Repair Biotechnologies

We produce cholesterol-degrading macrophages to reverse all forms of atherosclerosis.

Disclaimers

This presentation ("Presentation") is provided on a confidential basis for informational and discussion purposes only. It may not be reproduced or distributed to any third party, in whole or in part, without the express prior written consent of Repair Biotechnologies, Inc. ("Company"). The Presentation is not, and should not be construed to be, an offer or invitation to purchase, or a solicitation of an offer to purchase, any of the Company's securities.

This document contains forward-looking statements. In addition, from time to time, we or our representatives may make forward-looking statements orally or in writing. We base these forward-looking statements on our expectations and projections about future events, which we derive from the information currently available to us. Such forward-looking statements relate to future events or our future performance, including: our financial performance and projections; our growth in revenue and earnings; and our business prospects and opportunities. You can identify forward-looking statements by those that are not historical in nature, particularly those that use terminology such as "may," "should," "expects," "anticipates," "contemplates," "estimates," "believes," "plans," "projected," "predicts," "potential," or "hopes" or the negative of these or similar terms. In evaluating these forward-looking statements, you should consider various factors, including: our ability to change the direction of the Company; our ability to keep pace with new technology and changing market needs; and the competitive environment of our business. These and other factors may cause our actual results to differ materially from any forward-looking statement. Forward-looking statements are only predictions. The forward-looking events discussed in this document and other statements made from time to time by us or our representatives, may not occur, and actual events and results may differ materially and are subject to risks, uncertainties and assumptions about us. We are not obligated to publicly update or revise any forward-looking statement, whether as a result of uncertainties and assumptions, the forward-looking events discussed in this document and other statements made from time to time by us or our representatives might not occur.

The Company, its officers, directors, or employees undertake no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change, except as required by applicable securities laws.

Risk Factors Related to Our Business

Our business is subject to a number of risks you should be aware of before making an investment decision. These risks include the following:

- Our success is primarily dependent on the successful development, regulatory approval and commercialization of our lead product candidates, both of which are in the early stages of development.
- We have no source of predictable revenue, have incurred significant losses since inception, may never become profitable and may incur substantial and increasing net losses for the foreseeable future as we continue the development of, and seek regulatory approvals for our product candidates.
- If clinical trials of our product candidates fail to demonstrate safety and efficacy, we may be unable to obtain regulatory approvals to commercialize our product candidates.
- We are subject to regulatory approval processes that are lengthy, time-consuming and unpredictable.
- We may not obtain approval for any of our product candidates from the FDA or foreign regulatory authorities.
- Even if we obtain regulatory approval, the market may not be receptive to our product candidates.
- We may not be able to establish collaborative partnerships with other pharmaceutical companies, through which we expect to complete development of, obtain marketing approval for and, if approved, manufacture and market our product candidates.
- We may encounter difficulties satisfying the requirements of clinical trial protocols, including patient enrollment.
- We may face competition from other companies in our field or claims from third parties alleging infringement of their intellectual property.

Executive Summary

Repair Biotechnologies

- Repair Biotechnologies operates in the cardiovascular and metabolic spaces, having developed a first-in-class therapeutic approach to treat all forms of atherosclerosis.

- Unlike current approaches which target LDL-cholesterol in the bloodstream, Repair Bio's proprietary Cholesterol Degrading Platform (CDP) actively degrades intracellular/intraplaque cholesterol, reversing atherosclerosis, rather than merely preventing it.

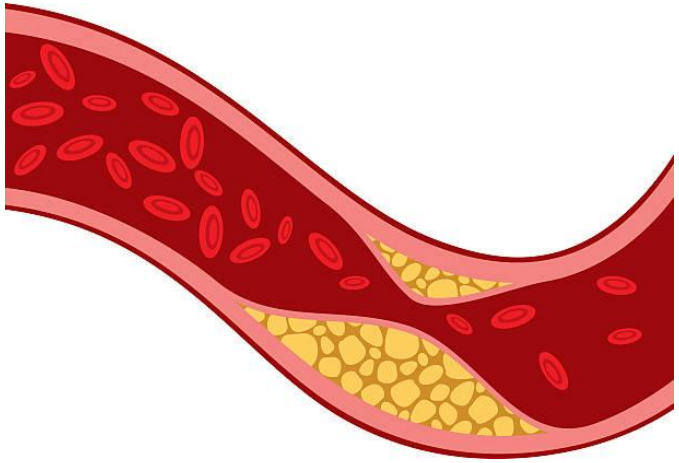
- Repair Bio is targeting Familial Hypercholesterolemias (FH) as its beachhead indication, with: (i) a favorable regulatory orphan status pathway for Homozygous FH (HoFH – hundreds of patients) and (ii) providing therapeutically superior solutions for Heterozygous FH (HeFH – one million patients).

- Repair Bio's lead candidate is an allogeneic, universal macrophage cell therapy equipped with the CDP genes. In a preliminary proof-of-concept using AAV-CDP, this therapy reduced atherosclerotic plaque lipids by 48% (ApoE knockout model – 1 month, post single treatment).

- Repair Bio aims to further advance its lead candidate for treatment of all forms of atherosclerosis, focusing initially on high-risk non-responder patients (5-10% of all statin-prescribed patients – 10 to 20 million patients).

