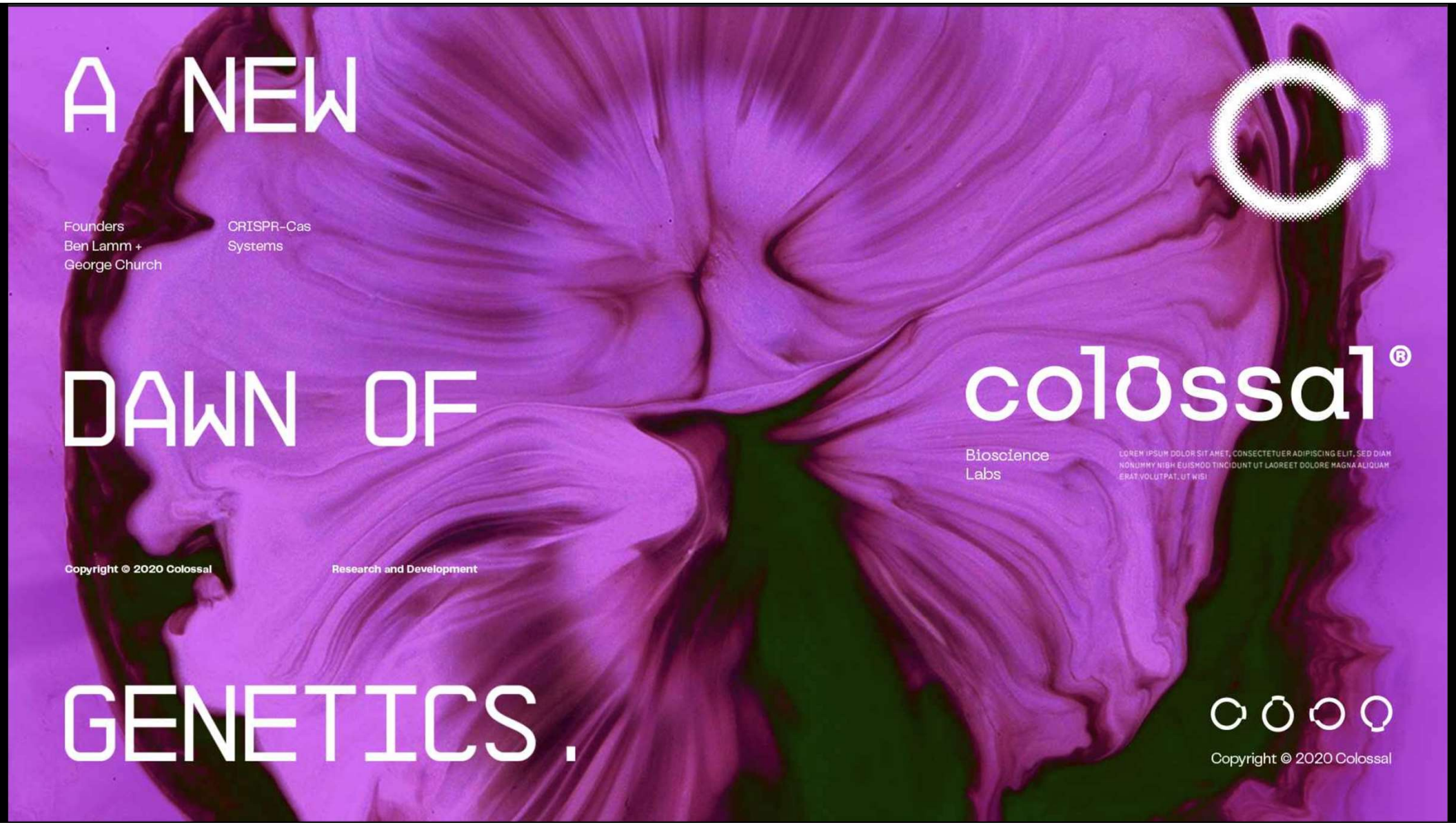

A NEW
Founders
Ben Lamm +
George Church
CRISPR-Cas
Systems
DAWN OF
colossal®
Bioscience
Labs
LOREM IPSUM DOLOR SIT AMET, CONSECTETUER ADIPISCING ELIT, SED DIAM
NONUMMY NIBH EUISMOD TINCIDUNT UT LAOREET DOLORE MAGNA ALIQUAM
ERAT VOLUTPAT. UT WISI
Copyright © 2020 Colossal
Research and Development
GENETICS.
Copyright © 2020 Colossal

SciTechDaily

BIOLOGY CHEMISTRY EARTH HEALTH PHYSICS SCIENCE SPACE TECHNOLOGY

HOT TOPICS MARCH 3, 2022 | FOR GETTING BETTER SLEEP, RESISTANCE EXERCISE MAY BE SUPERIOR TO AEROBIC EXERCISE

HOME SCIENCE NEWS

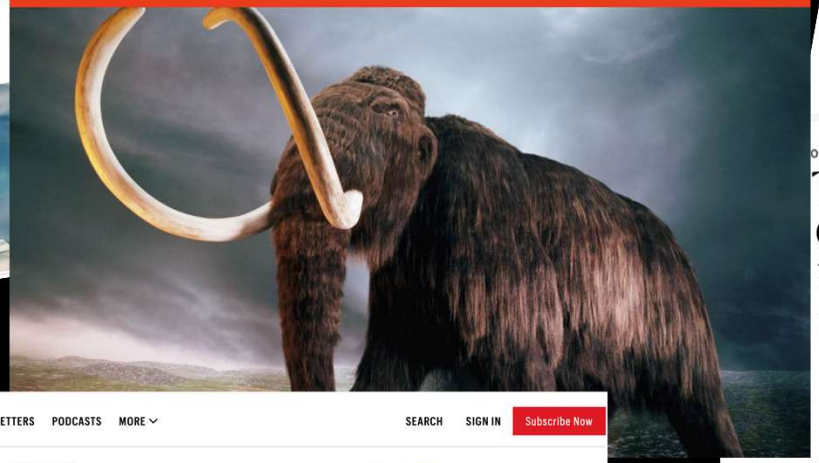
Startup Colossal Biosciences Wants To Bring Woolly Mammoths Back From Extinction – It Might Not Be Su a Bad Idea

TOPICS: Ethics Genetics Mammoth Popular The Conversation University Of Melbourne

By UNIVERSITY OF MELBOURNE SEPTEMBER 17, 2021

The planet-saving plan to bring the woolly mammoth back from the dead

The last mammoths died out nearly 4,000 years ago. Now a team of scientists are trying to resurrect them — and it could help stop the climate catastrophe



UFO Hunter and Harvard Geneticist Announce $15 Million Effort to Resurrect Woolly Mammoths

George Church and Ben Lamm have announced Colossal, a company with the explicit goal of de-extincting woolly mammoths.

