NEW

HARVEST

ANNUAL REPORT

2020

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About Us

New Harvest is laying the groundwork for the future of agriculture by reimagining the way we make animal products—using cells instead of animals.

We are an independent, 501(c)(3) nonprofit that supports responsible research and innovation in the field of cellular agriculture. Founded in 2004, New Harvest is the world's longest-running organization dedicated to advancing cultured meat research.

This report presents an overview of our accomplishments in the 2020 calendar year.

Letter from the Executive Director

How does one reflect on 2020, the year we didn't see coming?

For me, it is with sadness, gratitude, and hope. Sadness that so much suffering took place on this planet. Gratitude that we were forced to see our interconnectedness, through the cracks in the systems we have built. Hope that a global transition is on the horizon, driven by a new awareness.

This theme of transition was felt deeply at New Harvest. In the face of uncertainty we chose to grow, seeing the importance of our work in a new light.

First was the operational change. We began searching for a COO early in 2020 and onboarded the fantastic Paige Wilcoxson mid-year. We became a remote-forward organization early in the pandemic, seeing it as the best way to support our staff through a challenging time.

Second was the spiritual shift. Alongside our community members, we embarked on a six-month journey to articulate a new strategic plan to guide our next five years of impact. We revised our mission: our previous mission was "to build the field of cellular agriculture." Our new mission is to maximize the positive impact of cellular agriculture on the world. It's an acknowledgment that positive impacts are not innately built into the advancement of technology.

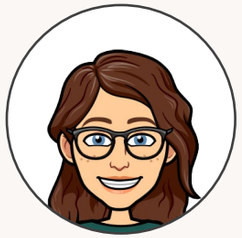
Third was building the team to drive the new mission forward. We were lucky to have Bre Duffy, Yadira Tejeda-Saldana, and Stephanie Bailey join our team, creating a new sense of "whole" in the organization.

What challenged us the most in 2020 was re-envisioning closeness at a time of mandated distance. With the cancellation of our conference and researcher gathering, we decided not to replace them with digital versions. Instead, we experimented. We shared face masks across the cell ag community, dabbled in TikTok, and took our networking into Twitter DMs. We launched a podcast series with our research fellows. We coordinated the first industry-wide collective action in cellular agriculture—a landmark paper on the safety of cultured meat, built with input from 50 cultured meat companies, across innumerable 1:1s and a handful of workshops.

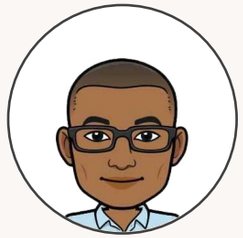
As 2020 zoomed by, we came away with sadness that we could not be closer, gratitude that our community is as strong and supportive as ever, and hopeful that this year has planted seeds for a new type of unity as, together, we figure out how to realize the potential of cellular agriculture.

Thank you for joining us in this journey.

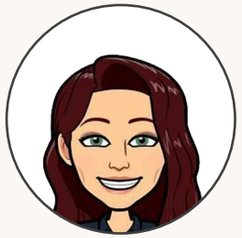
Who We Are



Breanna Duffy
Research Operations & Outreach Director
(Rhode Island, USA)



Lanto Hariveloniaina
Operations Manager
(Texas, USA)

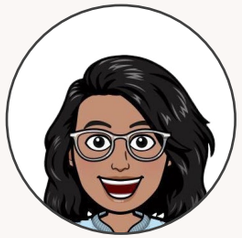


Paige Wilcoxson
Chief Operating Officer
(California, USA)

Gaby Floratos
Science Communications Intern
(Nevada, USA)

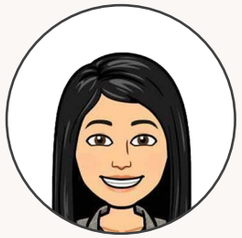
Meera Zassenhaus
Communications & Media Manager
(Missouri, USA)

Stephanie Bailey
Development Manager
(Ontario, Canada)



Isha Datar
Executive Director
(Alberta, Canada)

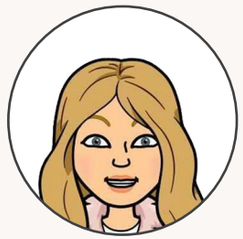
Michela Caffrey
Content Production Manager
(Pennsylvania, USA)