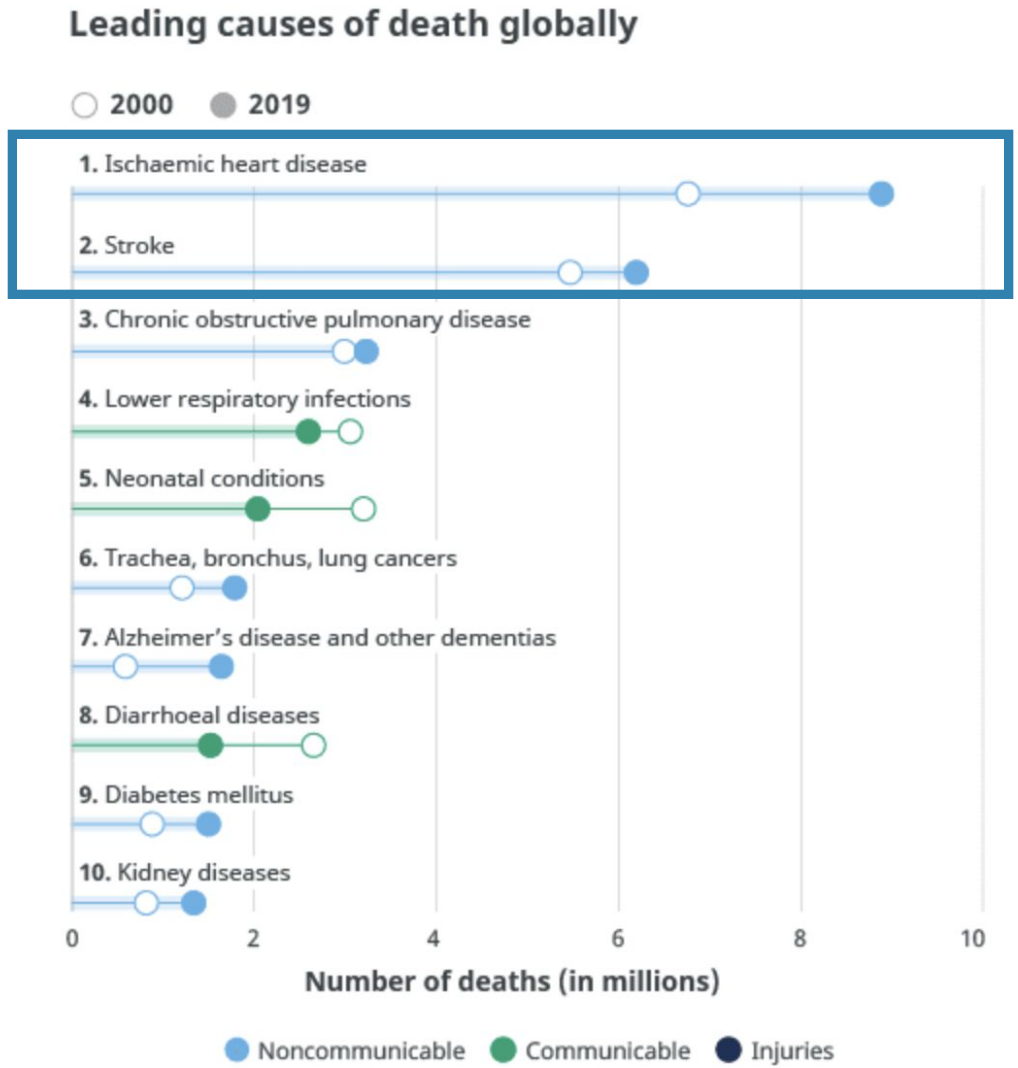
Atherosclerosis is the buildup of cholesterol-based plaques, and the #1 cause of death in the world

Repair Biotechnologies



Atherosclerosis

- **Chronic maladaptive inflammatory response** triggered by the retention of cholesterol-rich low-density lipoproteins (LDL-C) within the walls of arteries
- Can lead to **heart attack, stroke, and death**

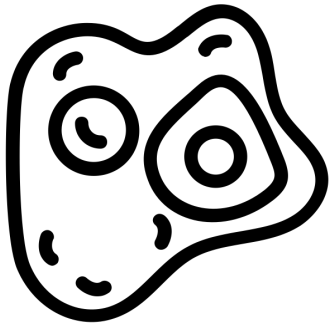


SOURCE: WHO (https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death, 12/2020)

Atherosclerosis is caused by the combination of LDL-Cholesterol and normal human macrophages that cannot degrade cholesterol

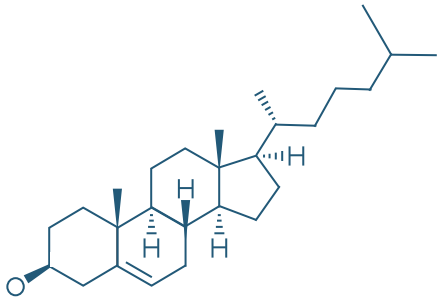
Repair Biotechnologies

Normal macrophage



+

Cholesterol



=

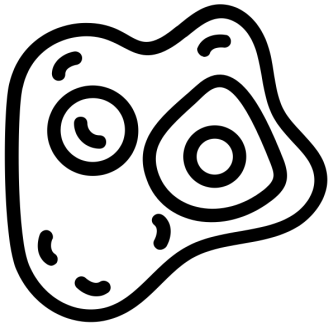
Cell death
+
Cholesterol-based plaque

- **Circulating monocytes/macrophages enter the arterial wall** and ingest excess LDL-C to prevent further accumulation.
- **Human macrophages cannot degrade cholesterol**, unlike some bacteria, and, with continued uptake of cholesterol, become engorged and assume a **“foamy” appearance**.
- **Enabling the breakdown of cholesterol in macrophages could ameliorate** a fundamental cause of atherogenesis and thus provide significant salutary effects to patients.

Current drugs focus on lowering LDL-C, leading to a slow-down in the build-up of plaque, but not to degradation/reversal

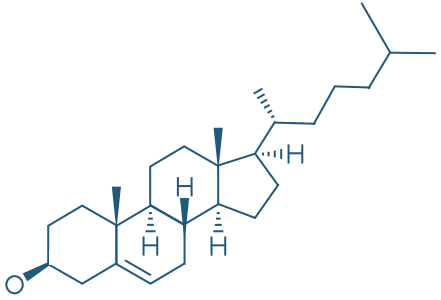
Repair Biotechnologies

Normal macrophage



+

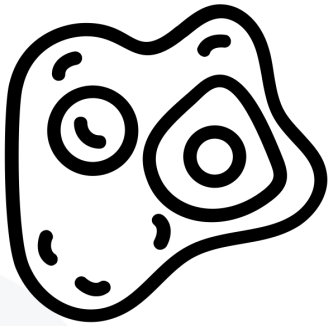
Cholesterol



=

Cell death
+
Cholesterol-based plaque

Normal macrophage



+

LDL-Cholesterol Lowering Drugs

- Statins (HMG-CoA reductase inhibitors)
- PCSK9 inhibitors
- LDL apheresis
- ANGPLT3 inhibitors
- Etc!

Current drugs focus on lowering LDL-C, leading to a slowing in the buildup of plaque, but not to degradation/reversal of plaque.