By Gabriel Geiger

September 13, 2021, 9:00am Share Tweet Email

09-13-21

This startup really is trying to create living woolly mammoths from DNA

And once they've completed the "de-extinction," the plan is for the giant beasts to help reverse climate change.

[Source Photo: Jean-Marc Zaorski/Gamma-Rapho/Getty Images]

FORTUNE RANKINGS MAGAZINE NEWSLETTERS PODCASTS MORE SEARCH SIGN IN Subscribe Now

Most Popular

Banks are stopping Putin from tapping a $630 billion war chest Russia stockpiled before invading Ukraine

After collecting $47 million in Bitcoin, Dogecoin and Ether donations, Ukraine is rewarding its supporters with a special 'airdrop'

Germany seizes $594 million 512-foot super yacht that Russia's sixth-richest man named after his mother

TECH • GENETICS

Bitcoin billionaires bet big on reviving woolly mammoths to combat climate change

BY MARTINE PARIS

September 13, 2021 9:00 AM CDT

A FUTURE ROOTED IN OUR PAST.

There’s the science of today. And then there’s the science bigger than any life or span of time. A science that’s concerned not only with tomorrow, but also with 20 years, 300 years, 5,000 years from now. That science is Colossal.

From animals who can improve our climate, to engineering genetic code to sustain endangered life - we’ve already been given the tools we need to protect our earth. Knowing how to find and use them is the difference.

This, the world’s guiding force is DNA, and we are mapping and mastering its intricacies. Whether it be in our own genes, in the living things around us, isolated in rock and amber, or frozen in ancient ice. We can see the future because we look to what’s already worked. We are learning from the intrinsic genius of our natural world and reviving the next wave of wild.

Survival is our instinct. Science will lead the way.

colossal

COLOSSAL FOUNDING TEAM

Ben Lamm (CEO/Founder)
Previous: CEO/Founder of Hypergiant, former CEO and founder of multiple successful startups acquired by LivePerson, Zynga, and Accenture.

Eriona Hysolli, Ph.D. (Head of Biological Sciences/Co-Founder)
Former postdoctoral fellow in the Church Lab from 2015 to 2021, where she focused on developing and optimizing novel genetic tools for multiplex mammalian genome engineering including mammoth de-extinction and building a virus-resistance human cell line.

Andrew Busey, MBA (Chief Product Officer/Co-Founder)
Multiple successful exited founder with exits to Avaya, Demand Media, Zynga. Andrew also is the principle inventor on 30 patents.

Kent Wakeford, JD (COO/Co-Founder)
Software entrepreneur with several billion+ exits. Co-founded Integral Ad Science tvScientific, Rally Network, Gen.G Esports, and board of Skillz.

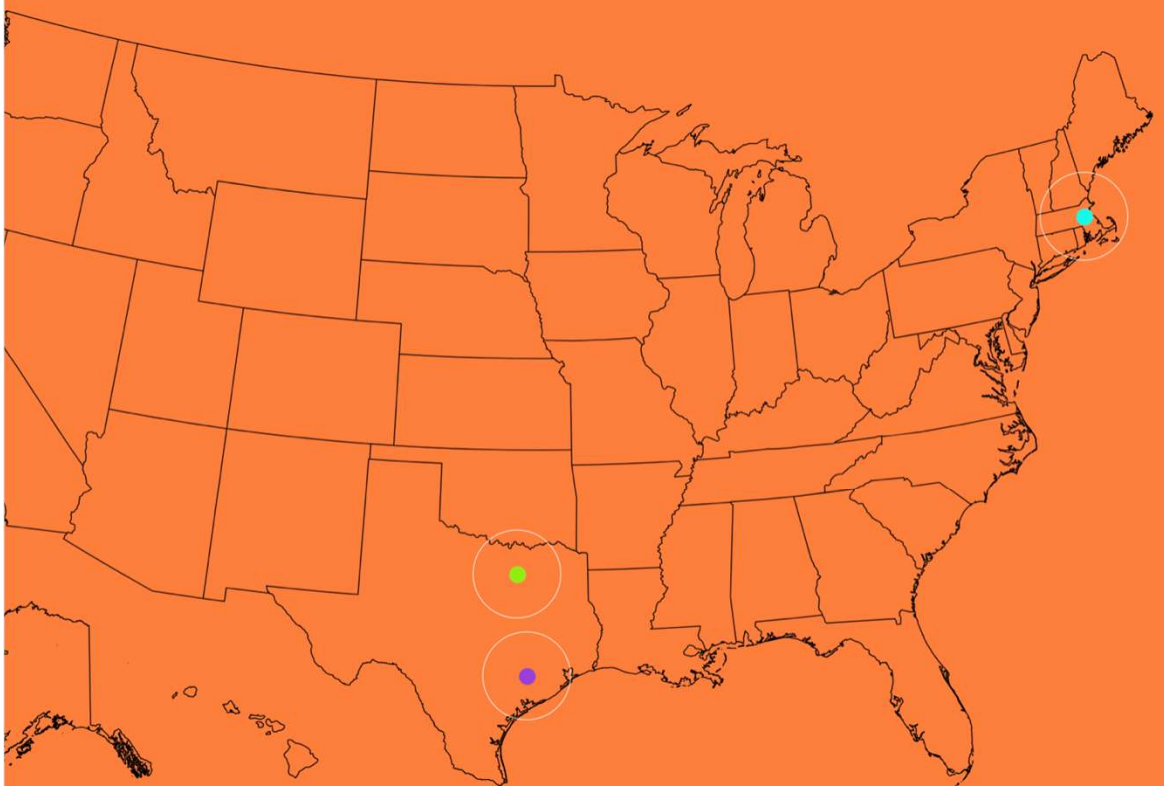
Brian Beard, JD (Chief Legal Officer/Co-Founder)
30+ years of corporate and technology law. Former managing partner of WSGR