Yadira Tejeda-Saldana
Research Collaborations Director
(Ontario, Canada)

Jeremiah Johnston
Research Program Director
(Massachusetts, USA)

Morgan Ziegelski
Science Communications Intern
(Georgia, USA)



Board of Directors Scott Banister, Karien Bezuidenhout, Andras Forgacs, John Pattison, Vince Sewalt, Isha Datar, Paige Wilcoxson*

*non-voting member

OUR APPROACH

Our Mission

New **Mission:** To maximize the positive impact of cellular agriculture

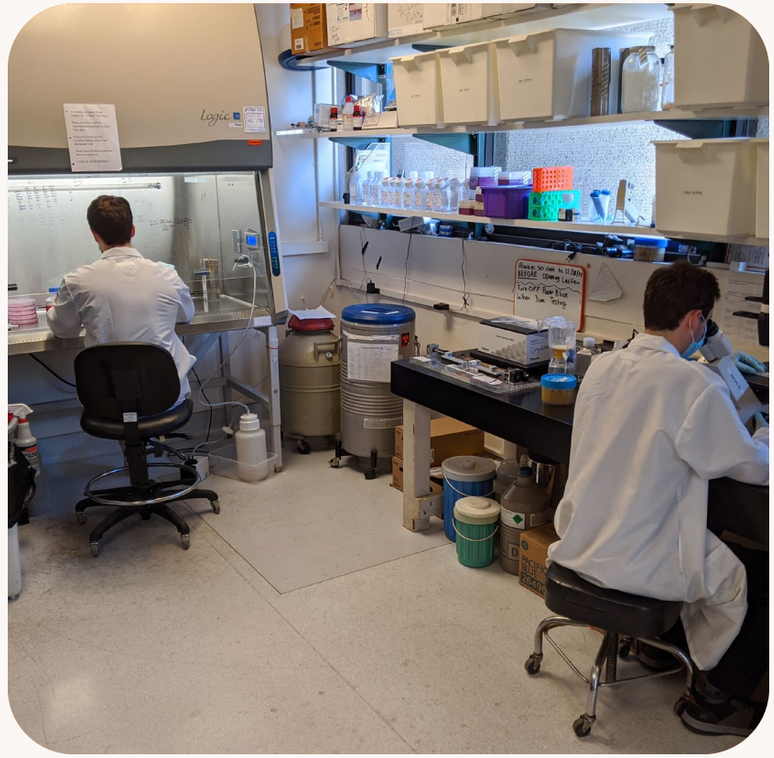
Old Mission: To build the field of cellular agriculture

Over the last decade, cultured meat has matured from an obscure, sci-fi idea to an industry with over 100 companies raising roughly $1B in venture capital.

Up until last year, New Harvest's mission has been to build the field of cellular agriculture. Today, it's clear that growth—especially of the industry—is well on its way.

That's why in 2020, we revised our mission to maximize the positive impact of cellular agriculture on the world. This reflects a monumental shift in thinking—away from a focus on simply growing the field toward activating a shared sense of responsibility to ensure it delivers on its potential.

Positive impacts are not innately built into the advancement of technology. Cultured meat can spearhead incredible change, but ultimately it's just a tool. How that tool is developed, governed, owned, and implemented will dictate the impact cell ag actually has on the world.