=

Less cell death
+
Less cholesterol-based plaque

Slowing is not enough, degradation is required! Plaque burden contributes to 67+% of atherosclerosis-related adverse events and deaths

Repair Biotechnologies

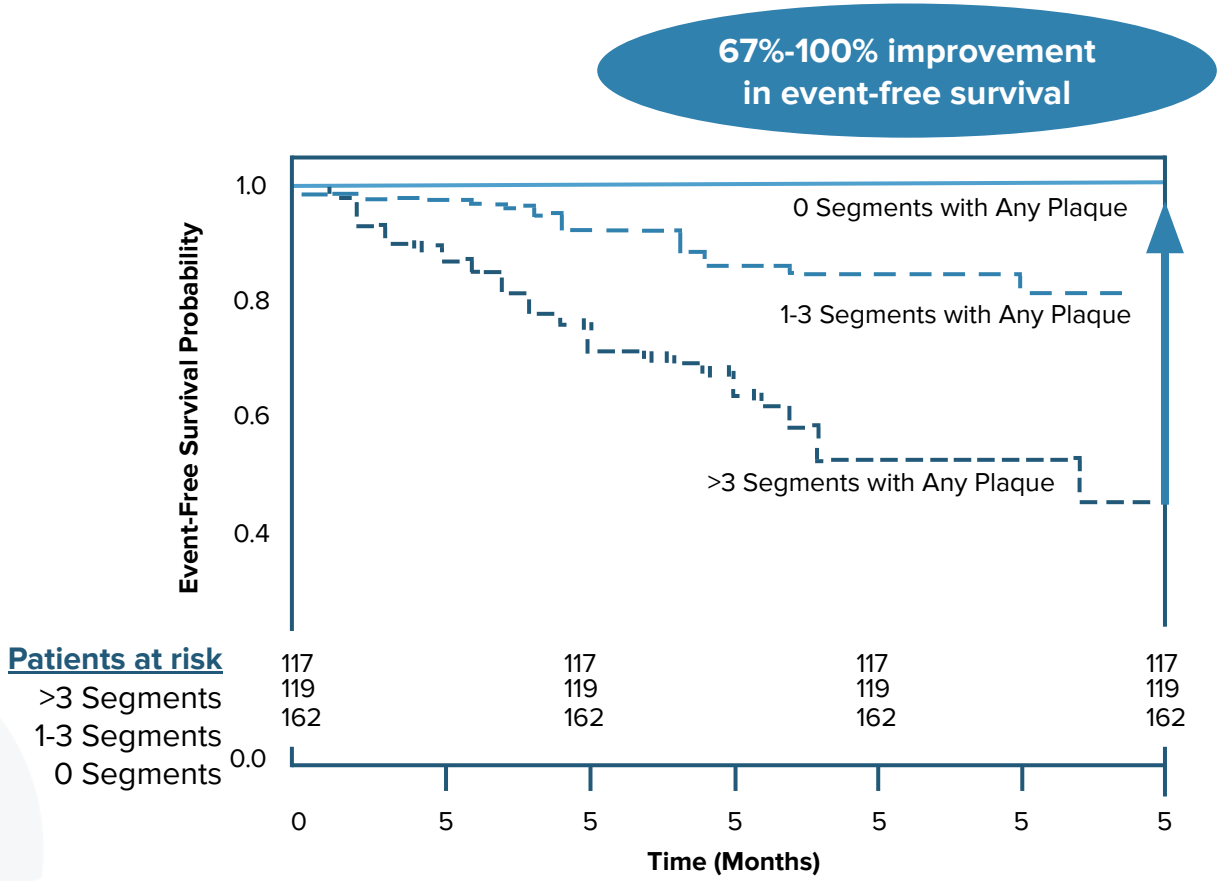


TABLE 3. Hazard Ratio of Mortality Risk in Relation to Carotid Plaques Adjusted for Age

Total plaque score	Subjects at Risk, n	Events, n	HR (95% CI)
No plaque (reference)	60	4	1.00 (reference)
1 to 2 plaques	98	16	2.89 (0.96-8.69)
3 to 4 plaques	90	16	2.91 (0.97-8.73)
5 to 6 plaques	75	23	4.89 (1.69-14.15)
7 to 12 plaques	42	11	4.53 (1.44-14.23)

4x+ increase in mortality risk

SOURCE: Nance JW Jr et al. Incremental prognostic value of different components of coronary atherosclerotic plaque at cardiac CT angiography beyond coronary calcification in patients with acute chest pain. Radiology. 2012 Sep; Epub 2012 Jul 19. PMID: 22820732.
Störk S et al. Carotid artery plaque burden, stiffness, and mortality risk in elderly men: a prospective, population-based cohort study. Circulation. 2004 Jul 20;pub 2004 Jul 6. PMID: 15238459.

Because they only slow the build-up of plaque, LDL-C lowering drugs fail to cure atherosclerosis. Even so, they are the best-selling drugs of all time

Repair Biotechnologies

World's #1 drug Lipitor: $150B in global sales

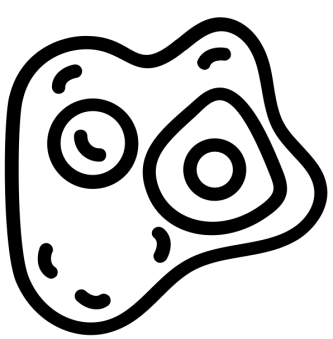
	Mortality reduction	Estimated list price
Statins	20%	$100 / year
VASCEPA	20%	$1,000 / year
PCSK9 inhibitors	17%	$10,000 / year
ANGPTL3 inhibitors	Unknown	$450,000 / year

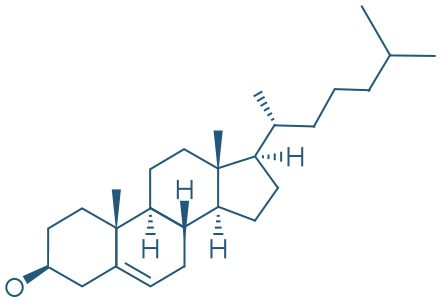
SOURCE: Yebyo HG, Aschmann HE, Kaufmann M, Puhan MA. Comparative effectiveness and safety of statins as a class and of specific statins for primary prevention of cardiovascular disease: A systematic review, meta-analysis, and network meta-analysis of randomized trials with 94,283 participants. Am Heart J. 2019 Apr;210:18-28. doi: 10.1016/j.ahj.2018.12.007. Epub 2019 Jan 10. PMID: 30716508.
Bhatt DL, Steg PG, Miller M, Brinton EA, Jacobson TA, Ketchum SB, Doyle RT Jr, Juliano RA, Jiao L, Granowitz C, Tardif JC, Ballantyne CM; REDUCE-IT Investigators. Cardiovascular Risk Reduction with Icosapent Ethyl for Hypertriglyceridemia. N Engl J Med. 2019 Jan 3;380(1):11-22. doi: 10.1056/NEJMoa1812792. Epub 2018 Nov 10. PMID: 30415628.
Schmidt AF, Carter JL, Pearce LS, Wilkins JT, Overington JP, Hingorani AD, Casas JP. PCSK9 monoclonal antibodies for the primary and secondary prevention of cardiovascular disease. Cochrane Database Syst Rev. 2020 Oct 20;10(10):CD011748. doi: 10.1002/14651858.CD011748.pub3. PMID: 33078867; PMCID: PMC8094613.