Peter Phillips, MBA (Chief Business Officer/Co-Founder)
Former EVP and GM of Interactive & Distribution at Marvel and former COO of Giphy

LOCATIONS MAP

U.S.A. LOCATIONS

COLOSSAL



LOCATIONS

DALLAS	TEXAS
AUSTIN	TEXAS
BOSTON	MASSACHUSETTS


biolabs


colossal
Embryology Lab

VALUES

DUTY TO PRESERVE & PROTECT A PRISTINE NATURE

As grateful citizens of the universe, we recognize the value of habitable environments for our species and those around us. As tenants of Earth, currently the only livable planet in our solar system, it is not enough just to be grateful, but we must also be active in a role as custodians and defenders of the nature which sustains life.

PUSHING THE HUMANISTIC & ECONOMIC POTENTIAL OF BIOSCIENCE

Today, the Woolly Mammoth. But tomorrow, maybe the cure for blindness, eradication of tumors and elimination of disease. The potential of bioscience is almost unlimited, and we are at the forefront, pushing the boundaries.

RESPECT FOR ALL LIVING THINGS

Balance is not for us to determine. It has been refined for billions and billions of years by forces such as gravity, geology and evolution. Thus it is not our role to pick and choose the winners and losers. But merely to respect all living things – past and present.

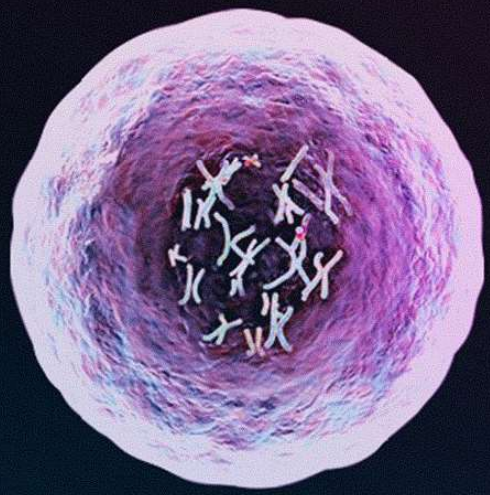
VIRTUE & MORAL GOOD

At Colossal we are driven by the forces of virtue and moral good – working for a healthier planet, a healthier human populace and a pursuit of that which we recognize as goodness, compassion and honest, pure science.

colossal

THOUGHTFUL, DISRUPTIVE CONSERVATION

A NEW APPROACH TO CONSERVATION FUNDING



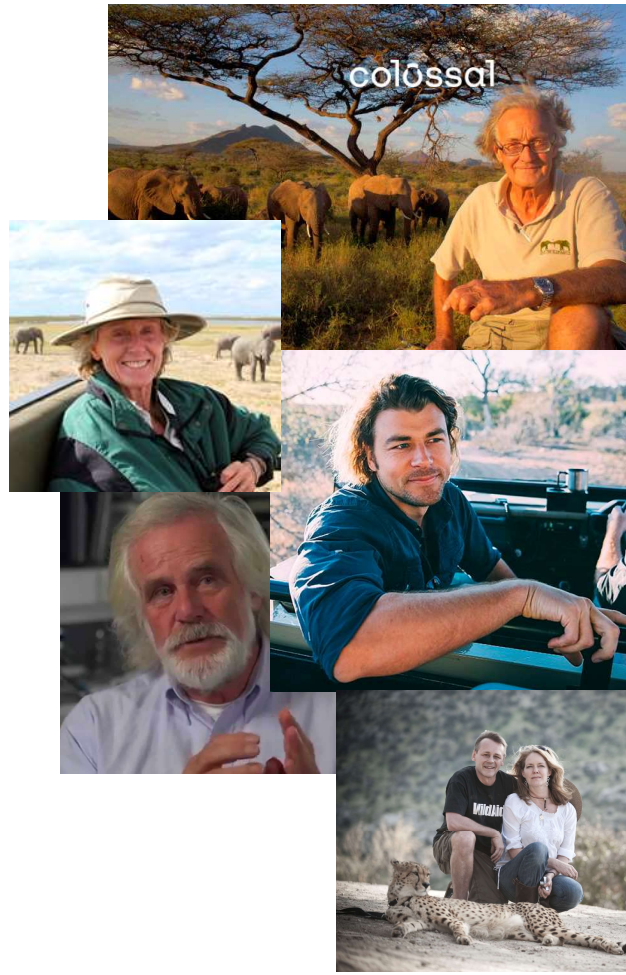
REVENUE STREAMS

COMPUTATIONAL BIOLOGY SOFTWARE

MULTIPLEX GENE EDITING

CONSUMER MEDIA

A colossal Mission with colossal support



LAUNCH SUCCESS:

- 22 Billion + Media Impressions
- Over 5,800 Unique Articles
- 96% Positive or Neutral Positioning

COLOSSAL INVESTORS:

colossal

COLOSSAL Scientific advisors

At Colossal we're bringing together the greatest minds and leaders in technology, translational medicine, chemical engineering, biotechnology, molecular genetics, and software along with ground breaking entrepreneurs to help guide us on our path. Our team includes bioethicists, conservationists, practicing physicians, researchers, authors, inventors, professors, and winners of the Anitschkow Prize, National Medal of Technology and Innovation, Breakthrough Prize in Life Sciences and the Harvey Prize.