Our Plan

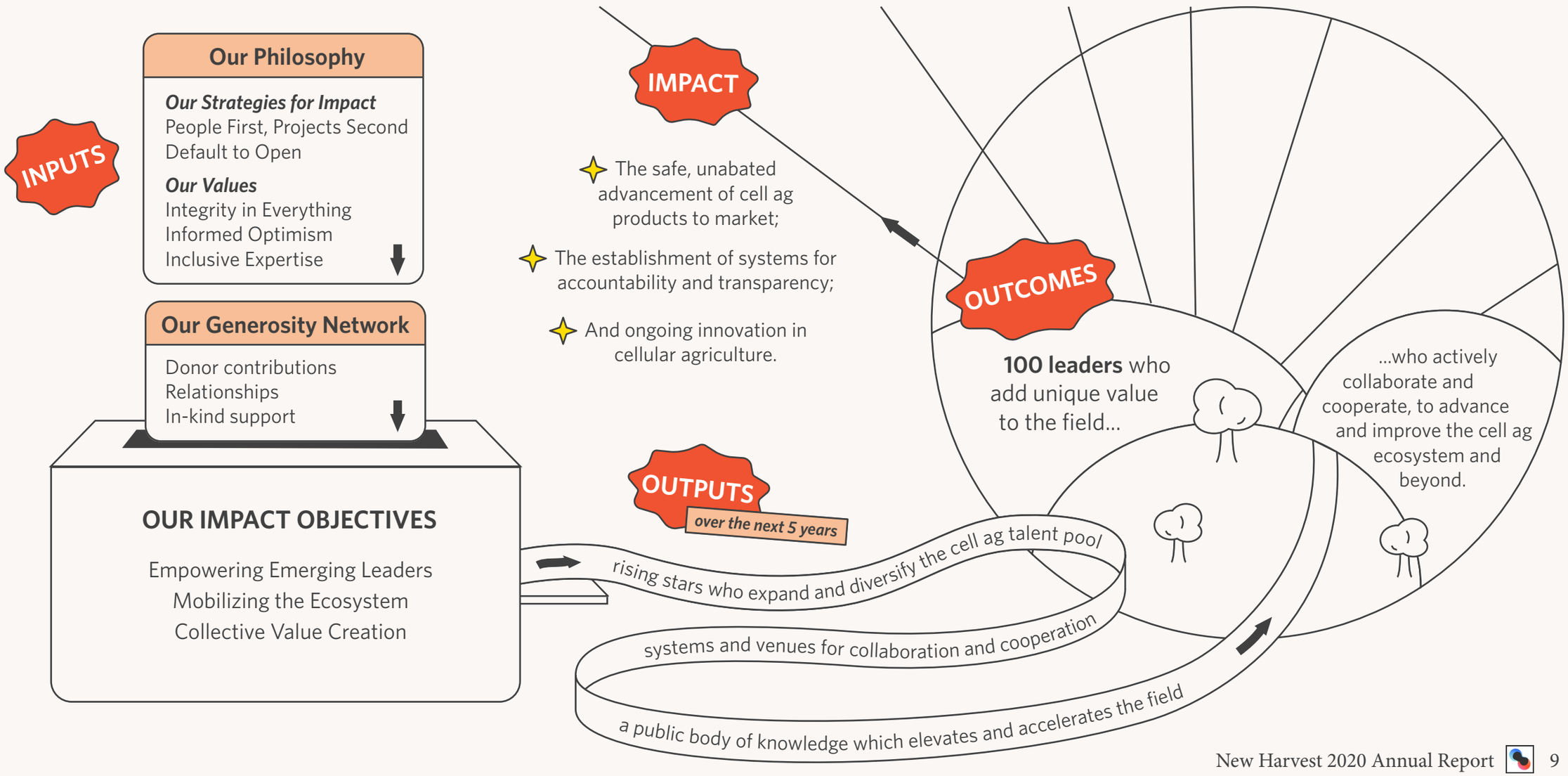
Last year, we devised a roadmap for realizing our new mission to ensure that cellular agriculture delivers on its promises to make the world a better place. The process involved an in-depth listening campaign, live revisions and many iterations. It is truly a document of a shared visioning process: a human-centered strategy to realizing positive impact in the world.

2020-2025 Strategic Plan

- Culmination of a six-month collaborative effort
- Dozens of founders, researchers and stakeholders engaged
- **Read our collectively crafted plan here**

