Krystal Biotech Announces Initiation of Phase 1/2 Study of KB105 in Transglutaminase-1 (“TGM1”) Deficient Autosomal Recessive Congenital Ichthyosis (“ARCI”)

September 4, 2019

PITTSBURGH, Sept. 04, 2019 (GLOBE NEWSWIRE) -- Krystal Biotech Inc., (“Krystal”) (NASDAQ: KRYS), a gene therapy company developing medicines to treat rare skin diseases, today announced the initiation of the Phase 1/2 study of KB105 in transglutaminase-1 (TGM1) deficient autosomal recessive congenital ichthyosis (ARCI). The study, termed GEM-3 study, will examine KB105, an HSV-1 based gene therapy engineered to deliver a human TGM1 gene, in patients with ARCI.

Up to six subjects are presently planned for the study. Pediatric patients will be enrolled in the study following establishment of safety in adult subjects. This study is an intra-patient comparison of KB105 and placebo-administered target areas. Patients will be evaluated for safety, and target areas will be assessed individually with the Investigator Global Assessment (IGA) and Visual Index of Ichthyosis Severity (VIIS) scales. Target areas will be imaged and evaluated for safety and efficacy and subjects will be on-trial for approximately 3.5 months.

TGM1-deficient ARCI is a debilitating rare skin disease characterized by excessive, thick scaling of the skin, causing multiple chronic health conditions. There are approximately 23,000 cases of TGM1-deficient ARCI worldwide and about 400 new cases per year globally. Krystal’s approach is to use a non-replicating, non-integrating engineered HSV-1 vector to deliver the TGM1 gene to keratinocyte skin cells, potentially allowing them to produce the TGM1 protein that is lacking in this patient population. KB105 is designed to be an off-the-shelf treatment for TGM1-deficient ARCI that can be applied topically, directly to a patient’s skin.

“TGM1-deficient ARCI is a debilitating condition that drastically affects patient's lives and has no current treatment options beyond palliative care,” said Pooja Agarwal, vice president, product development of Krystal. "KB105, based on our proprietary topically-applied gene therapy platform technology, has the potential to be the first-ever treatment for people with TGM1-deficient ARCI.”

“Initiating a second clinical study marks an important milestone for our STAR-D gene therapy platform,” said Suma Krishnan, founder and chief operating officer of Krystal Biotech. “We look forward to using the capabilities of our platform to bring medicines to treat several debilitating rare and non-rare skin diseases.”

About KB105
KB105 is Krystal’s second product candidate, currently in preclinical development, and seeks to use gene therapy to treat patients with TGM1-deficient ARCI. KB105 is a replication-defective, non-integrating viral vector that has been engineered employing Krystal’s STAR-D platform to deliver functional human TGM1 gene directly to the patients’ dividing and non-dividing skin cells. HSV-1 is Krystal’s replication-deficient, non-integrating viral vector that can penetrate skin cells more efficiently than other viral vectors. Its high payload capacity allows it to accommodate large or multiple genes and its low immunogenicity makes it a suitable choice for direct and repeat delivery to the skin.

About Autosomal Recessive Congenital Ichthyosis
Transglutaminase 1 (TGM1) is an essential epidermal enzyme that facilitates the formation of the epidermal barrier, which prevents dehydration, and protects the skin from unwanted toxins and surface microorganisms. The loss of TGM1 activity results in the severe genetic skin disease autosomal recessive congenital ichthyosis (ARCI). Most patients with a TGM1 deficiency exhibit life-long pronounced scaling with increased transepidermal water loss (TEWL). The scales are plate-like, often of a dark color, and cover the whole-body surface area. Erythroderma is either absent or minimal. Such patients usually have ectropion and, at times, eclabium, hypoplasia of joint and nasal cartilage, scarring alopecia, especially at the edge of the scalp, and palmoplantar keratoderma. Additional complications include episodes of sepsis, fluid and electrolyte imbalances due to impaired skin barrier function, and failure to thrive, especially during neonatal period and infancy. Severe heat intolerance, and nail dystrophy are also frequently observed. TGM1 deficient ARCI is associated with increased mortality in the neonatal period and has a dramatic impact on quality of life. No efficient treatment is available; current therapy only relieves some symptoms. There are approximately 23,000 cases of TGM1 deficient ARCI worldwide and about 400 new cases per year globally.

About the STAR-D Gene Therapy Platform
Krystal’s **S**kin **TAR**geted **D**elivery platform, or STAR-D platform, is a proprietary gene therapy platform consisting of an engineered viral vector and skin-optimized gene transfer technology that Krystal is employing to develop off-the-shelf treatments for dermatological diseases for which there are no known effective treatments. The company believes that the STAR-D platform provides an optimal approach for treating dermatological conditions due to the nature of the HSV-1 viral vector it has created. Certain inherent features of the HSV-1 virus, combined with the ability to strategically modify the virus in the form employed as a gene delivery backbone, provide the STAR-D platform with several advantages over other viral vector platforms for use in dermatological applications.

About Krystal Biotech
Krystal Biotech, Inc. (NASDAQ: KRYS) is a gene therapy company dedicated to developing and commercializing topical and intradermal “off-the-shelf” novel treatments for patients suffering from rare dermatological diseases. For more information, please visit http://www.krystalbio.com.

Forward-Looking Statements
This press release includes certain disclosures that contain “forward-looking statements,” including, without limitation, statements regarding the potential of KB103 to treat the underlying causes of DEB, the timetable for bringing GMP manufacturing in-house and the potential for rapid development of the company’s clinical programs. You can identify forward-looking statements because they contain words such as “believes” and “expects.” Forward-looking statements are based on Krystal’s current expectations and assumptions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that may differ materially from those contemplated by the forward-looking statements, which are neither statements of historical fact nor guarantees or assurances of future performance. Important factors that could cause actual results to differ materially from those in the forward-looking statements are set forth in Krystal’s filings with the Securities and

Exchange Commission, including its registration statement on Form S-1 and Form 10-K, as amended from time to time, under the caption “Risk Factors.”

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Source: Krystal Biotech, Inc.