By adding Cholesterol Degrading Proteins (CDP), Repair has engineered macrophages that *can* degrade cholesterol in plaque

Repair Biotechnologies

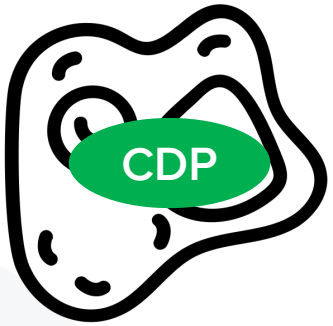
Normal macrophage + **Cholesterol** =

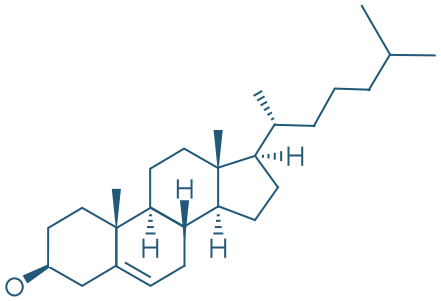




Cell death
+
Cholesterol-based plaque

CDP+ macrophage + **Cholesterol** =





Cholesterol degradation
+
Cholesterol-based plaque reversal

In vitro, CDP+ macrophages degrade cholesterol into a safe and water-soluble catabolite

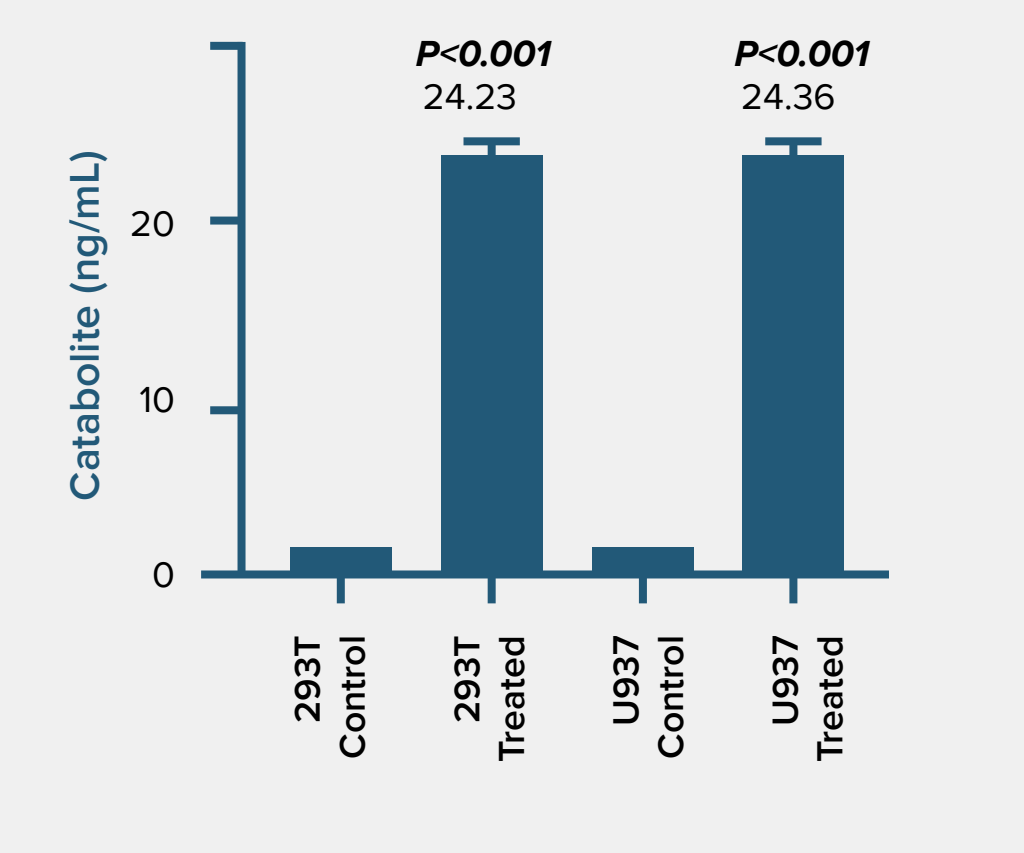


Figure. Human cells expressing CDP break down cholesterol into a safe catabolite.

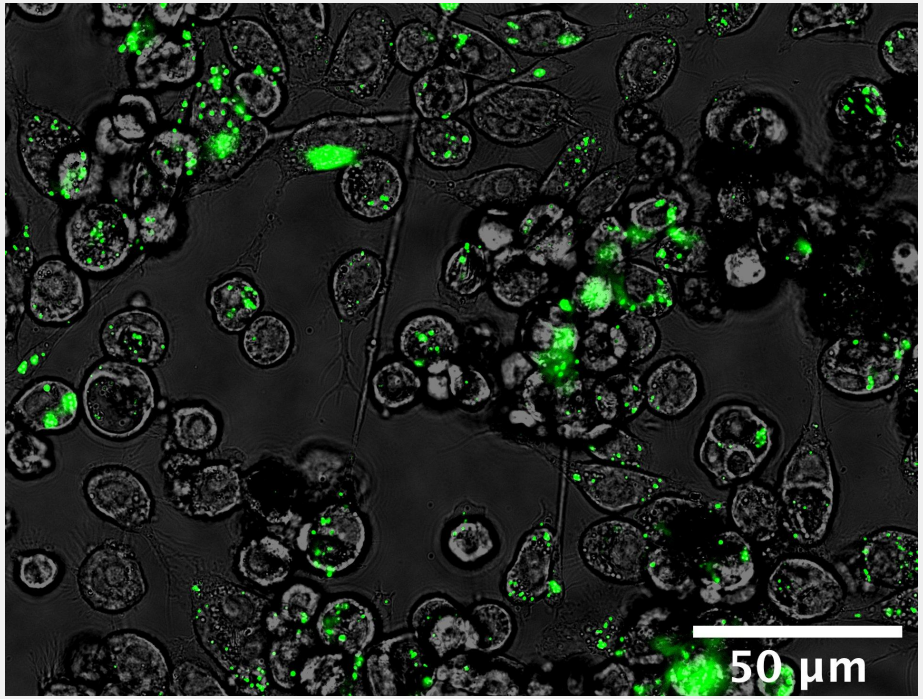
Transient transfection of CDP in human HEK293T cells and lentivirus-mediated stable transduction of CDP in human U937 monocytes leads to a robust increase in the production and secretion of the catabolite of interest into the culture media.