Our Theory of Change

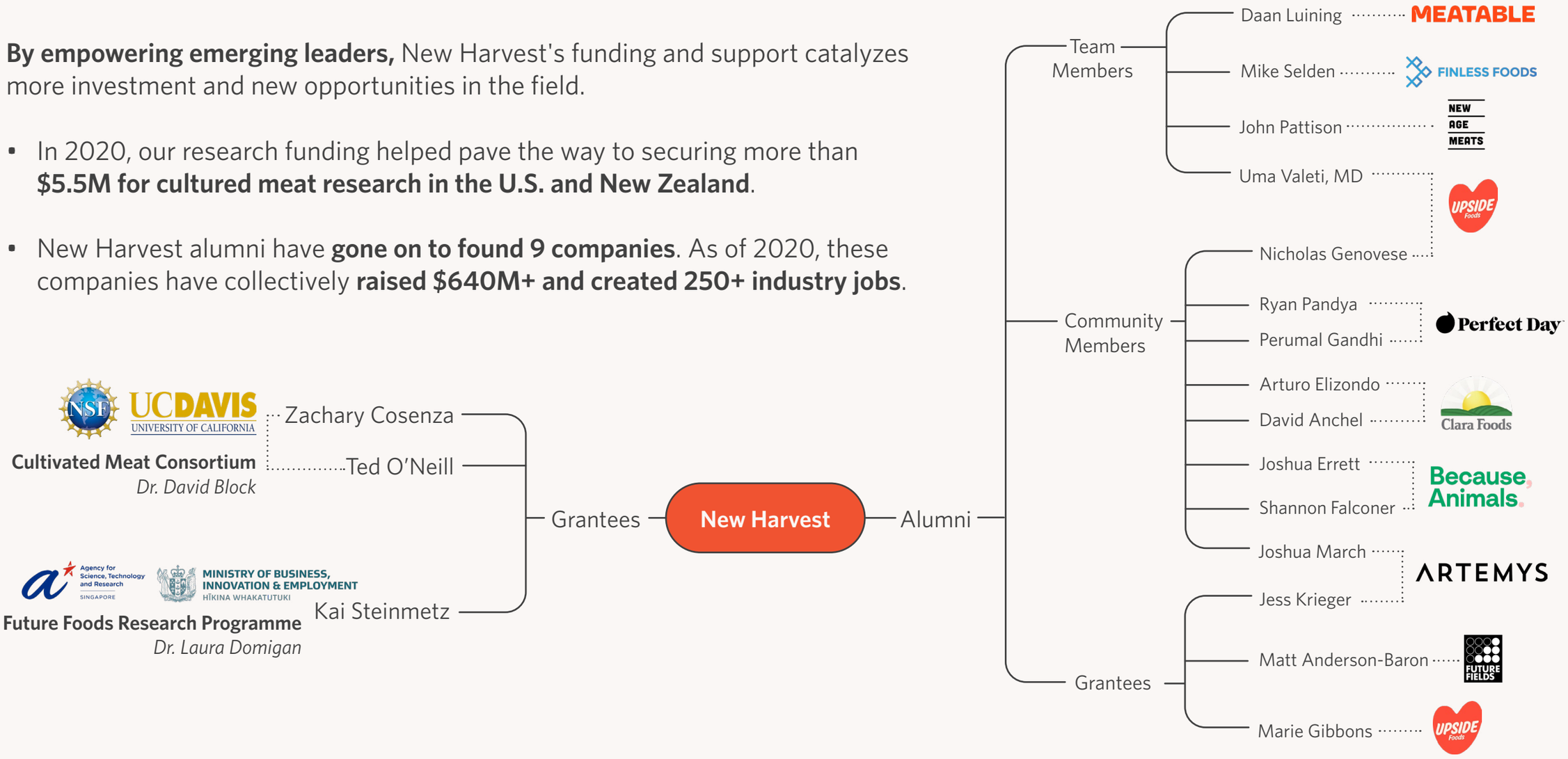
Our mission is to maximize the positive impact of cellular agriculture on the world.



Our Network Effect

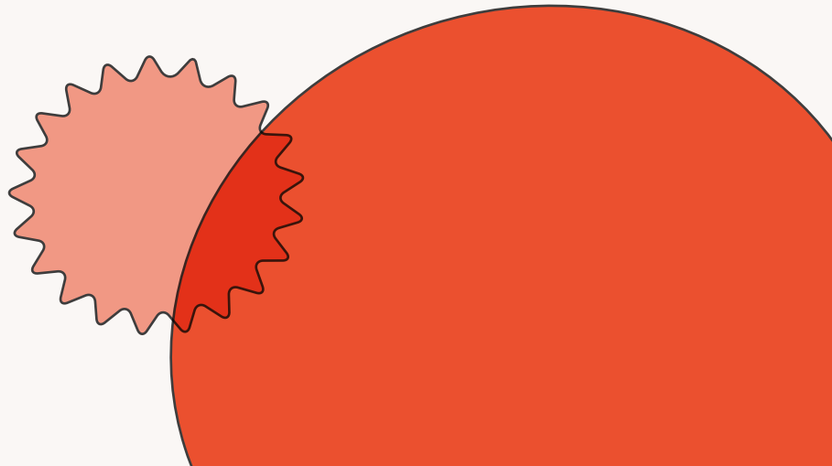
By empowering emerging leaders, New Harvest's funding and support catalyzes more investment and new opportunities in the field.