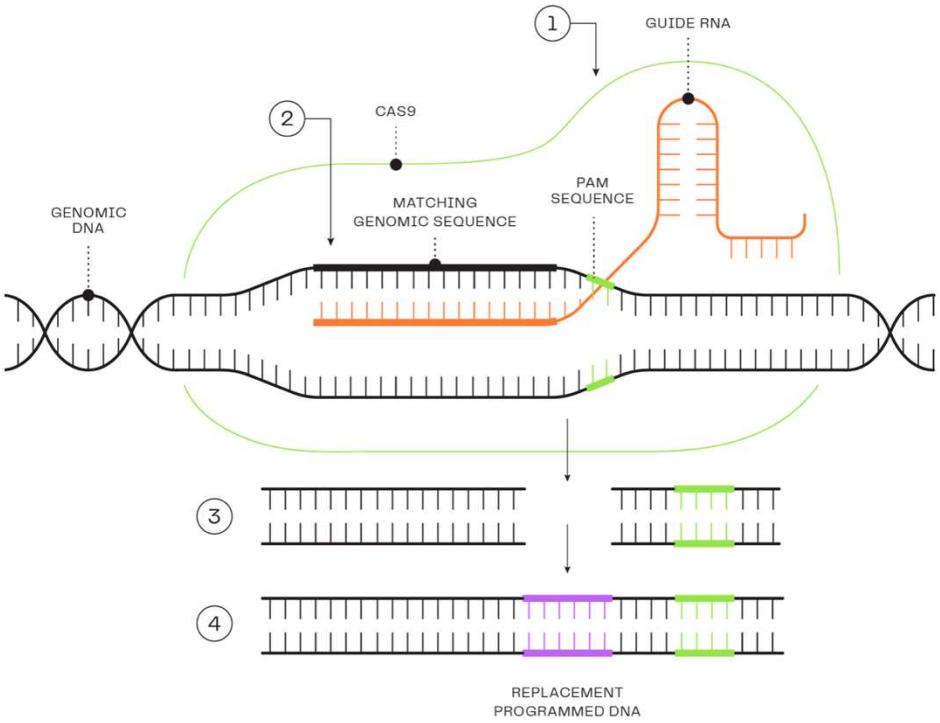
Colossal Scientific Advisory Board:

Carolyn Bertozzi, Ph.D
Alta Charo, JD
Joe DeSimone, Ph.D
Helen Hobbs, Ph.D
Michael Hofreiter, Ph.D
Matthew Liao, Ph.D
Beth Shapiro, Ph.D
Luhan Yang, Ph.D
Claire Aldridge, Ph.D
Iain Douglas-Hamilton, Ph.D
Fritz Vollrath, Ph.D
Vagheesh Narasimhan, Ph.D
Elazer Edelman, M.D., Ph.D
Chris Mason, Ph.D

OUR TECHNOLOG

Colossal is utilizing CRISPR/Cas9 system technology to pursue ambitious goals of preventing and reversing extinction. We leverage expertise in genetic editing, engineering, embryology, and business to advance the economies of biology.

- Open Source Genomic Mapping/Annotation of Endangered Species
- Assisted Reproductive Technologies (ARTs)
- Gestational Technologies
- EEHV Therapeutics



CRISPR-CAS9

HOW THE GENOME EDITOR WORKS

001	The Cas9 protein forms a complex with guide RNA in a cell
002	This complex attaches to a matching genomic DNA sequence adjacent to a spacer
003	The Cas9-RNA complex cuts the double strands of the DNA
004	Programmed DNA may be inserted at the cut

colossal

THE GENETICALLY EDITED ELEPHANT

PHILOSOPHICAL TRANSACTIONS B

royalsocietypublishing.org/journal/rstb

Research

Pleistocene Arctic megafaunal ecological engineering as a natural climate solution?

Marc Macias-Fauria[1], Paul Jepson[1,2], Nikita Zimov[3] and Yadvinder Malhi[1]

[1]School of Geography and the Environment, University of Oxford, Oxford, UK
[2]Ecosulis Ltd., Bath, UK
[3]Northeast Science Station, Pacific Institute for Geography, Russian Academy of Sciences, Cherskii, Russia

MM-F, 0000-0002-8438-2223; PJ, 0000-0003-1419-9981; YM, 0000-0002-3503-4783

www.nature.com/scientificreports

SCIENTIFIC REPORTS

nature research

OPEN

Protection of Permafrost Soils from Thawing by Increasing Herbivore Density

Christian Beer[1,2,3,7*], Nikita Zimov[4], Johan Olofsson[5], Philipp Porada[1,2,6,7] & Sergey Zimov[4]

nature climate change

REVIEW ARTICLE

https://doi.org/10.1038/s41558-021-01162-y

Emergent biogeochemical risks from Arctic permafrost degradation

Kimberley R. Miner[1], Juliana D'Andrilli[2], Rachel Mackelprang[3], Arwyn Edwards[4], Michael J. Malaska[1], Mark P. Waldrop[5] and Charles E. Miller[1]

The Arctic cryosphere is collapsing, posing overlapping environmental risks. In particular, thawing permafrost threatens to release biological, chemical and radioactive materials that have been sequestered for tens to hundreds of thousands of years. As these constituents re-enter the environment, they have the potential to disrupt ecosystem function, reduce the populations of unique Arctic wildlife and endanger human health. Here, we review the current state of the science to identify potential hazards currently frozen in Arctic permafrost. We also consider the cascading natural and anthropogenic processes that may compound the impacts of these risks, as it is unclear whether the highly adapted Arctic ecosystems have the resilience to withstand new stresses. We conclude by recommending research priorities to address these underappreciated risks.

www.nature.com/scientificreports

scientific reports

OPEN

Effects of large herbivore grazing on relics of the presumed mammoth steppe in the extreme climate of NE-Siberia

Jennifer Reinecke[1,2], Kseniia Ashastina[3,4], Frank Kienast[3], Elena Troeva[5] & Karsten Wesche[1,2,6]

