Zafgen™

Company Update:
Zafgen and Chondrial Therapeutics
Definitive Merger Agreement

December 18, 2019

Forward Looking Statements

Additional Information about the Proposed Merger and Where to Find It

This communication relates to the proposed merger transaction involving Zafgen, Inc. ("Zafgen") and Chondrial Therapeutics, Inc. ("Chondrial") and may be deemed to be solicitation material in respect of the proposed merger involving Zafgen and Chondrial. In connection with the proposed merger, Zafgen intends to file relevant materials with the Securities and Exchange Commission (the "SEC"), including a proxy statement relating to the approval of the merger agreement. Investors and security holders of Zafgen are urged to read these materials when they become available because they will contain important information about Zafgen, Chondrial and the proposed merger. The proxy statement and other relevant materials (when they become available), and any other documents filed by Zafgen with the SEC, may be obtained free of charge at the SEC web site at www.sec.gov. In addition, investors and security holders may obtain free copies of the documents filed with the SEC by Zafgen by directing a written request to: Zafgen, Inc., 3 Center Plaza, Suite 610, Boston, Massachusetts 02108, Attention: Secretary. Investors and security holders are urged to read the proxy statement and other relevant materials when they become available before making any voting or investment decision with respect to the proposed merger.

This communication shall not constitute an offer to sell or the solicitation of an offer to sell or the solicitation of an offer to buy any securities, nor shall there be any sale of securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction.

Participants in the Solicitation

Zafgen and its directors and executive officers and Chondrial and its directors and executive officers may be deemed to be participants in the solicitation of proxies from the stockholders of Zafgen in connection with the proposed merger. Information regarding the special interests of these directors and executive officers in the proposed merger will be included in the proxy statement referred to above. Additional information regarding the directors and executive officers of Zafgen is also included in Zafgen's definitive proxy statement in connection with its 2019 Annual Meeting of Stockholders filed with the SEC on April 26, 2019. These documents are available free of charge at the SEC web site (www.sec.gov) and from the Secretary of Zafgen at the address above.

Forward Looking Statements

Zafgen Forward-Looking Information is Subject to Risks and Uncertainty

This communication contains forward-looking statements based upon Zafgen's and Chondrial's current expectations. Forward-looking statements involve risks and uncertainties, and include, but are not limited to, statements about the structure, timing and completion of the proposed merger; the combined company's listing on Nasdaq after the closing of the proposed merger; expectations regarding the ownership structure of the combined company; the combined company's expected cash position at the closing of the proposed merger; the future operations of the combined company; the nature, strategy and focus of the combined company; the development and commercial potential and potential benefits of any product candidates of the combined company; the executive and board structure of the combined company; the location of the combined company's corporate headquarters; and other statements that are not historical fact. Actual results and the timing of events may differ materially from those indicated by these forward-looking statements as a result of various important factors, including, without limitation: (i) the risk that the conditions to the closing of the proposed merger are not satisfied, including the failure to timely obtain stockholder approval for the proposed merger, if at all; (ii) uncertainties as to the timing of the consummation of the proposed merger and the ability of each of Zafgen and Chondrial to consummate the proposed merger; (iii) risks related to Zafgen's ability to manage its operating expenses and its expenses associated with the proposed merger pending closing; (iv) risks related to the failure or delay in obtaining required approvals from any governmental or quasi-governmental entity necessary to consummate the proposed merger; (v) the risk that as a result of adjustments to the exchange ratio, Zafgen stockholders and Chondrial stockholders could own more or less of the combined company than is currently anticipated; (vi) risks related to the market price of Zafgen's common stock relative to the exchange ratio; (vii) unexpected costs, charges, expenditures or expenses resulting from the proposed merger; (viii) potential adverse reactions or changes to business relationships resulting from the announcement or completion of the proposed merger; (ix) Zafgen's ability to retain personnel as a result of the announcement or completion of the proposed merger; and (x) risks associated with the possible failure to realize certain anticipated benefits of the proposed merger, including with respect to future financial and operating results. Actual results and the timing of events may differ materially from those anticipated in such forward-looking statements as a result of these risks and uncertainties. These and other risks and uncertainties are more fully described in periodic filings with the SEC, including the factors described in the section entitled "Risk Factors" in Zafgen's Quarterly Report on Form 10-Q for the quarter ended September 30, 2019 filed with the SEC, and in other filings that Zafgen makes and will make with the SEC in connection with the proposed merger, including the proxy statement described above under "Additional Information about the Proposed Merger and Where to Find It." You should not place undue reliance on these forward-looking statements, which apply only as of the date of this communication. Zafgen expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in its expectations with regard thereto or any change in events, conditions or circumstances on which any such statements are based.