Catabolite concentrations were measured using a commercially available ELISA kit.

CDP+ macrophages resist the pathological foam cell state after exposure to excess cholesterol

Repair Biotechnologies

A) Mock-RAW264 Macrophages



B) CDP-RAW264 Macrophages

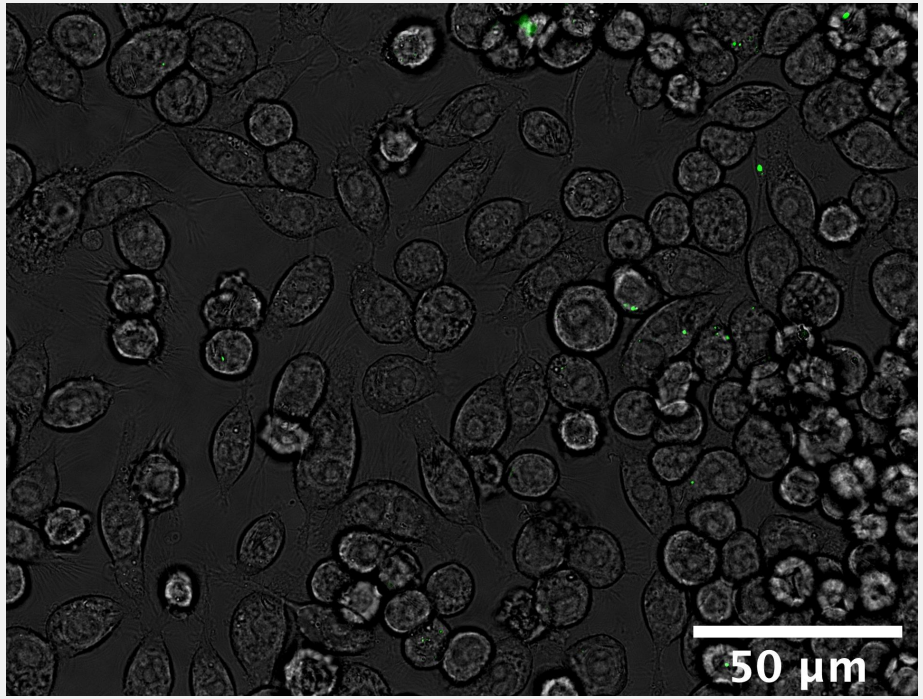
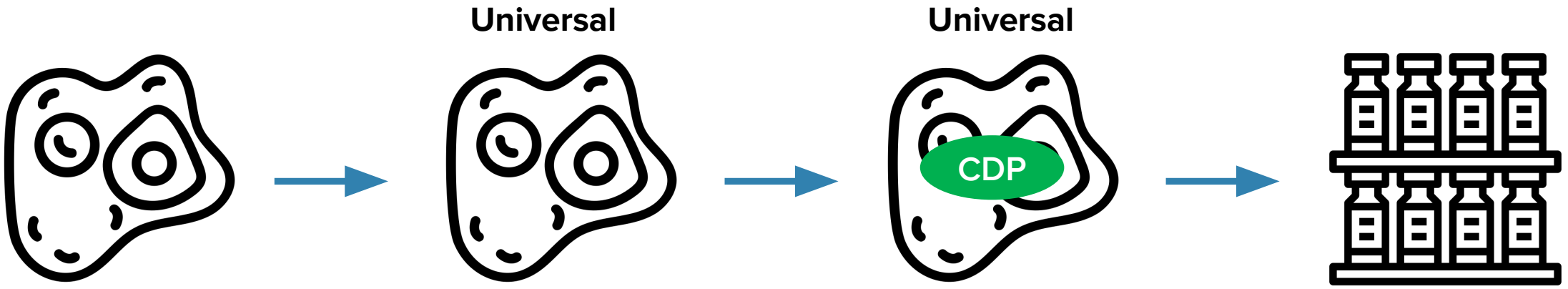


Figure. Expression of CDP in macrophages prevents the formation of lipid-laden foam cells in response to treatment with cholesterol. A) Mock-RAW264 macrophages treated with NBD-cholesterol (50 µg/mL) showed signs of cholesterol accumulation and foam cell formation as evidenced by areas of intense green fluorescence. B) NBD-Cholesterol fluorescence was very low to undetectable in CDP-RAW264 macrophages, suggesting that CDP confers resistance to atherogenic macrophage foam cell formation when challenged with excess cholesterol.

We are developing a universal CDP+ macrophage line, making this therapy affordable and accessible for our indications

Repair Biotechnologies



1

iPSC derived from healthy donor

2

Disruption of MHC I/II and other factors to make cells universal

3

Addition of Cholesterol Degrading Proteins (CDP)

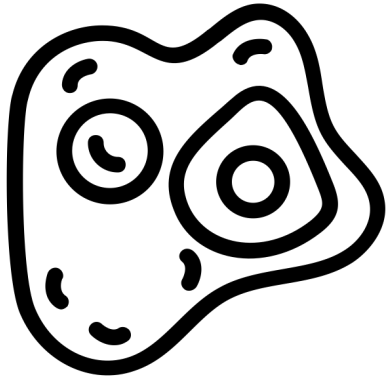
4

Differentiation to create off-the-shelf CDP+ macrophages

M2 macrophages are desirable for regenerative therapies

Repair Biotechnologies

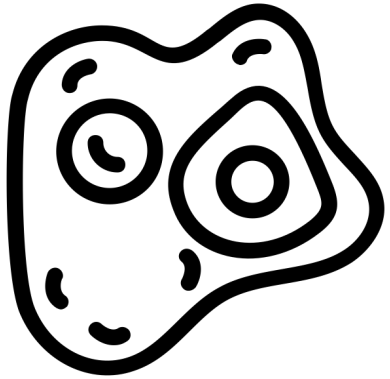
Macrophages adopt a package of behaviors, or phenotype, of which M1 and M2 are best understood and characterized. It is important to produce the right phenotype for a given therapy. A robust source of macrophages of a particular phenotype is a valuable product.



