Gritstone Oncology Presents Data at AACR Demonstrating MHC Class II Neoantigen Prediction with EDGE™ Significantly Outperforms Current Prediction Methods

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EMERYVILLE, Calif., April 02, 2019 (GLOBE NEWSWIRE) -- Gritstone Oncology, Inc. (Nasdaq: GRTS), a clinical-stage biotechnology company developing the next generation of cancer immunotherapies to fight multiple cancer types, today announced the presentation of data demonstrating its ability to identify major histocompatibility complex (MHC) class II antigens at the American Association for Cancer Research Annual Meeting 2019 in Atlanta, Georgia. In an oral presentation titled, "MHC Class II Antigen Identification for Cancer Immunotherapy by Deep Learning on Tumor HLA Peptides," it was shown that Gritstone EDGE™ improved the positive predictive value for human leukocyte antigen class II (HLA-DR) peptide presentation over standard methods by approximately 20-fold.

EDGE is an artificial intelligence platform that identifies tumor-specific neoantigens (TSNA) for the development of antigen-directed immunotherapies that may drive highly specific tumor cell destruction by T cells. TSNA can be presented by either MHC class I, which are recognized by CD8 T cells, or MHC class II, which are recognized by CD4 T cells. The public tools available to predict tumor-specific antigens presented by MHC class I are more advanced; historically, the characterization of MHC class II presented antigens has been challenging for the field due to greater variability in their binding properties.

"We believe, based in large part on the observed mechanism of action of checkpoint inhibitors such as anti-PD-(L)1 antibodies, that immunotherapies targeting tumor-specific neoantigens are potentially one of the most powerful approaches to achieve durable anti-cancer responses with minimal to no impact on healthy cells," said Andrew Allen, M.D., Ph.D., co-founder, president and chief executive officer of Gritstone Oncology. "Accurate identification of tumor-specific neoantigens, while hard, is a linchpin to the successful development of such therapies. Therefore, we built our proprietary EDGE platform from the ground up, and it fuels our best-in-class technologies and immunotherapies. We are continuing to improve our EDGE platform with new data, and we plan to incorporate MHC class II TSNA in our therapeutics once our dataset and model for these targets is sufficiently robust."

The MHC class II dataset for the AACR analyses was derived from 73 human tumor and cell-line samples, including non-small cell lung cancer, lymphoma, and ovarian cancer, and comprised over forty-five thousand tumor-presented peptides. Building on the progress with class I EDGE, Gritstone's class II model overcame a key challenge with HLA class II prediction, which is the longer and more variable presented peptide lengths. Gritstone addressed this challenge with the new comprehensive training dataset and an innovative neural network architecture, leading to an approximately 20-fold increase in performance when using EDGE versus standard methods.

This dataset complements the previously reported EDGE data demonstrating that it is approximately nine-fold better than publicly available tools at predicting tumor-specific antigens presented by MHC class I. Gritstone's groundbreaking data were published in *Nature Biotechnology* in December 2018 and are a key element of the collaboration agreement signed with bluebird bio in 2018.

About Gritstone EDGE™ (Epitope Discovery in cancer GEnomes) Platform
The EDGE platform is designed to be a best-in-class machine-learning tool for the identification of tumor neoantigens presented on the surface of tumor cells. EDGE's prediction model was initially trained using a large dataset of human tumor and normal tissue samples with paired class I HLA-presented peptide sequences, HLA types and transcriptome RNA sequencing. The training dataset for EDGE includes hundreds of tumor and normal tissue samples, yielding over one million peptides, from patients of various ancestries with diverse HLA types. EDGE leverages a novel integrated neural network model architecture to model key features that are essential for accurate prediction of true tumor-specific neoantigens. Data demonstrating the neoantigen identification capabilities of EDGE were published in *Nature Biotechnology* in December 2018. Gritstone has issued patent coverage on EDGE. Neoantigens identified by EDGE are being utilized in our lead immunotherapy programs, GRANITE-001 and SLATE-001, to educate the immune system to attack these key tumor targets.

About Gritstone Oncology
Gritstone Oncology (Nasdaq: GRTS), a clinical-stage biotechnology company, is developing the next generation of cancer immunotherapies to fight multiple cancer types. Gritstone develops its products by leveraging two key pillars—first, a proprietary machine learning-based platform, Gritstone EDGE™, which is designed to predict, from a routine tumor biopsy, the tumor-specific neoantigens (TSNA) that are presented on a patient's tumor cells; and second, the ability to develop and manufacture potent immunotherapies utilizing patients' TSNA to potentially drive the patient's immune system to specifically attack and destroy tumors. The company's lead product candidate, GRANITE-001, is a personalized neoantigen-based immunotherapy beginning Phase 1 clinical testing. Gritstone's second product candidate, SLATE-001, is a shared neoantigen ("off-the-shelf") immunotherapy which is advancing towards the clinic. Novel tumor-specific antigens can also provide targets for bispecific antibody (BiSAb) therapeutics for solid tumors, and Gritstone's BiSAb program is currently in lead optimization. For more information, please visit gritstoneoncology.com.

Gritstone Forward-Looking Statements

This press release contains forward-looking statements, including, but not limited to, statements related to the predictive capabilities of the EDGE Platform, its T cell and T cell receptor discovery program, and its investigational immunotherapies. Such forward-looking statements involve substantial risks and uncertainties that could cause Gritstone's research and clinical development programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the drug development process, including Gritstone's programs' early stage of development, the process of designing and conducting preclinical and clinical trials, the regulatory approval processes, the timing of regulatory filings, the challenges associated with manufacturing drug products, Gritstone's ability to successfully establish, protect and defend its intellectual property and other matters that could affect the sufficiency of existing cash to fund operations. Gritstone undertakes no obligation to update or revise any forward-looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to the business of the company in general, see Gritstone's most recent Annual Report on Form 10-K filed on March 28, 2019 and any current and periodic reports filed with the Securities and Exchange Commission.

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