Identifying the highest-potential value creation opportunity

- ✓Near-term milestones within 6 – 9 months post-transaction
- ✓Well funded beyond value inflection milestone
- ✓Either early stage (IND or Phase 1) or late (pivotal trial)
- ✓Innovative scientific approach in an attractive field – both market opportunity and patient need – especially if focus is on rare disease
- ✓Platform opportunity for multiple assets or multiple value streams

Thorough evaluation of strategic alternatives
Unanimous decision by Zafgen Board of Directors and leadership team

About the proposed merger

Chondrial Therapeutics, Inc.

- Post-transaction ownership ~60% Chondrial / ~40% Zafgen stockholders
- Anticipated 1H 2020 closing
- New company will operate under new name, Larimar Therapeutics
  - Blended Board of Directors (four from Chondrial / three from Zafgen)
  - President and Chief Executive Officer will be Dr. Carole Ben-Maimon

Introduction to Chondrial Therapeutics

- Clinical-stage biotech with a novel protein replacement therapy platform to address untreated, serious and complex rare diseases
- Lead candidate, CTI-1601, in Phase 1 clinical development for potential treatment of Friedreich's ataxia (FA)
  - Only frataxin (FXN) protein replacement therapy in clinical development to our knowledge
  - Nonclinical studies have shown promising results in several models of FA, including heart, brain and muscle function, and overall survival
- Experienced leadership team
- Strong IP with 12 years market exclusivity expected if approved and patents around efficacy biomarkers
- Created, incubated and funded by Deerfield Management

Proprietary protein replacement platform

- Peptide technology with proven ability to design differentiated cell-penetrating peptides (CPPs) that enable intracellular delivery of bioactive cargos

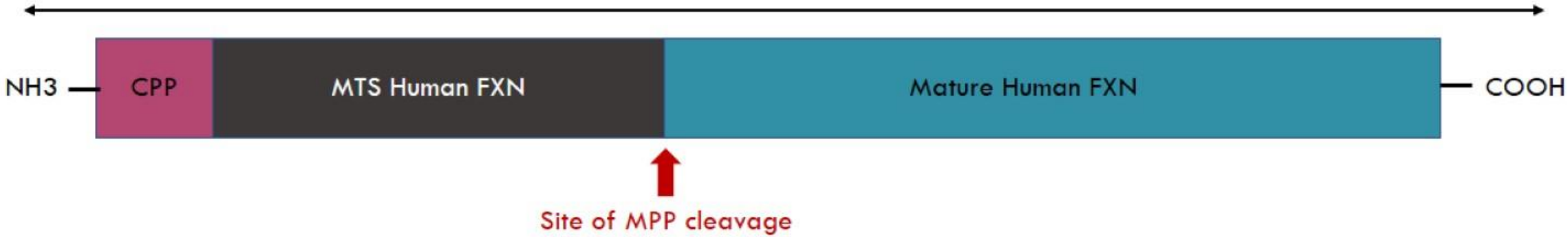
- Highly relevant and applicable to a range of cargos and rare disease indications

Friedreich's ataxia (FA): significant medical need

- Rare disease caused by a genetic defect resulting in abnormally low levels of frataxin (FXN), affects ~5,000 patients in U.S. and ~10,000 patients in EU-5
- Progressive, irreversible, systemic disease that affects multiple body systems, particularly the brain and heart
- **Onset:** Age of onset correlated with severity and speed of progression (earlier onset correlated with more drastic progression)
  - Significant asymptomatic period; >70% of patients present before age 14
  - Initial symptoms (age 10 – 15) may include unsteady posture, frequent falling and progressive difficulty in walking due to impaired ability to coordinate voluntary movements (ataxia)
  - By the time symptoms occur, heart damage has already occurred
- **Progression of disease:** Symptoms worsen and may include development of advanced limb ataxia often requiring patient confinement to wheelchair, hypertrophic cardiomyopathy, scoliosis, fatigue, diabetes and hearing loss
- **Life expectancy:** 30 – 50 years, early death usually caused by heart disease due to advanced cardiomyopathy
- Treatment limited to symptom management; no approved therapies