- In 2020, our research funding helped pave the way to securing more than **$5.5M for cultured meat research in the U.S. and New Zealand**.
- New Harvest alumni have **gone on to found 9 companies**. As of 2020, these companies have collectively **raised $640M+ and created 250+ industry jobs**.



“Without New Harvest funding our first two graduate researchers, UC Davis may never have started the Cultivated Meat Consortium or won the first government grant for academic cultivated meat research in 2020. It truly planted the seed for something much greater.”

Kara Leong, *Assistant Director of Development, Office of Research, UC Davis*



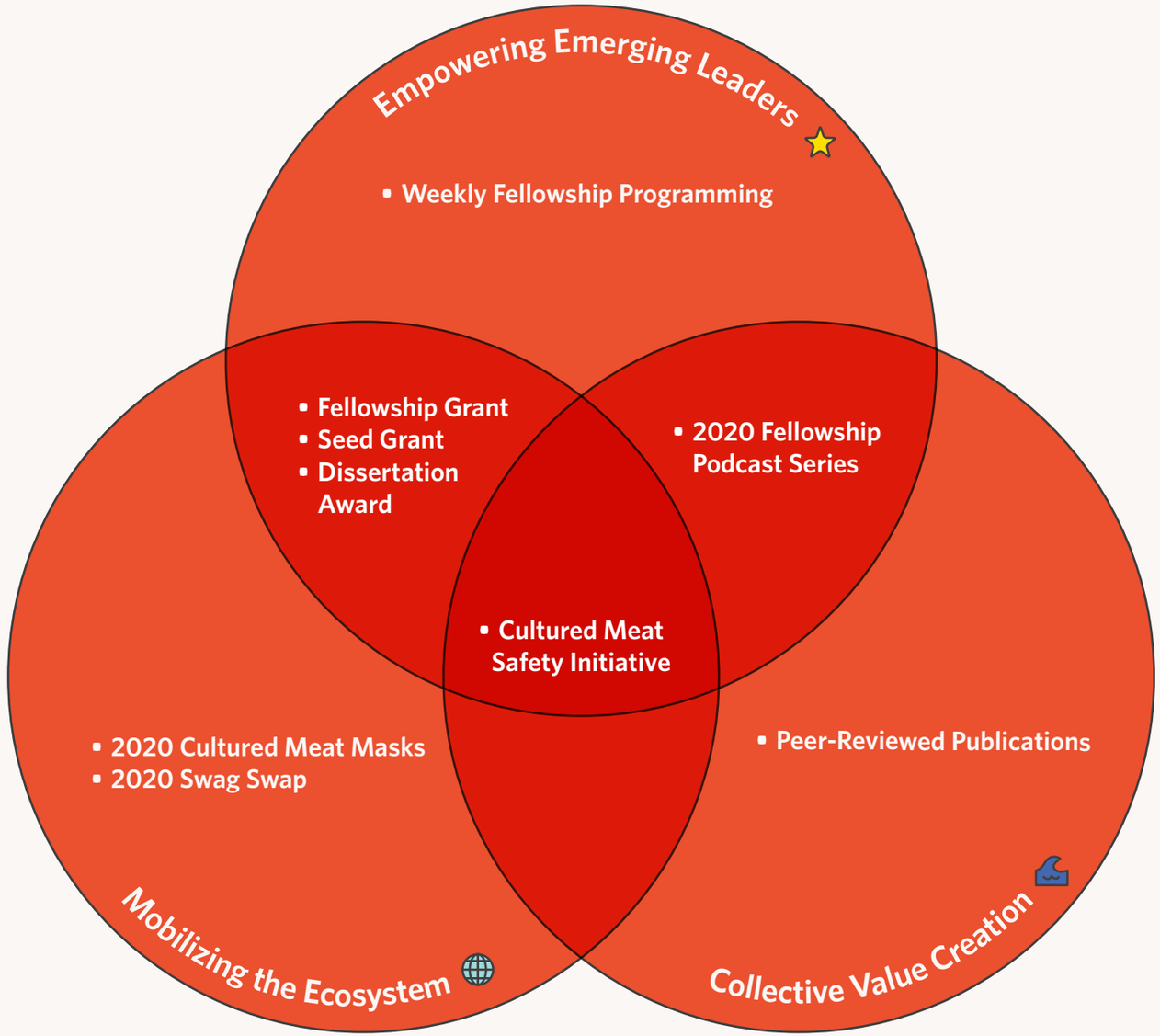
Our Impact Objectives

New Harvest's programming aims to develop the public infrastructure for the interdisciplinary field of cellular agriculture through the following impact objectives:

- **Empowering Emerging Leaders** ⭐
  Training and supporting individuals towards field-level leadership roles that fortify and advance cellular agriculture

- **Mobilizing the Ecosystem** 🌐
  Creating productive venues to convene cellular agriculture stakeholders around key neglected topics

- **Collective Value Creation** 🌊
