Voyager Therapeutics to Present Preclinical Data from its Vectorized anti-HER2 Antibody Program and a Novel AAV5-Derived TRACER™ Capsid at the 25th American Society of Gene and Cell Therapy Annual Meeting

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Single dose of TRACER AAV vector encoding anti-HER2 antibody reduced CNS tumor burden and extended survival across multiple mouse models of breast cancer brain metastasis

Novel AAV5-derived capsid improved transduction in multiple CNS regions and cell types in non-human primates with partial detargeting of the dorsal root ganglia

CAMBRIDGE, Mass., May 16, 2022 (GLOBE NEWSWIRE) -- Voyager Therapeutics, Inc. (Nasdaq: VYGR), a gene therapy company developing life-changing treatments and next-generation adeno-associated virus (AAV) capsids, today is scheduled to present findings demonstrating preclinical proof-of-concept for its vectorized anti-HER2 antibody program and cross-species translatability for its novel AAV5-derived capsid at the 25th American Society of Gene and Cell Therapy (ASGCT) Annual Meeting.

Vectorized anti-HER2 Antibodies Reduce Tumor Burden in Models of Breast Cancer Metastasis
Preclinical data demonstrated that a single, systemic dose of a TRACER AAV9 variant, VCAP-102, encoding an anti-HER2 antibody may represent a new approach to treating brain metastases in patients with HER2+ breast cancer. In the study, Voyager's vectorized anti-HER2 antibody reduced central nervous system (CNS) tumor burden and extended survival across multiple mouse models of HER2+ brain metastases.

"The ability to deliver antibodies to the CNS in concentrations sufficient to diminish tumor burden and prolong survival in mouse models illustrates the potential power of our TRACER capsids to improve treatment options for HER2+ brain metastases that are a significant cause of mortality in patients with HER2+ breast cancer," said Todd Carter, Ph.D., Senior Vice President of Research at Voyager. "By coupling a better capsid with a targeted therapeutic payload, we have demonstrated that this innovative gene therapy approach can inhibit tumor cell proliferation and promote antibody-dependent cell cytotoxicity to eliminate tumor cells in multiple mouse models of HER2+ brain metastasis."

Key Results

- Delivery of an anti-HER2 antibody vectorized with the TRACER capsid VCAP-102 attenuated HER2+ metastatic brain tumors in three independent mouse models.
- The vectorized anti-HER2 antibody gene therapy conferred a survival benefit compared to a control antibody, with a median survival of 129 days for mice receiving the antibody versus 94 days for control mice.
- Vectorized HER2-directed antibodies penetrated brain tumors and elicited an innate immune response in mouse models.

Additional results are scheduled to be presented today at the ASGCT Annual Meeting at 5:15 p.m. ET in Room 204. The Company intends to make full results available on the Investor page of the Voyager website following the conclusion of the presentation.

TRACER Platform Discovers AAV5-Derived Variant with Enhanced CNS Transduction Across Species
Voyager's TRACER capsid discovery platform has identified a novel AAV5 derived variant, VCAP-100, as a strong candidate for clinical development in the delivery of gene therapies for diseases of the CNS. In the study, preclinical data demonstrated that the TRACER capsid achieved cross-species translatability through enhanced CNS transduction, as compared to a conventional AAV9 capsid in non-human primates (NHPs) and rodents, when administered intravenously.

"While conventional AAV5 capsids have a reduced prevalence of preexisting neutralizing antibodies and are easier to manufacture, to date they have not demonstrated sufficient CNS transduction to be considered for clinical gene therapy development," said Mathieu Nonnenmacher, Ph.D., Vice President of Capsid Discovery at Voyager. "The discovery of an AAV5 variant with improved transduction in primate CNS tissue via intravenous administration is an exciting finding, and the ability of this variant to function across primates and rodents makes it a strong candidate for use in the clinical development of CNS-targeted gene therapies. The discovery of this capsid further demonstrates the potential of Voyager's TRACER screening and iterative evolution technology to identify highly-differentiated capsids featuring a range of desirable characteristics."