CTI-1601 – Delivering frataxin to the mitochondria

CTI-1601: recombinant fusion protein intended to deliver human frataxin, the protein deficient in FA



STEP 1: CTI-1601 crosses cell membrane into cytoplasm and then crosses mitochondrial membrane

STEP 2: Mitochondrial Processing Peptidase (MPP) cleaves CTI-1601

STEP 3: Mitochondrial Targeting Sequence (MTS) and CPP complex leave mitochondria and cell

STEP 4: Mature human frataxin remains trapped within the mitochondria to function

CTI-1601: proof of concept achieved through multiple nonclinical studies

- Nonclinical efficacy and PD data provides proof of concept in support of continued development to potentially replace FXN in patients with FA
  - Extended survival in a well-characterized nonclinical model of FA
  - Demonstrated capability of delivering sufficient amounts of FXN to mitochondria
  - Safe and well tolerated in multiple species

CTI-1601 extends survival in FXN-deficient KO Mice

Initial Proof of Concept for FXN Replacement Therapy in FA

- ✓ CTI-1601 extended survival in a well characterized cardiac mouse model of FRDA
- ✓ Confirms that CTI-1601 is capable of delivering sufficient amounts of FXN to mitochondria, rescuing a severe disease phenotype

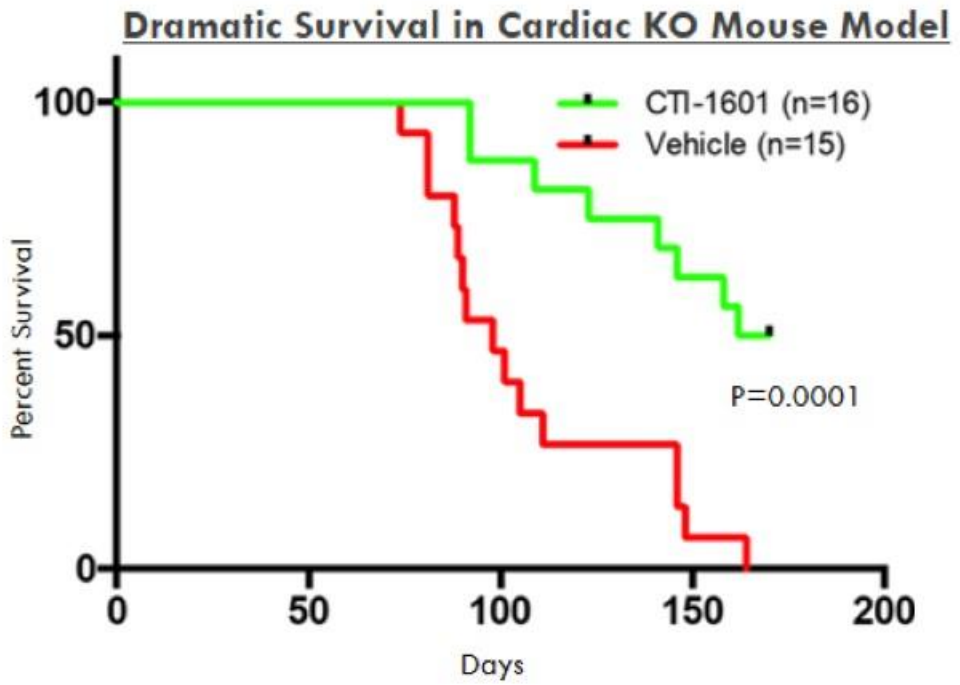
TAT-FXN was administered 10 mg/kg SC every other day

Median Survival of MCK-Cre FXN-KO Mice

- 166 days (CTI-1601) vs 98.0 days (Vehicle)

Survival beyond Vehicle mean (107.5 days)