M1

- Aggressive, inflammatory.
- Used in cancer therapy.

versus



M2

- Regenerative, anti-inflammatory.
- Potentially treat inflammatory conditions such as stroke, fibrosis, and atherosclerosis.

Our CDP+ macrophages have an M2-like anti-inflammatory phenotype

Repair Biotechnologies

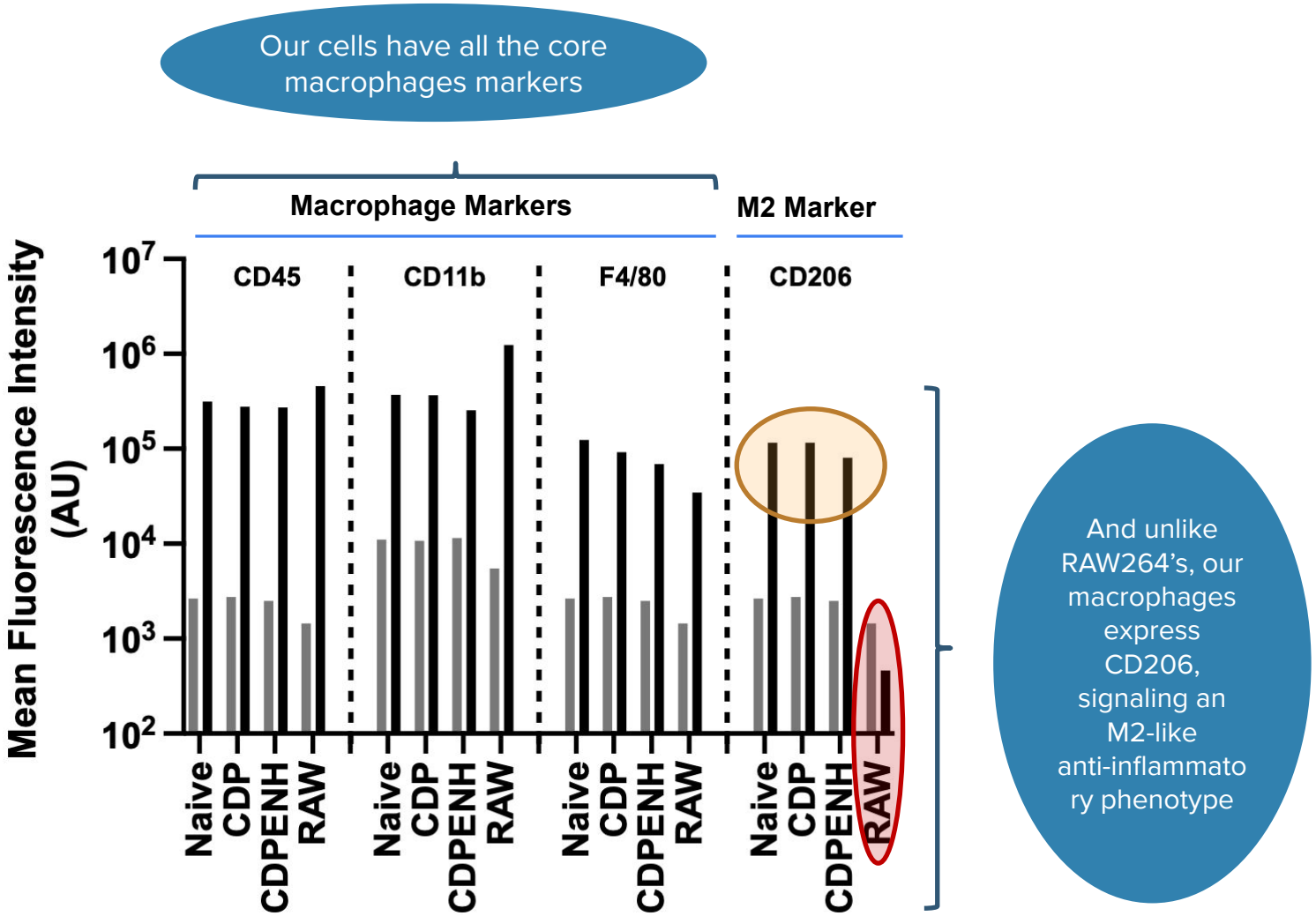
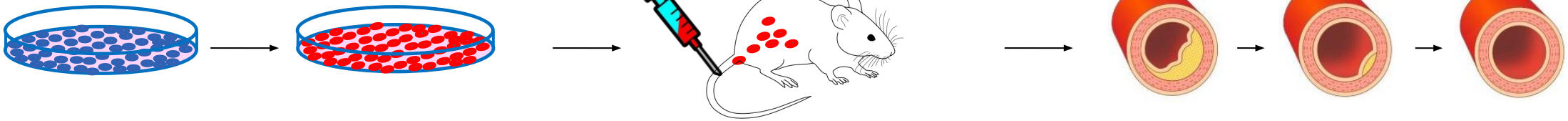


Figure. CDP+ and CDPENH+ ApoE-null iPSCs successfully differentiate into monocytes/macrophages. Pluripotent clones of Naive, CDP-expressing and CDPENH-expressing (CDPENH is a more potent version of CDP) ApoE-null mouse iPSCs were subjected to a stepwise differentiation into monocytes/macrophages using our proprietary protocol. Analysis of cells by flow cytometry revealed robust expression of monocyte/macrophage markers including, CD11b, F4/80, CD45 and CD206. As expected, all iPSC-derived monocytes/macrophages were negative for the early hematopoietic cell marker, CD41, and indicative of successful differentiation. As for macrophages, CD206 is normally expressed on the M2 but not M1 subtype and serves as a useful marker to identify the M2 phenotype. Unlike RAW264 macrophages, our iPSC-derived macrophages express CD206 suggesting that they are already skewed towards an M2 phenotype.

