

## MicroRNA Therapy to prevent the progression from Heart Attack to Heart Failure

### Business Summary:

Prolifagen, Inc. is a pre-clinical stage company focused on the development of a microRNA-based approach to cardiac muscle regeneration, following heart attack.

### Management:

The company was co-founded by three individuals: Claudine Bruck, PhD, a former Pharma Executive with 30 years of experience in drug and vaccine development. Ed Morrissey, PhD is the inventor of the Prolifagen technology. Jason Burdick, PhD is a leading expert in hydrogel formations for the delivery of cardiac therapeutic treatments. The CEO, Mike Behr, is a life science executive who has taken multiple life science start-ups from idea to commercialization. The CFO, Will Houston is a veteran of the life science community with experience in organization development and financial plan strategy. The CDO, Kiernan Seth has over 25 year of experience in biotechnology and pharmaceuticals, including Lexicon, BMS, Pfizer and Merck.

### Target patient population:

800,000 Myocardial Infarctions (MI) annually in the USA. 30% of MI develop Heart Failure (HF) after 1 year and 45% develop MI after 5 years post initial MI. More people die each year in the US of HF than any other disease or illness. The economic burden of Heart Failure will reach \$70B in the USA by 2023.

### Technology:

Prolifagen internal studies have shown that, in mice where artificial myocardial infarct has been induced, *transient administration of miR302* reactivates the resident cardiomyocyte cell cycle, leading to proliferation followed by differentiation into functional adult cardiomyocytes. This results in reduced scar formation and improved cardiac function. A local, single-point delivery formulation has been developed and successfully tested in mice hearts. Strong proliferation in infarcted pig hearts has also been observed, and in vitro *human* cells are similarly sensitive to the effect of miRNA302.

Prolifagen has developed a proprietary method to deliver miRNA302 directly to the heart within a hydrogel formation that limits the delivery of the therapeutic to a specific targeted location for a specific amount of time.

Dr. Morrissey's and Dr. Burdick's scientific studies with miRNA and hydrogel delivery mechanism have been published in peer-reviewed journal articles.

### Next Steps:

With efficacy demonstrated in vivo mice data, in vivo pig data and in vitro human data, a second more expansive pig study has been initiated with Yale University to demonstrate the Prolifagen technology in a large animal model. Standard IND-enabling investigations, including pharmacology, toxicology, chemical manufacturing controls, etc. need to be designed and executed. Finalizing the hydrogel formation and the delivery mechanism will also be completed.

### Use of Funds:

A seed funding of \$5.0M is required to conduct the next steps itemized above and build a team of professionals to develop the technology and begin the commercialization process.

### PROLIFAGEN, Inc.

#### Industry: Biotech/Pharma

- LLC founded: June 2016
- C-Corp Formation: June 2025
- URL: [www.prolifagen.com](http://www.prolifagen.com)

#### Contact

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#### Management

- Michael J. Behr  
*Chief Executive officer*
- William Houston, CFA  
*Chief Financial Officer*
- Kiernan Seth  
*Chief Development Officer*
- Andreas Bader, PhD  
*Chief Science Officer Consultant*

#### Board of Directors

- Claudine Bruck, Chair
- Michael J. Behr, CEO
- Alex Shaw, Former CEO
- David Pfeiffer, Independent

#### Scientific Advisory Board

- Ed Morrissey, PhD
- Jason Burdick, PhD
- Howard Herman, MD
- Gordana Vunjak-Novakovic, PhD
- Jose Oberholzer, MD
- Rob Gorman, MD

#### Stage: Preclinical

- Proof of efficacy in mice
- In-Vitro proliferation in human tissue
- Proof of cardiomyocyte proliferation in initial pig study

#### Intellectual Property

- 3 granted patents

#### Current Funding

- \$450k
- SBIR Grant Award-2019