Key Results

- VCAP-100 showed 20-fold higher brain transduction and five-fold higher spinal cord transduction compared to a conventional AAV9 capsid in NHPs.
- VCAP-100 improved transduction in multiple CNS regions and cell types in NHPs with partial detargeting from the dorsal root ganglia observed.
- In adult NHPs, VCAP-100 demonstrated peripheral tissue transduction similar to conventional AAV9.
- No signs of toxicity were observed in histopathology of samples from macaques dosed with VCAP-100.

Additional results are scheduled to be presented today at the ASGCT Annual Meeting at 5:30 p.m. ET in Hall D (Poster M-10, Abstract 129). Full

results will be available on the Investor page of the Voyager website at the start of the presentation.

About HER2+ Brain Metastases
HER2+ breast cancer, or tumors that overexpress the HER2 growth receptor, account for approximately 20% of all breast cancers, and brain metastases occur in up to 55% of HER2+ metastatic breast cancer patients. While approved anti-HER2 antibody therapies are effective for peripheral disease, to date they have demonstrated limited ability to reach the CNS in sufficient concentrations to treat brain metastases.

About the TRACER™ AAV Capsid Discovery Platform
Voyager's TRACER™ capsid discovery platform is a broadly applicable, RNA-based, functional screening platform that allows for rapid in vivo evolution of AAV capsids with enhanced tropisms and cell- and tissue-specific transduction properties in multiple species, including non-human primates (NHPs). Initial data from the first of many libraries screened in NHPs demonstrated the proprietary capsid variants effectively penetrated the blood-brain barrier and achieved widespread biodistribution and transduction of multiple regions of the brain. Separate results have demonstrated the enhanced ability of certain capsids to transduce cardiac muscle and to de-target the dorsal root ganglia. Voyager is proceeding with additional capsid campaigns derived from AAV9, AAV5, and other capsid serotypes to identify novel AAV vectors optimized for specific therapeutic applications.

About Voyager Therapeutics
Voyager Therapeutics (Nasdaq: VYGR) is leading the next generation of AAV gene therapy to unlock the potential of the technology to treat devastating diseases. Proprietary capsids born from the Company's TRACER screening platform are powering a rich early-stage pipeline of new and second-generation programs and may elevate the field to overcome the limitations of conventional gene therapy vectors across neurologic disorders and other therapeutic areas.
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Forward-Looking Statements
This press release contains forward-looking statements for the purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995 and other federal securities laws. The use of words such as "may," "might," "will," "would," "should," "expect," "plan," "anticipate," "believe," "estimate," "undoubtedly," "project," "intend," "future," "potential," or "continue," and other similar expressions are intended to identify forward-looking statements.

For example, all statements Voyager makes regarding the presentation of preclinical data at ASGCT 2022; Voyager's ability to continue to identify and develop proprietary capsids from its TRACER AAV screening platform; Voyager's ability to identify and develop proprietary capsids from its TRACER AAV screening platform with increased transgene expression, increased blood-brain barrier penetration and increased biodistribution compared to conventional AAV9 capsids; Voyager's ability to develop a gene therapy approach to treating brain metastases in patients with HER2+ breast cancer; Voyager's ability to identify an AAV5 derived capsid with high transduction in CNS tissue via intravenous dosing across species; Voyager's ability to progress its research and development programs; Voyager's ability to continue to develop preclinical data on its early pipeline programs relying upon its novel capsid discovery efforts; and Voyager's ability to utilize its novel proprietary capsids in its product development programs are forward looking.

All forward-looking statements are based on estimates and assumptions by Voyager's management that, although Voyager believes such forward-looking statements to be reasonable, are inherently uncertain. All forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those that Voyager expected. Such risks and uncertainties include, among others, the severity and length of the COVID-19 health crisis; the continued development of Voyager's technology platforms, including Voyager's TRACER platform; the ability to initiate and conduct of preclinical studies in more advanced pre-clinical animal models; the ability to attract and retain talented contractors and employees; the ability to create and protect intellectual property; and the sufficiency of cash resources.

These statements are also subject to a number of material risks and uncertainties that are described in Voyager's most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission, as updated by its subsequent filings with the Securities and Exchange Commission. All information in the press release is as of the date of this press release, and any forward-looking statement speaks only as of the date on which it was made. Voyager undertakes no obligation to publicly update or revise this information or any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

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