Neon Therapeutics Logo

Neon Therapeutics' Personal Neoantigen Vaccine Study Demonstrates Prolonged Progression-Free Survival in Advanced or Metastatic Melanoma, Non-Small Cell Lung and Bladder Cancers

July 15, 2019

NEO-PV-01, in combination with OPDIVO® (nivolumab), broadens the immune response to specific new cancer targets, leading to the first demonstration of improved clinical durability for a personal neoantigen-based therapy in the metastatic cancer setting

Demonstrated prolonged and consistent improvements in progression-free survival (PFS) that compare favorably to historical monotherapy checkpoint inhibitor data in each of the three distinct tumor types in trial of NEO-PV-01

Median PFS not yet reached at 13.4-month median follow-up in metastatic melanoma; median PFS of 5.6 months in metastatic non-small cell lung cancer; and median PFS of 5.6 months in metastatic bladder cancer

Data from multicenter Phase 1b trial support future randomized Phase 2 development of NEO-PV-01

Conference call today at 8:30 A.M. ET

CAMBRIDGE, Mass., July 15, 2019 (GLOBE NEWSWIRE) -- Neon Therapeutics, Inc. (Nasdaq: NTGN), a clinical-stage immuno-oncology company developing neoantigen-based therapeutics, today announced top-line results, with at least 12-month median follow-up, from the ongoing, multicenter Phase 1b clinical trial evaluating NEO-PV-01, Neon's personal neoantigen vaccine candidate, in combination with OPDIVO in patients with advanced or metastatic melanoma, smoking-associated non-small cell lung cancer (NSCLC) and bladder cancer. Across all three distinct tumor types, results demonstrated prolonged and consistent improvements in progression-free survival (PFS) that compare favorably to that observed with checkpoint inhibitor monotherapy, based on historical benchmark data. At 13.4-month median follow-up in 34 patients with metastatic melanoma, median PFS had not yet been reached. In 27 patients with metastatic NSCLC, median PFS was 5.6 months; and in 21 patients with metastatic bladder cancer, median PFS was 5.6 months. These top-line data, which come from 82 patients who received at least one dose of OPDIVO in the Phase 1b NT-001 trial (Intention-to-Treat analysis, or ITT), support further development of NEO-PV-01, including randomized Phase 2 trials of NEO-PV-01 in metastatic disease settings. The NT-001 trial was initiated in November 2016 and completed enrollment in July 2018.

"Collectively, these data demonstrate a promising new approach in the field of cancer immunotherapy with the potential to further broaden and extend the benefits of checkpoint inhibitor treatment to improve patient outcomes in multiple cancer settings. Monotherapy checkpoint inhibitors have historically shown a range in median progression-free survival in metastatic melanoma, non-small cell lung and bladder cancers of approximately 3-7 months, 2-4 months and 2-3 months, respectively. With these NT-001 results, we are observing consistent prolongation of progression-free survival across all three tumor types compared with historical checkpoint inhibitor monotherapy studies involving patients with similar baseline characteristics. This is an exciting step in establishing the potential of neoantigen-based therapies as a vital component of the cancer treatment landscape," said Patrick Ott, M.D. Ph.D., Clinical Director, Melanoma Center, Center for Immuno-Oncology at the Dana-Farber Cancer Institute and a lead investigator in the NT-001 trial. "Importantly, these clinical outcome improvements, when coupled with the immune and pathological changes seen after vaccination that were presented at the American Association of Cancer Research (AACR) 2019 Annual Meeting, are consistent with the mechanism of action of NEO-PV-01."