ARCTIC ELEPHANT REWILDING

Soil Carbon Storage

The northern permafrost region contains approximately 50% of the estimated global below ground organic carbon. [1] Globally, soils contain more than twice the amount of carbon as compared to vegetation. [2]

[1]: Tarnocai, et al. 2009
[2] Zimov, Schuur, Chapin; 2006

Atmospheric and Biogeochemical Hazards

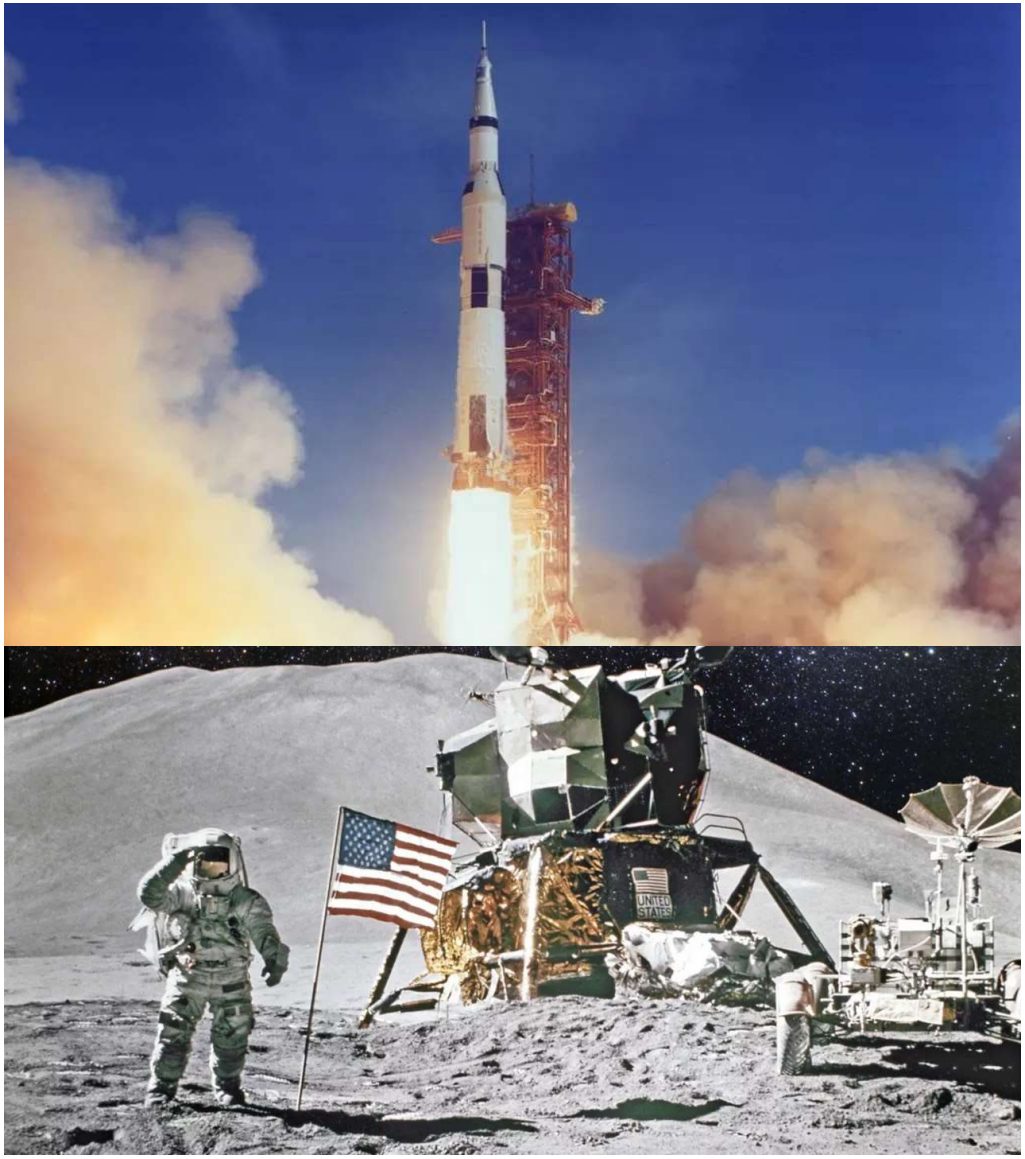
Climate change is driving a re-emergence of extremotolerant microorganisms and mobilization of anthropogenic chemicals [3]. Meanwhile, many climate models are underestimating carbon emissions from thawing permafrost [4].

[3] Miner, et al 2021
[4] Turetsky, et al. 2020

Mega-vertebrate Rewilding

Using natural climate solutions, such as rewilding mega-vertebrates, we can restore grassland-dominant systems that might delay permafrost thaw [5]

[5] Macias-Fauria, et al. 2019



Assisted Reproduction Technologies

Creating massive leaps in ARTs including ovum pick up, IVF, and embryo transfer techniques with implications for:

-Northern white rhino

-Engineered genetic diversity

-Ex situ population sustainability

Genetic Editing Toolkits

We are developing toolkits for editing genomes of organisms to better address wildlife disease and rapidly changing climate

-EEHV resistance

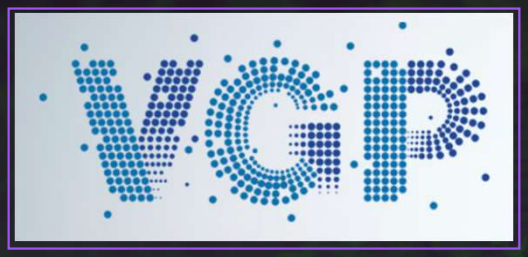
-Facial tumor virus in Tasmanian devils

Gestational Technologies

Currently studying gestational development in numerous species to fabricate artificial womb technology that would allow for rapid population growth even if a dam were not available

colossal

CURRENT PROJECTS

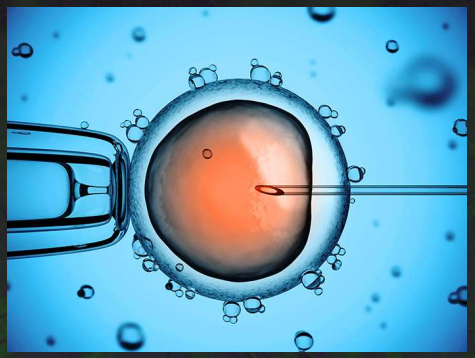


VERTEBRATE GENOMES PROJECT

Partnered with the VGP to sequence, assemble, and annotate the genomes of all three elephant species. These reference genomes will be stored in the Genome Ark, a digital open-access library.

