« Previous Release

Mar 31, 2016

Genital Herpes Immunotherapy GEN-003 Shows Sustained Reduction of Viral Shedding Rate, Durable Impact on Clinical Disease 12 Months Post-Dosing

- Consistent efficacy across potential Phase 3 clinical trial endpoints -

- Once-yearly or less frequent maintenance dosing expected -

- Company to host conference call at 9 a.m. ET today -

CAMBRIDGE, Mass., March 31, 2016 (GLOBE NEWSWIRE) -- Genocea Biosciences, Inc. (NASDAQ:GNCA), a biopharmaceutical company developing T cell-directed vaccines and immunotherapies, today announced positive 12 month efficacy data from its Phase 2 dose optimization trial evaluating GEN-003 for the treatment of genital herpes. GEN-003 demonstrated sustained and statistically significant reductions compared to baseline in the rate of viral shedding 12 months after dosing across multiple dose groups as well as sustained efficacy at multiple dose levels across secondary endpoints measuring the impact on clinical disease. GEN-003 was safe and well tolerated by patients, with no serious adverse events related to the vaccine in the trial.

"We are very pleased with these data, which show that GEN-003 has strong and durable effects on both HSV-2 viral activity and genital herpes clinical disease, supporting our belief that GEN-003 could become a cornerstone treatment for patients affected by this serious disease. Specifically, a single course of treatment of GEN-003 may offer benefits similar to a full year of daily administration of oral antivirals - but with greatly improved convenience," said Chip Clark, president and chief executive officer of Genocea. "We anticipate reporting virologic efficacy data for GEN-003 from our recently-initiated Phase 2b study in the third quarter of 2016, clinical efficacy data at 6 months post dosing around the end of 2016 and conducting our end of Phase 2 meeting with the FDA in the first quarter of 2017."

"These 12 month data highlight the potential of GEN-003 to significantly

enhance the genital herpes treatment landscape," said Lori A. Panther, M.D., MPH, infectious diseases specialist at Beth Israel Deaconess Medical Center and Assistant Professor of Medicine at Harvard Medical School. "Because of the physical and psychological impact of this disease, both patients and treating physicians would be eager to use an effective treatment that more conveniently improves control of outbreaks. The reduction in viral shedding, which is thought to cause the epidemic spread of genital herpes, is also encouraging."

Genocea has already advanced the two most promising doses, 60 µg per protein combined with either 50 or 75 µg of Matrix-M2™ adjuvant, from this Phase 2 dose optimization study into an ongoing Phase 2b efficacy trial. The efficacy of GEN-003 at these two dose levels over the course of the Phase 2 dose optimization trial is as follows:

Endpoint	60 µg per protein / 50 µg of Matrix-M2			60 µg per protein / 75 µg of Matrix-M2		
	Post dose 3	6 months	12 months	Post dose 3	6 months	12 months
Viral shedding rate reduction*	41% (p < 0.0001)	46% (p < 0.0001)	64% (p < 0.0001)	55% (p < 0.0001)	58% (p < 0.0001)	52% (p < 0.0001)
% patients lesion free	68%	36%	30%	68%	30%	21%
Genital lesion rate reduction*	69% (p < 0.0001)	50% (p < 0.0001)	65% (p < 0.0001)	60% (p < 0.0001)	43% (p < 0.0001)	47% (p < 0.0001)

Notes:
* Rate reduction vs. pre-dosing baseline levels. Poisson mixed effect model analysis.

Genocea plans to present the full data from the Phase 2 dose optimization trial at an upcoming scientific meeting.

About the GEN-003 Phase 2 Clinical Trial

This Phase 2 study enrolled 310 subjects from 17 institutions in the United States. Subjects were randomized to one of six dosing groups of either 30 µg or 60 µg per protein paired with one of three adjuvant doses (25 µg, 50 µg, or 75 µg). A seventh group received placebo. Subjects received three doses of GEN-003 or placebo at 21-day intervals. Baseline viral shedding and genital lesion rates were established for each subject in a 28-day observation period prior to the commencement of dosing by collecting 56 genital swab samples (two per day), which were analyzed for the presence of HSV-2 DNA, and by recording the days on which genital lesions were present. This 28-day observation period was repeated immediately after the completion of dosing and at six and, twelve months following dosing. No booster doses were given. After the 28-day observation period immediately after dosing, patients in the placebo arm were rolled over across the 6 active combinations of GEN-003 and Matrix-M2 under a

separate protocol.

For more information about this clinical study of GEN-003 please visit www.clinicaltrials.gov.