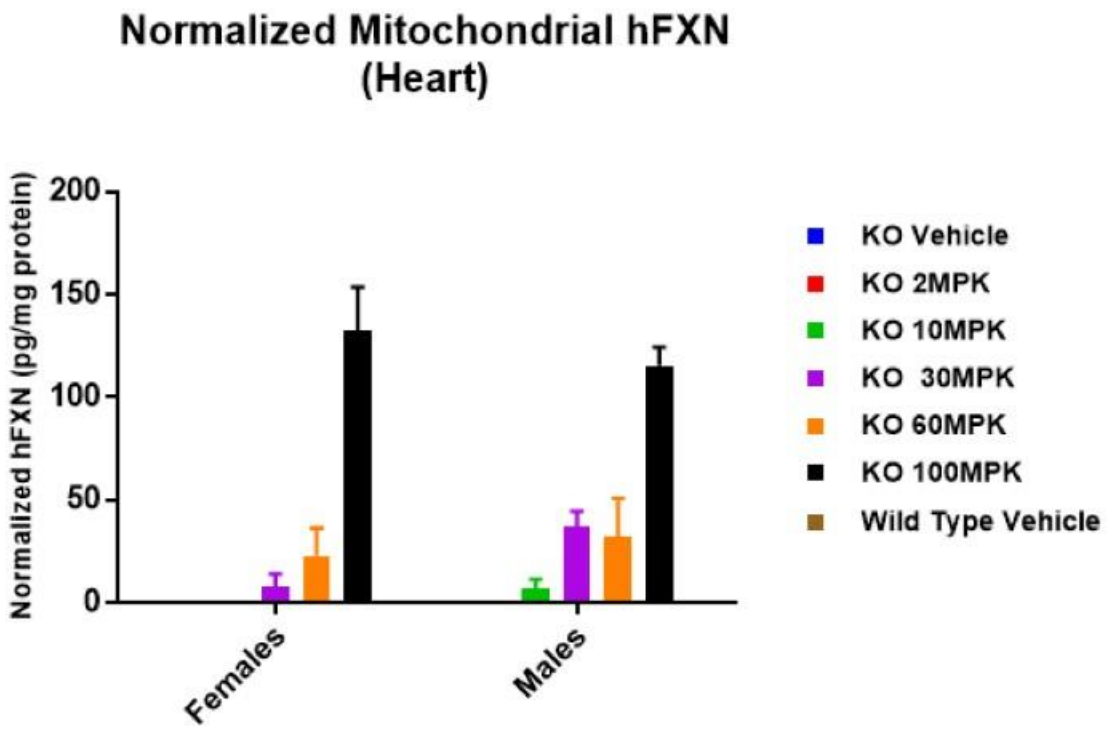
- 87.5% (CTI-1601) vs. 33% (Vehicle)