  Co-creating resources, knowledge, and tools that have collective value for the cellular agriculture ecosystem and beyond



Milestones & Achievements

Awarded our **first dissertation award**

United 87 individuals from 50 cultured meat companies around a landmark publication on the safety of cultured meat, representing the first industry-wide collective action

Grew our team size **from 6 to 9 full-time employees** and transitioned to a remote-forward working model

Launched a **12-part series** on the *Cultured Meat and Future Food* podcast, highlighting our fellows' research

Distributed **450+ custom-designed cultured meat masks,** building a sense of community across the field

Published **9 peer-reviewed publications**, building the body of knowledge in cell ag

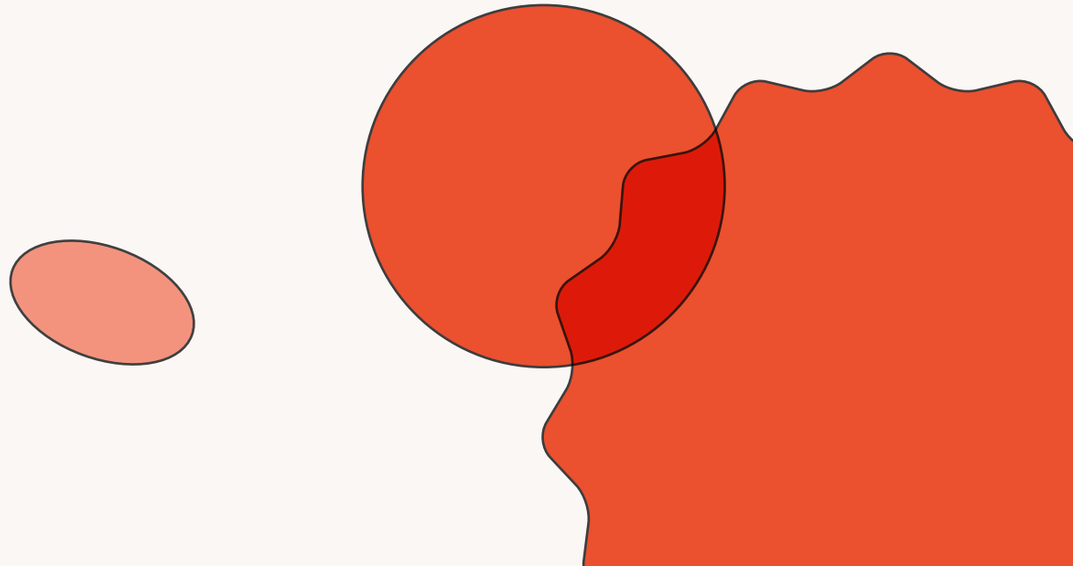
Raised **$1.6M from 317 donors**

Supported **5 new researchers-in-training** through our seed grants

Selected **7 new researchers** for the New Harvest Fellowship Program, accelerating scientific breakthroughs

“I think what makes New Harvest unique is its long history and its role shaping the field by connecting people and creating foundational work. It has a proven track record for taking limited resources and directing them wherever it will make the biggest impact.”