Cell therapy studies in APOE-null atherosclerotic mice are ongoing



ApoE-null-CDP+ induced pluripotent stem cells differentiated to monocytes

Monocyte cell therapy in *ApoE-null* atherosclerosis model

Assessment of atherosclerotic plaque in *ApoE-null* mice

1

Cell manufacturing protocols are well established in our laboratory

2

High dose cell therapy is well tolerated by mice, with no evident side-effects

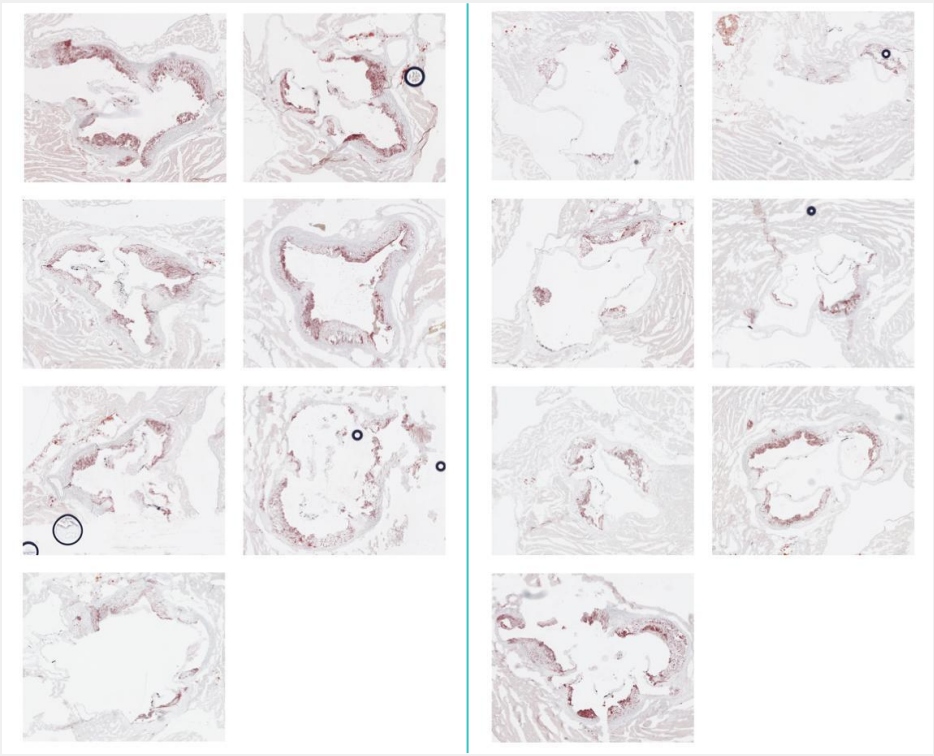
3

Tissue processing is a work in progress, with initial results soon.

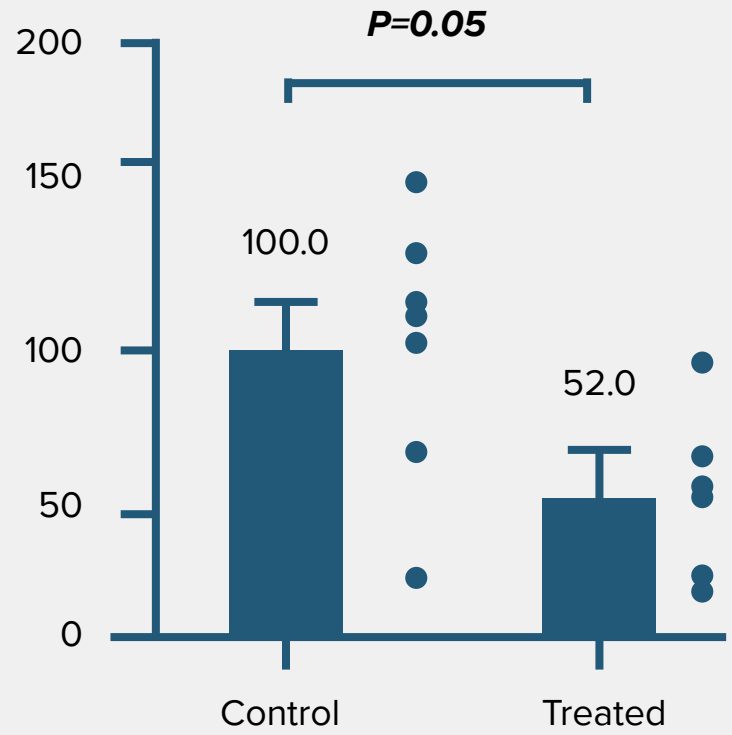
As our first in vivo proof-of concept, in the *APOE-null* atherosclerosis mouse model, our prototype therapy led to a 48% reduction in plaque lipids

Repair Biotechnologies

A. Control | Treated



B. Normalized Plaque Lipid Fraction



Summary

Figure. Treatment of *ApoE-null* mice with AAV-CDP led to a 48% reduction in plaque lipids in aortic root tissue sections. A. Fourteen male were randomly intravenously injected with either 10^12 vg of AAV-CDP (treatment; n=12) or AAV-empty (control; n=12). All mice were placed on a high fat Western diet (0.2% cholesterol) for 4 weeks and euthanized. Images of aortic root sections were stained with Oil Red O. B. Graph showing a 48% reduction (*P=0.05)* in plaque lipids in the aortic root tissue sections from AAV-CDP (Treated) compared to AAV-Empty (Control). No weight loss or other signs of side-effects in the treated group.

CDP technology can treat all forms of atherosclerosis. We intend a phased entry to maximize asset value and development.