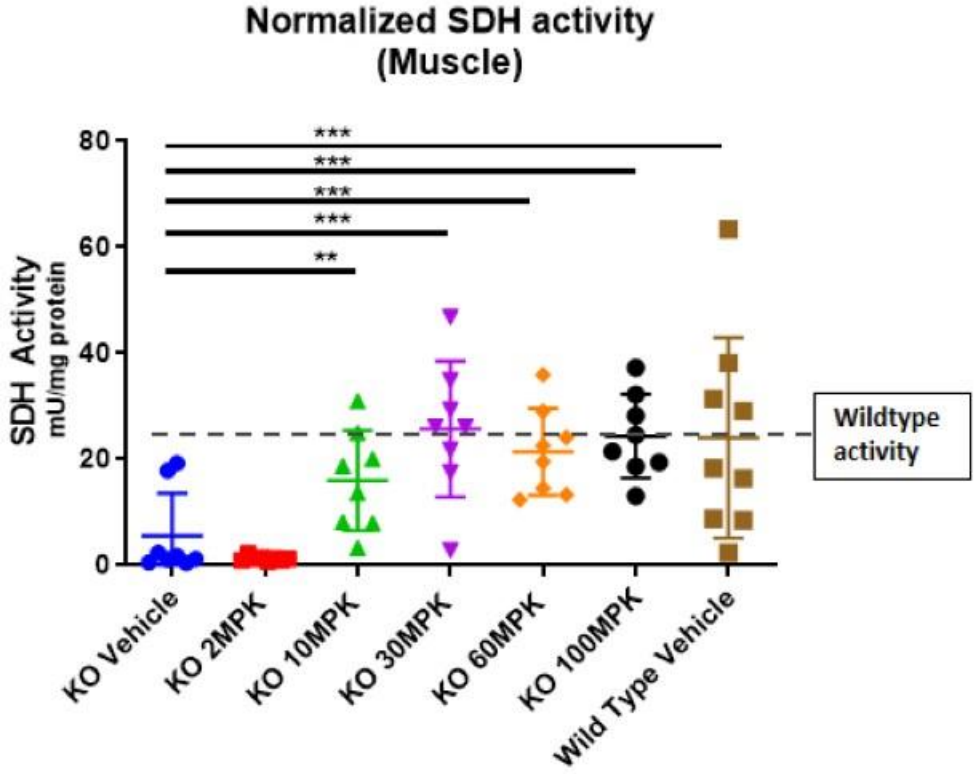


MCK = Muscle creatine kinase

CTI-1601 effectively traffics to mitochondria; delivers hFXN

- ✓ hFXN concentration within mitochondria increases in a dose-dependent manner
- ✓ Given subcutaneously CTI-1601 functionally replaces hFXN in mitochondria of KO mice
- ✓ SDH* activity increases in a dose-dependent manner after administration of CTI-1601; activity plateaus at 30 mg/kg and is equivalent to activity in wildtype animals
- ✓ Demonstrated normalization of gene expression in cardiac tissue





*Succinate dehydrogenase

Human frataxin found to be distributed into all tissues tested following CTI-1601 dosing

Observed hFXN across all tissue and cell types tested:

- ✓ Brain
- ✓ Heart
- ✓ Liver
- ✓ Dorsal Root Ganglia
- ✓ Spinal Cord
- ✓ Cardiac Mitochondria
- ✓ CSF (Cerebrospinal Fluid)
- ✓ Skeletal Muscle
- ✓ Skin
- ✓ Buccal Cells
- ✓ Platelets

Tissues Examined, By Study		
Study	Study Vehicle	Human Frataxin Distribution
TOX-1601-01	Rats	Brain, Heart, Liver
PHARM-1601-02	Neuro KO Mice	Brain, Dorsal Root Ganglia, Spinal Cord
PHARM-1601-03	Cardiac KO Mice	Mitochondria of Skeletal Muscle and Cardiomyocytes
PK-1601-08	Cynomolgus Monkey	CSF, Skin, Buccal Cells, Platelets

CTI-1601: safe and well tolerated in multiple animal models

No systemic clinical or pathological observations related to CTI-1601 in GLP studies

Cynomolgus Monkey

Injection Site Observations

- Some injection sites raised and firm; increased injection site pathology at higher doses most likely due to local irritation

Systemic Toxicity Analysis

- No other clinical observations or treatment-related changes in food consumption, body weight or organ weight
- No systemic histopathological findings

Sprague Dawley Rat

Injection Site Observations

- Some injection sites showed irritation, firmness, inflammation at higher doses

Systemic Toxicity Analysis

- No significant clinical observations or clinical pathology results
- No systemic histopathological findings

CTI-1601: Initiated Phase 1 clinical program evaluating safety and efficacy in FA

- Double, placebo-controlled SAD/MAD clinical trial
- Assessing safety, tolerability, PK/PD of subcutaneous CTI-1601 vs. placebo in adult patients with Friedreich's ataxia
- Patient dosing began recently
- Sufficient drug supply for clinical program (5 GMP batches)
- **Topline results from this clinical program expected by the end of 2020**

Orphan Drug Designation	Rare Pediatric Disease (RPD) Designation (Voucher)	Fast Track Designation

Compelling value-creation opportunity

- Publicly traded, clinical-stage biopharmaceutical company focused on rare disease
- Strong scientific approach and platform opportunity
- Targeting significant market opportunities
- Upcoming near-term value creating events expected
- Experienced leadership team
- Potential to have impact on significant and devastating diseases