EEHV VACCINE AND THERAPEUTICS

We are currently finalizing partnerships to fund and accelerate vaccine development and roll out as well as develop a next generation EEHV vaccine and therapeutics program



ASSISTED REPRODUCTIVE TECHNOLOGIES

In collaboration with experts in the field, we are working to quickly advance ARTs to support the conservation of wild elephants and support ex situ efforts

PARTNERSHIPS

Zoos & Conservation Organizations

We are engaging with several zoos and conservation groups to help amplify their missions while driving towards our conservation goals. We believe in supporting the experts in the field around us through financial and logistical support with a focus on protecting wild animals and wild spaces and creating goodwill within our community.

Governments

Currently in discussions with several government agencies and representatives from the state, federal, and international levels that are interested in leveraging our technologies and momentum to better protect and restore their wildlife and ecosystems.

Research Institutes

We are collaborating with research institutes that are driving research projects that will directly benefit endangered species and ecosystems including projects focused on EEHV, population genomics, and biodiversity.

SUPPORTING OUR PARTNERS

Funding

We are actively funding conservation projects and organizations in which our missions align in supporting endangered species.

- $75M in investor funds raised
- Direct connection and promotion to funding streams for partners

Exposure

Since being founded in September 2021, Colossal has developed a large media presence that we would like to leverage to support our partners

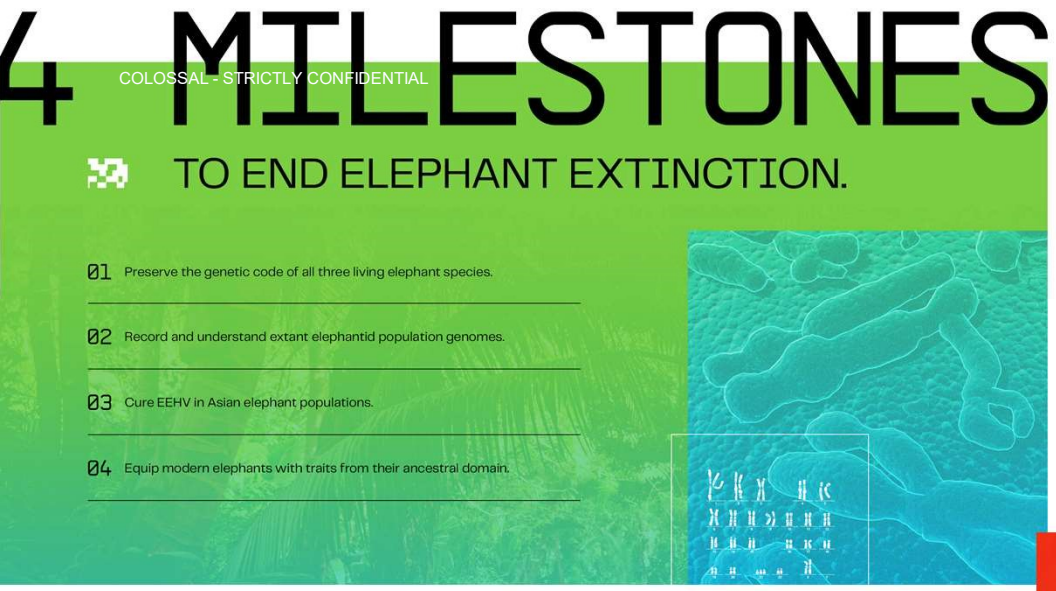
- Nearly 6k unique press stories and 24B media impressions
- 22k monthly website visits
- 12k social media followers and growing with a 6.6% engagement rate

Logistics

Colossal employs experts in diverse fields of expertise that are available to support on-going research, field conservation, and engineering.

- Assisted Reproduction and Gestation Technologies
- Genetics and Synthetic Biology
- Machine Learning and AI
- Computational Biology/Bioinformatics
- Software Engineering
- Device Engineering

colossal



Conservation Advisory Board

Developing framework and recruiting experts to create an advisory to board to direct our conservation strategy

- Direct conservation spending and support
- Identify programs most in need
- Direct research and technological advancement to support conservation needs

Conservation Strategy Masterplan

Drafting a conservation strategy masterplan to address issues that can and cannot be addressed by advances in our technology:

-Identify conservation issues that we can develop technology to support

-Identify partners to address conservation issues that are outside of our skillset

BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

Insert Favorite Bovid Here

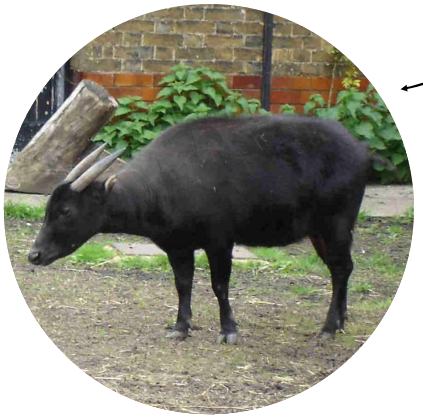
BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