Conference Call

Genocea management will host a conference call and webcast today at 9 a.m. ET to describe the 12 month efficacy data from the trial across all dose groups. The conference call may be accessed by dialing (844) 826-0619 for domestic participants and (315) 625-6883 for international callers (reference conference ID 81824505). A live webcast of the conference call will be available online from the investor relations section of the Company's website at http://ir.genocea.com. A webcast replay of the conference call will be available on the Genocea website beginning approximately two hours after the event, and will be archived for 30 days.

About GEN-003

Inducing a T cell response against HSV-2 is critical to treating the clinical symptoms of disease and controlling transmission of the infection. GEN-003 is a first-in-class T-cell directed immunotherapy designed to elicit both a T cell and B cell (antibody) immune response. The immunotherapy was designed using Genocea's ATLAS™ platform, which profiles the comprehensive spectrum of actual T cell responses mounted by humans in response to disease, to identify antigen targets that drive T cell response. GEN-003 includes the antigens ICP4 and gD2 along with Matrix-M2^{TM} adjuvant, which Genocea licenses from Novavax, Inc. For more information about GEN-003, please visit http://www.genocea.com/platform-pipeline/pipeline/gen003-for-genital-herpes/.

About Genital Herpes

Genital Herpes affects more than 400 million people worldwide and causes recurrent, painful genital lesions. It can be transmitted to sexual partners, even when the disease is asymptomatic. Current genital herpes therapies only partially control clinical symptoms and viral shedding, a process which drives disease transmission. Incomplete control of genital lesions and transmission risk, expense and the perceived inconvenience of taking a daily medication are hurdles for long-term disease management. Immunity through T cells is believed to be particularly critical to the control and possible prevention of genital herpes infections.

About Genocea

Genocea is harnessing the power of T cell immunity to develop life-changing vaccines and immunotherapies. T cells are increasingly recognized as a critical element of protective immune responses to a wide range of diseases, but traditional discovery methods have proven unable to identify the targets of such

protective immune response. Using ATLAS, its proprietary technology platform, Genocea identifies these targets to potentially enable the rapid development of medicines to address critical patient needs. Genocea's pipeline of novel clinical stage T cell-enabled product candidates includes GEN-003 for genital herpes, GEN-004 for the prevention of infection by all serotypes of pneumococcus (development suspended pending further data analysis and consultation with our advisers), and earlier-stage programs in chlamydia, genital herpes prophylaxis, malaria and cancer immunotherapy. For more information, please visit the company's website at www.genocea.com.

Forward-Looking Statements

Statements herein relating to future business performance, conditions or strategies and other financial and business matters, including expectations regarding clinical developments, are forward-looking statements within the meaning of the Private Securities Litigation Reform Act. Genocea cautions that these forward-looking statements are subject to numerous assumptions, risks and uncertainties, which change over time. Factors that may cause actual results to differ materially from the results discussed in the forward-looking statements or historical experience include risks and uncertainties, including Genocea's ability to progress any product candidates in preclinical or clinical trials; the ability of ATLAS to identify promising oncology vaccine and immunotherapy product candidates; the scope, rate and progress of its preclinical studies and clinical trials and other research and development activities; anticipated clinical trial results; current results may not be predictive of future results; even if the data from preclinical studies or clinical trials is positive, regulatory authorities may require additional studies for approval and the product may not prove to be safe and efficacious; Genocea's ability to enter into future collaborations with industry partners and the government and the terms, timing and success of any such collaboration; risks associated with the manufacture and supply of clinical and commercial product; the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights; Genocea's ability to obtain rights to technology; competition for clinical resources and patient enrollment from drug candidates in development by other companies with greater resources and visibility; the rate of cash utilized by Genocea in its business and the period for which existing cash will be able to fund such operation; Genocea's ability to obtain adequate financing in the future through product licensing, co-promotional arrangements, public or private equity or debt financing or otherwise; general business conditions; competition; business abilities and judgment of personnel; the availability of qualified personnel and other factors set forth under "Risk Factors" in Genocea's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 and other filings with the Securities and Exchange Commission (the "SEC"). Further information on the factors and risks that could affect Genocea's business, financial conditions and results of operations is contained in Genocea's filings with the SEC, which are available at www.sec.gov. These forward-looking statements speak only as of the date of this press release and Genocea

assumes no duty to update forward-looking statements.

For media:

Liz Bryan

Spectrum Science Communications

O: 202-587-2526

lbryan@spectrumscience.com

For investors:

Jonathan Poole

Genocea Biosciences

O: 617-876-8191

jonathan.poole@genocea.com

Source: Genocea Biosciences

News Provided by Acquire Media