Jason Ketola, *New Harvest donor since 2015*



RESEARCH AT NEW HARVEST

People First, Projects Second

At New Harvest, we believe that people, not projects, are the drivers of long term change. Projects, ideas, and initiatives come and go; what continues is an individual's drive to make a difference in the world through their knowledge and experiences.

That's why our approach is to support people first and projects second. To uplift emerging leaders in the field, we provide three different funding opportunities made possible through donor support:

- **New Harvest Fellowship Grant** provides multi-year funding for graduate or postdoctoral research in cellular agriculture.
- **New Harvest Seed Grant** is designed to provide researchers-in-training at the undergraduate and master's levels with funding for short-term projects in service of educational goals.
- **New Harvest Dissertation Award** supports Ph.D. students who discovered cellular agriculture later in their degree make the leap into this field for their professional career.

2020 by the Numbers

Started funding ***5 new research fellows***, bringing total to 17

Started funding ***5 new seed grantees***

Awarded our ***first dissertation award***, supporting a student in the final year of their Ph.D. looking to enter cell ag

Hired our ***first research intern*** for the summer of 2020

Hosted ***40+ virtual meetings***, where our grantees were invited to forge connections, ask questions and share protocols

Our Researchers

Research fellows active in 2020:

Natalie Rubio, United States ..... (2016 - 2021)
John Yuen, United States..... (2018 - 2022)
Andrew Stout, United States..... (2017 - 2023)
Scott Allan, United Kingdom..... (2017 - 2021)
Ricardo Gouveia, United Kingdom..... (2018 - 2022)
Cameron Semper, Canada..... (2019 - 2021)
Jannis Wollschlaeger, Germany..... (2019 - 2022)
Zachary Cosenza, United States..... (2019 - 2022)
Jordan Jones, United States..... (2019 - 2022)
Ted O'Neill, United States..... (2019 - 2022)
Sam Peabody, United States..... (2019 - 2023)
Kai Steinmetz, New Zealand..... (2019 - 2022)
Vanessa Haley-Benjamin, The Bahamas/New Zealand..... (2020 - 2023)
Sophie Letcher, United Kingdom..... (2020-2023)
Stephanie Kawecki, United States..... (2020 - 2024)
Alexis Garrett, United States..... (2020 - 2023)
Rick Thyden, United States..... (2020 - 2023)