NT-001 Clinical Trial Top-Line Results[1]

ITT analysis includes 82 patients receiving at least one dose of OPDIVO (as of April 2019 data cut)

	Metastatic Melanoma (N=34)	**Metastatic Non-Small Cell Lung Cancer (N=27)**	**Metastatic Bladder Cancer (N=21)**
Median Follow-up (months)	13.4	12.0	14.7
Median PFS (months)	Not Yet Reached (12-Month PFS = 56%)	5.6	5.6
Objective Response Rate	47%	22%	24%
Prior therapy %	41%	67%	71%

[1] Please see accompanying presentation at https://ir.neontherapeutics.com/ for additional details

As previously presented at the AACR 2019 Annual Meeting, in data available from the melanoma cohort from an August 2018 data cut, evidence of patients experiencing immune pressure on their tumors in the form of both cascading immune response (epitope spread) and decreased tumor cellularity (biopsies obtained following vaccine treatment) was observed in a majority of patients in the trial who had not progressed at nine months. This evidence of complete histological response of biopsied tumor is a potential correlate for durable clinical benefit and suggests that traditional radiographic analyses may underrepresent the effect that a neoantigen vaccine may have on tumor killing.

"By targeting neoantigens that are specific to each patient's tumor, we believe that our NEO-PV-01 personal cancer vaccine candidate is helping direct a patient's immune system to these new cancer targets, which can lead to prolonged clinical benefit. Consequently, we believe that the evidence we are seeing in this clinical trial of broadened neoantigen immune response, epitope spread and histological response suggest that NEO-PV-01 may play an important role in prolonging clinical benefit in combination with checkpoint inhibition, as evidenced by the extended PFS reported in this trial," said Richard Gaynor, M.D., Neon's President of Research and Development.

The safety data for NT-001 were consistent with the safety profile for OPDIVO monotherapy. In the 60 patients who had received at least one vaccine dose, no serious adverse events were observed that were related to the NEO-PV-01/OPDIVO combination. Low grade adverse events attributable to the NEO-PV-01/OPDIVO combination included injection site reactions, fatigue and influenza-like illness.

"Our NT-001 trial is the first demonstration of improved clinical outcomes for this new class of personal neoantigen therapies in metastatic cancer. We

believe Neon is pioneering this exciting new potential approach to treating cancer. The dataset we are presenting today represents an important milestone for Neon and the entire neoantigen field. We believe these data further validate our neoantigen-based platform, including our class-leading RECON® bioinformatics platform, and position us well to initiate Phase 2 development of NEO-PV-01 and advance our personal T cell therapy into the clinic," said Hugh O'Dowd, Neon's Chief Executive Officer.

Continued Development of NEO-PV-01

These top-line results support further development of NEO-PV-01, including randomized Phase 2 trials of NEO-PV-01 in metastatic disease settings. Neon plans to present more detailed data from its NT-001 clinical trial at an upcoming medical society meeting.

Melanoma: Neon plans to initiate a randomized Phase 2 clinical trial in combination with checkpoint inhibitor therapy in a biomarker-defined population of first-line metastatic melanoma patients in 2020. Data analysis from the NT-001 trial is ongoing and will further inform potential biomarker selection. In addition, Neon is conducting its NT-003 trial to evaluate NEO-PV-01 and OPDIVO in combination with other agents, including a CD40 agonist or a CTLA-4 antagonist, to potentially further enhance NEO-PV-01-induced neoantigen immune response and improve clinical outcomes. Neon plans to present immune monitoring data from this trial in the second half of 2020.

NSCLC and Bladder Cancer: Neon also believes that the NT-001 results in advanced or metastatic NSCLC and bladder cancers support continued development of NEO-PV-01 in these settings. The NT-001 data provide increased confidence in NEO-PV-01's potential to improve clinical benefit in combination with standard of care, such as with checkpoint inhibitor therapy and chemotherapy, for these difficult to treat cancers. As announced in April 2019, Neon has completed enrollment in NT-002, its Phase 1b clinical trial evaluating NEO-PV-01 in combination with the current standard of care, KEYTRUDA® (pembrolizumab) and chemotherapy, in first-line patients with untreated advanced or metastatic NSCLC. Neon expects to report immune monitoring and clinical outcome data from this trial by the end of the third quarter of 2020, which will inform future randomized clinical trials.

OPDIVO® is a registered trademark of Bristol-Myers Squibb Company. KEYTRUDA® is a registered trademark of Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA.