Repair Biotechnologies

1) HoFH (homozygous FH)

- **Orphan indication**
- Est. **300 patients** in the U.S.
- LDL-C levels can reach 1000 mg/dL
- Life exp. without treatment: 33 years

< $1B Market

2) HeFH (heterozygous FH)

- Est. **1M patients** in the U.S.
- Patients are underdiagnosed, first symptom can be heart attack
- Without treatment, **22x higher risk** of heart attack (vs <130 mg/dL non-FH patient)

~$1B Market

3) Atherosclerosis high-risk subpopulations

- Est. **10M-20M patients** globally (5%-10% of 200M global statin patients)
- Includes patients who are statin non-responders or suffer from side-effects

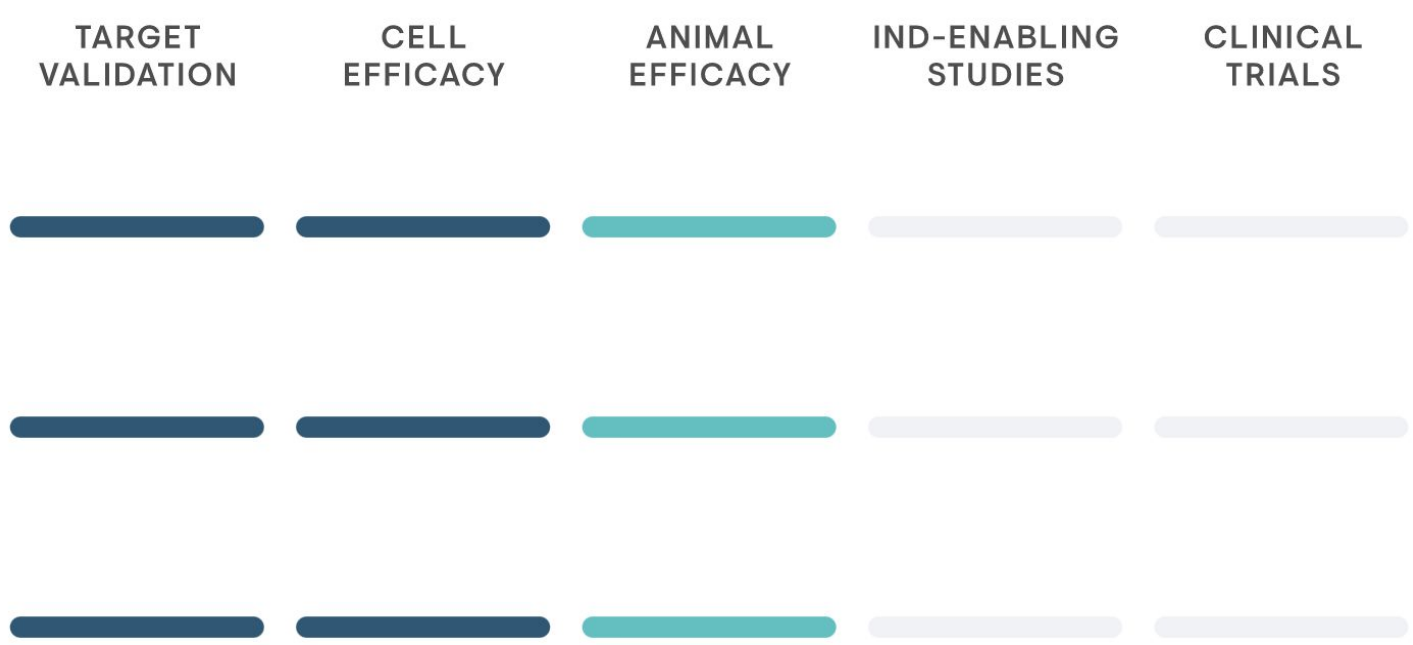
~$22B Market

SOURCE: Goldberg AC et al; National Lipid Association Expert Panel on Familial Hypercholesterolemia. Familial hypercholesterolemia: screening, diagnosis and management of pediatric and adult patients: clinical guidance from the National Lipid Association Expert Panel on Familial Hypercholesterolemia. J Clin Lipidol. 2011 Jun;5(3 Suppl):S1-8. doi: 10.1016/j.jacl.2011.04.003. Epub 2011 Apr 12. PMID: 21600525.
Khera AV et al. Diagnostic Yield and Clinical Utility of Sequencing Familial Hypercholesterolemia Genes in Patients With Severe Hypercholesterolemia. J Am Coll Cardiol. 2016 Jun 7;67(22):2578-89. doi: 10.1016/j.jacc.2016.03.520. Epub 2016 Apr 3. PMID: 27050191; PMCID: PMC5405769.

Our pipeline has the advantage of including both an orphan indication and a multi-billion dollar market

Repair Biotechnologies

Indication	Market size
Homozygous familial hypercholesterolemia (HoFH)	$<1B
Heterozygous familial hypercholesterolemia (HeFH)	$1B
Atherosclerosis subpopulations	$22B



SOURCE: Internal analysis, Research and Markets (https://www.businesswire.com/news/home/20200828005107/en/Worldwide-Familial-Hypercholesterolemia-Market-to-2030---Insight-Epidemiology-and-Market-Forecast---ResearchAndMarkets.com), August 2020, Grand View Research (https://www.grandviewresearch.com/press-release/global-hyperlipidemia-drugs-market), July 2018

Repair has exclusive rights to CDP technology

Repair Biotechnologies

Licensed Patents

- **Core technology patent covering CDP mechanisms in cells,** licensed from University of South Alabama.
- **Exclusive license, no cash milestones, 2% royalty.**

Repair Biotechnologies Patents Filed and In Progress

- **Use of CDP to treat hypercholesterolemias**,
  based on animal data produced by Repair Biotechnologies.
- **Use of cofactors/modifiers**
  to greatly enhance efficiency of CDP in degrading cholesterol.

Executive Team: Multidisciplinary Expertise

Repair Biotechnologies

Reason
Chief Executive Officer

FIGHT AGING!

Mourad Topors, PhD
Chief Scientific Officer

Pfizer

HARVARD MEDICAL SCHOOL

Bobby Khan, MD, PhD
Chief Medical Officer

Prexxartan (valsartan) Oral Solution 20 mg/5 mL (4 mg/mL)

CARMEL BIOSCIENCES

Bill Cherman
Chairman

McKinsey & Company

NOTE: Logos reflect professional experience.

Scientific Advisory Board: World-leading Scientific Competence

Repair Biotechnologies

Richard Honkanen, PhD
Advisor: Inventor

Graham Pawelec, PhD
Advisor: Immunology

EBERHARD KARLS UNIVERSITÄT TÜBINGEN

UNIVERSITY OF CAMBRIDGE

Andrew Zhu, MD, PhD
Advisor: Hepatology

HARVARD MEDICAL SCHOOL

MASSACHUSETTS GENERAL HOSPITAL CANCER CENTER

Babak Razani, MD, PhD
Advisor: Cardiovascular

WASHINGTON UNIVERSITY IN ST. LOUIS 1853

NOTE: Logos reflect professional experience.

Thank you

Repair
Biotechnologies