Insert Favorite Bovid Here

BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer



Insert Favorite Bovid Here

BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

Insert Favorite Bovid Here

Insert Favorite Bovid Here

BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

Insert Favorite Bovid Here

BUILDING A PATHWAY TO THE DE-EXTINCTION

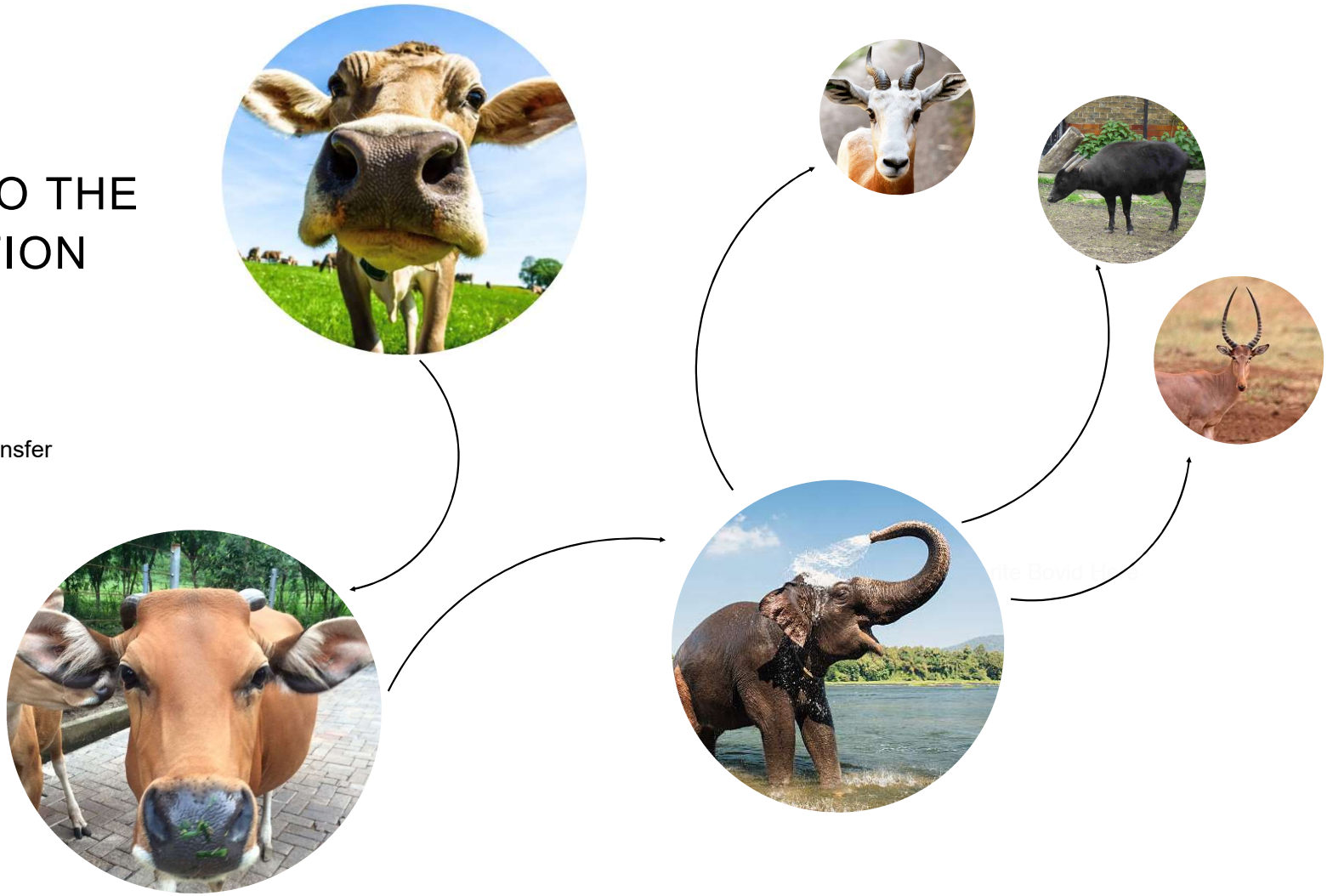
- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer

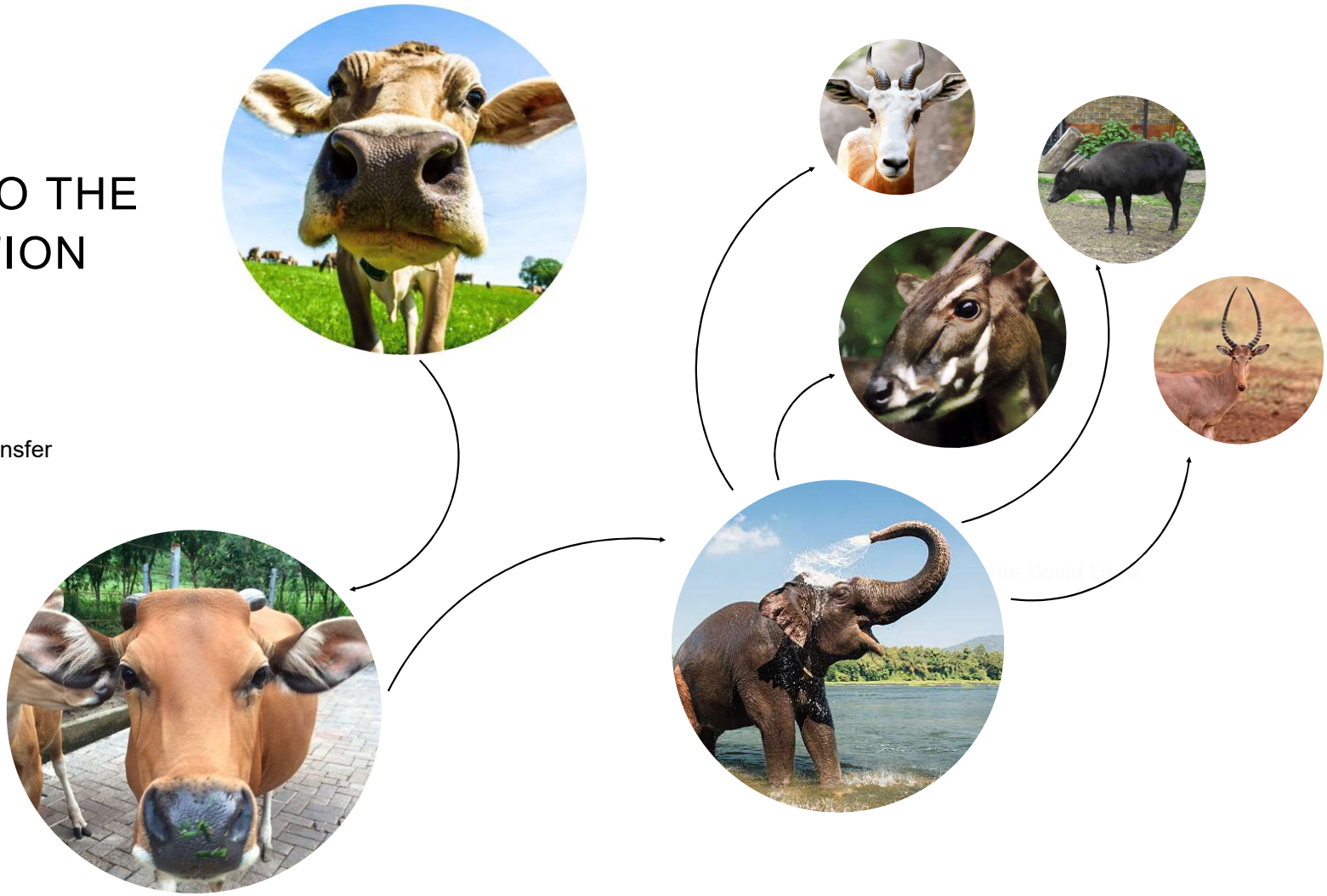
BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer



