to engineer exosomes – naturally occurring, extracellular nanoparticle vesicles – with distinct properties, load them with various therapeutic molecules and alter tropism so they reach specific cellular targets. Codiak has two programs in clinical development and expects to file an IND for exoASO-STAT6 – a novel exosome therapeutic carrying an antisense oligonucleotide (ASO) to target the transcription factor, STAT6 – by the end of the year.

exoASO-STAT6 Demonstrates Immune-Mediated Anti-Tumor Activity
Data presented at ASGCT from Codiak's exoASO-STAT6 program confirm results presented earlier this year showing potent local and systemic anti-tumor activity. Exosome-mediated delivery of an ASO results in enhanced uptake and improved silencing of STAT6 in tumor associated macrophages (TAMs) compared to ASO administration without an exosome (e.g., "free"). This activity, which was evident both *in vitro* and *in vivo* and across species, was persistent for up to 10 days and resulted in effective reprogramming of immunosuppressive macrophages to a pro-inflammatory phenotype. Efficacy studies of exoASO-STAT6 in multiple tumor models revealed dose-dependent single-agent activity, including 94% tumor growth inhibition and 60% complete responses at the efficacious dose in a CT26 tumor model and 62% reduction in tumor mass and complete elimination of tumor lesions in an orthotopic model of HCC unresponsive to other immunotherapies.

exoVACC Induces Robust, Tunable and Broad Immune Response
exoVACC is Codiak's proprietary and modular vaccine system that utilizes the unique properties of exosomes to deliver antigens, adjuvants and immunomodulators simultaneously and selectively to antigen presenting cells. The data presented at ASGCT show that this platform enables antigen-specific immune responses that can be modulated through antigen orientation and adjuvant loading. Further, multiple exoVACC vaccine constructs induced superior systemic and tissue-resident immune responses via various routes of administration compared to conventional vaccine formulations in animal models of both infectious disease and oncology. Specific to SARS-CoV-2, an exosome loaded with a receptor-binding domain on the surface generated robust neutralizing antibodies against the virus without requiring adjuvants. Codiak is collaborating with the Ragon Institute of MGH, MIT and Harvard to investigate the potential of the exoVACC platform in SARS-CoV-2 and HIV.

Immune-Silent Nature of Exosomes Provides Potential Strategy to Enhance AAV Delivery
Codiak presented new data at ASGCT that show that exosomes also have potential utility in overcoming the limitations of current adeno-associated virus (AAV) vectors used for the delivery of gene therapies. In *in vitro* studies, AAV encapsulated in an exosome (exoAAV) demonstrated increased potency compared to "free" AAV and resistance to neutralizing antibodies, which, if present, prevent treatment with gene therapy or readministration after an initial dose.

Engineered Exosomes with Altered Cellular Tropism Instigate Preferential Uptake in Neuronal Cells
Results from multiple *in vitro* and *in vivo* studies have demonstrated the ability of the engEx Platform to modulate exosome tropism and drive uptake into specific cell types. Illustrating the potential for exosome-based therapeutics in neurology indications, the data presented at ASGCT show that exosomes engineered to express different targeting ligands at high density result in increased uptake in various cell types of interest in the nervous system, such as neuroblastoma cell lines.

About the engEx™ Platform
Codiak's proprietary engEx Platform is designed to enable the development of engineered exosome therapeutics for a wide spectrum of diseases and to manufacture them reproducibly and at scale to pharmaceutical standards. By leveraging the inherent biology, function and tolerability profile of exosomes, Codiak is developing engEx exosomes designed to carry and protect potent drug molecules, provide selective delivery and elicit the desired pharmacology at the desired tissue and cellular sites. Through its engEx Platform, Codiak seeks to direct tropism and distribution by engineering exosomes to carry on their surface specific targeting drug moieties, such as proteins, antibodies/fragments, and peptides, individually or in combination. Codiak scientists have identified two exosomal proteins that serve as surface and luminal scaffolds. By engineering the exosome surface or lumen and optimizing the route of administration, Codiak aims to deliver engEx exosomes to the desired cell and tissue to more selectively engage the drug target, potentially enhancing the therapeutic index by improving potency and reducing toxicity.

About Codiak BioSciences
Codiak is a clinical-stage biopharmaceutical company focused on pioneering the development of exosome-based therapeutics, a new class of medicines with the potential to transform the treatment of a wide spectrum of diseases with high unmet medical need. By leveraging the biology of exosomes as natural intercellular transfer mechanisms, Codiak has developed its proprietary engEx Platform to expand upon the innate properties of exosomes to design, engineer and manufacture novel exosome therapeutic candidates. Codiak has utilized its engEx Platform to generate a deep pipeline of engineered exosomes aimed at treating a broad range of disease areas, spanning oncology, neuro-oncology, neurology, neuromuscular disease and infectious disease.

Forward-Looking Statements
This press release contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, including, among other things, statements concerning the development and therapeutic potential of the Company’s engEx Platform, engEx product candidates and engineered exosomes generally, including future development plans, regulatory filings, releases of data and timing with respect thereto. Any forward-looking statements in this press release are based on management’s current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. For a discussion of these risks and uncertainties, and other important factors, any of which could cause our actual results to differ from those contained in the forward-looking statements, see the section entitled “Risk Factors” in Codiak’s Annual Report on Form 10-K for the year ended December 31, 2020, and in subsequent filings with the Securities and Exchange Commission, as well as discussions of potential risks, uncertainties and other important factors in Codiak’s subsequent filings with the Securities and Exchange Commission. All information in this press release is current as of the date of this report, and Codiak undertakes no duty to update this information unless required by law.

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