Conference Call Information

Neon will host a conference call and webcast today at 8:30 A.M. ET to discuss the top-line results from its Phase 1b NT-001 clinical trial. The live webcast can be accessed on the investor page of Neon's website at https://ir.neontherapeutics.com/. The conference call can be accessed by dialing (866) 353-0265 and using the conference ID 5596197. A replay of the webcast will be available on Neon's website approximately two hours after the completion of the event and will be archived for up to 30 days.

About NEO-PV-01

NEO-PV-01 is Neon's investigational personal neoantigen vaccine, which is custom-designed and manufactured based on the unique mutational fingerprint of each individual patient. NEO-PV-01, which is designed to include up to 20 neoantigen-targeting peptides selected by Neon's RECON® bioinformatics engine, is intended to generate an anti-tumor immune response directing T cells to target particular neoantigens in the patient's tumor. NEO-PV-01 is being studied in multiple ongoing Phase 1 clinical trials.

About Neon's NT-001 Clinical Trial

NT-001 is a Phase 1b clinical trial evaluating Neon's investigational personal neoantigen vaccine, NEO-PV-01, in combination with OPDIVO® (nivolumab) in checkpoint-naïve patients with metastatic melanoma, smoking-associated NSCLC or bladder cancer. OPDIVO is a PD-1 immune checkpoint inhibitor designed to overcome immune suppression. Neon's NT-001 trial is intended to evaluate the combination of NEO-PV-01 with OPDIVO and the potential to broaden a patient's anti-tumor immune response, resulting in improved duration of clinical benefit. The NT-001 trial is being conducted at nine leading U.S. cancer centers and includes first-, second- and later-line metastatic patients who were eligible to participate if they had received no more than one prior systemic treatment. The primary endpoint of the trial is to evaluate the safety of NEO-PV-01 in combination with OPDIVO and secondary endpoints include the clinical efficacy of the combination over two years of follow-up. Exploratory endpoints include correlative immune response with clinical outcome endpoints.

About Neon Therapeutics

Neon Therapeutics is a clinical-stage immuno-oncology company and a leader in the field of neoantigen-targeted therapies, dedicated to transforming the treatment of cancer by directing the immune system towards neoantigens. Neon is using its neoantigen platform to develop both vaccine and T cell therapies, including NEO-PV-01, a clinical-stage neoantigen vaccine for the treatment of metastatic melanoma, non-small cell lung cancer, and bladder cancer; NEO-PTC-01, a neoantigen T cell therapy for the treatment of solid tumors; and NEO-SV-01, a neoantigen vaccine for the treatment of a subset of hormone receptor-positive (HR+) breast cancer.

For more information, please visit **www.neontherapeutics.com**.

Forward-Looking Statements

This press release contains "forward-looking statements" of Neon Therapeutics, Inc. within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements may include, but may not be limited to, express or implied statements regarding our ability to obtain and maintain regulatory approval of our product candidates; the potential timing and advancement of our clinical trials; the potential timing and manner of data readouts from our ongoing and planned clinical trials; the design and potential efficacy of our therapeutic approaches; and our ability to replicate results achieved in our preclinical studies or clinical trials in any future studies or trials. Any forward-looking statements in this press release are based on management's current expectations and beliefs 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. These risks and uncertainties include, but are not limited to: uncertainties related to the initiation, timing and conduct of studies and other development requirements for our product candidates; the risk that any one or more of our product candidates will not be successfully developed and commercialized; the risk that the results of preclinical studies and clinical trials may not be predictive of future results in connection with future studies or trials; the risk that Neon's collaborations will not continue or will not be successful; risks related to our ability to protect and maintain our intellectual property position; and risks related to the ability of our licensors to protect and maintain their intellectual property position. For a discussion of these and other risks and uncertainties, and other important factors, any of which could cause Neon's actual results to differ from those contained in the forward-looking statements, see the section

entitled “Risk Factors” in Neon’s most recent Quarterly Report on Form 10-Q, as filed with the Securities and Exchange Commission, as well as discussions of potential risks, uncertainties, and other important factors in Neon’s other filings with the Securities and Exchange Commission. All information in this press release is as of the date of the release, and Neon undertakes no duty to update this information unless required by law.

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