BUILDING A PATHWAY TO THE DE-EXTINCTION

- Gametogenesis
- IVF
- Somatic Cell Nuclear Transfer
- Embryo transfer



■

Assisted Reproduction Technologies

Creating massive leaps in ARTs including ovum pick up, IVF, and embryo transfer techniques with implications for:

-Northern white rhino

-Engineered genetic diversity

-Ex situ population sustainability

Genetic Editing Toolkits

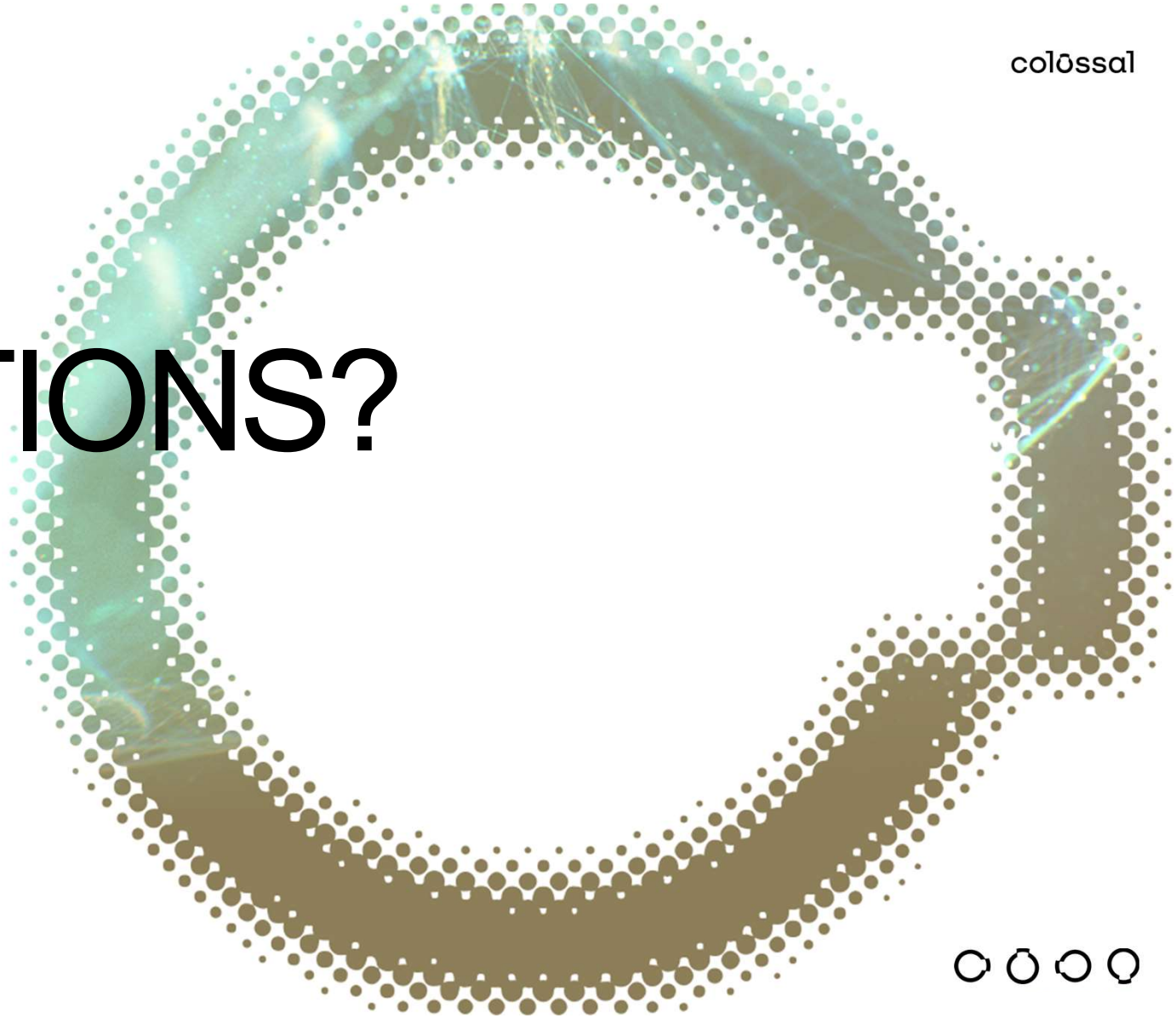
We are developing toolkits for editing genomes of organisms to better address wildlife disease and rapidly changing climate

Gestational Technologies

Currently studying gestational development in numerous species to fabricate artificial womb technology that would allow for rapid population growth even if a dam were not available

+

colossal



QUESTIONS?

23/12/2022 //