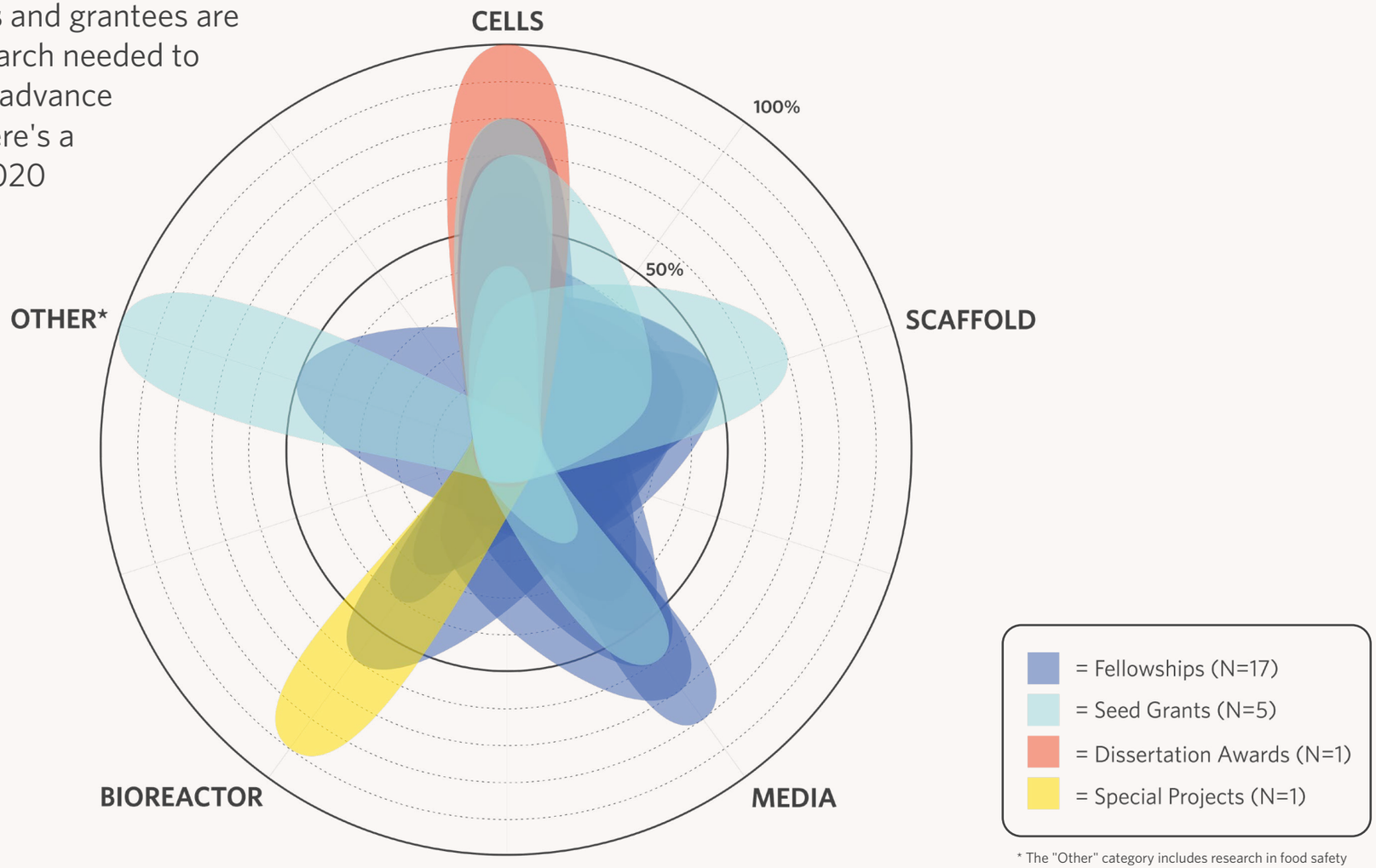
Other grantees active in 2020:

Jake Marko, United States.....
Julian Cohen, United States.....
Clarisse Beurrier, United Kingdom.....
Vicky Andriessen, New Zealand.....
Lisa Musgrove, Australia .....
Michael McLellan, United States.....
Institute for Development of Advanced Applied Systems (IRNAS), Slovenia.....

● = cells ▲ = media ■ = scaffold ◖ = bioreactor ◆ = food safety ✳ = other

Our Research Portfolio

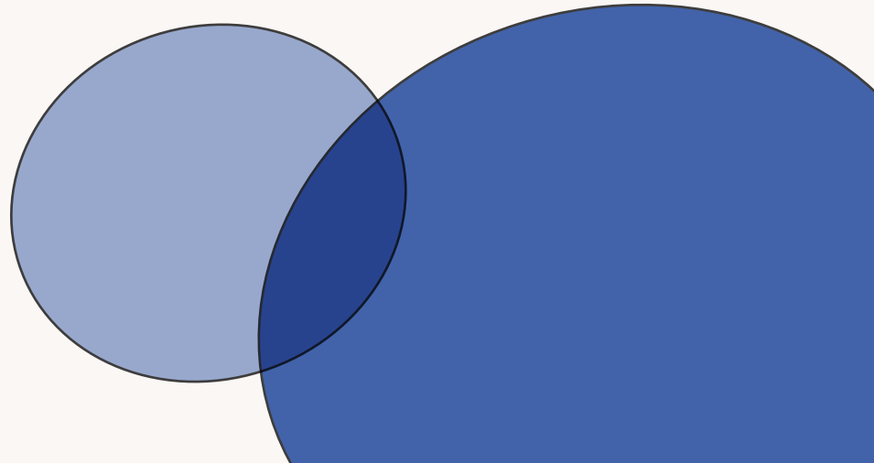
New Harvest research fellows and grantees are creating the foundational research needed to accelerate breakthroughs and advance the field on multiple fronts. Here's a breakdown of projects from 2020 into five key research areas.



* The "Other" category includes research in food safety and LCAs.

“I thought at first New Harvest was just a funding organization that would cover the cost of my research and my tuition. But now I see that it’s this community that’s really there to support your research and career development and help you understand where you fit in to help build the industry.”

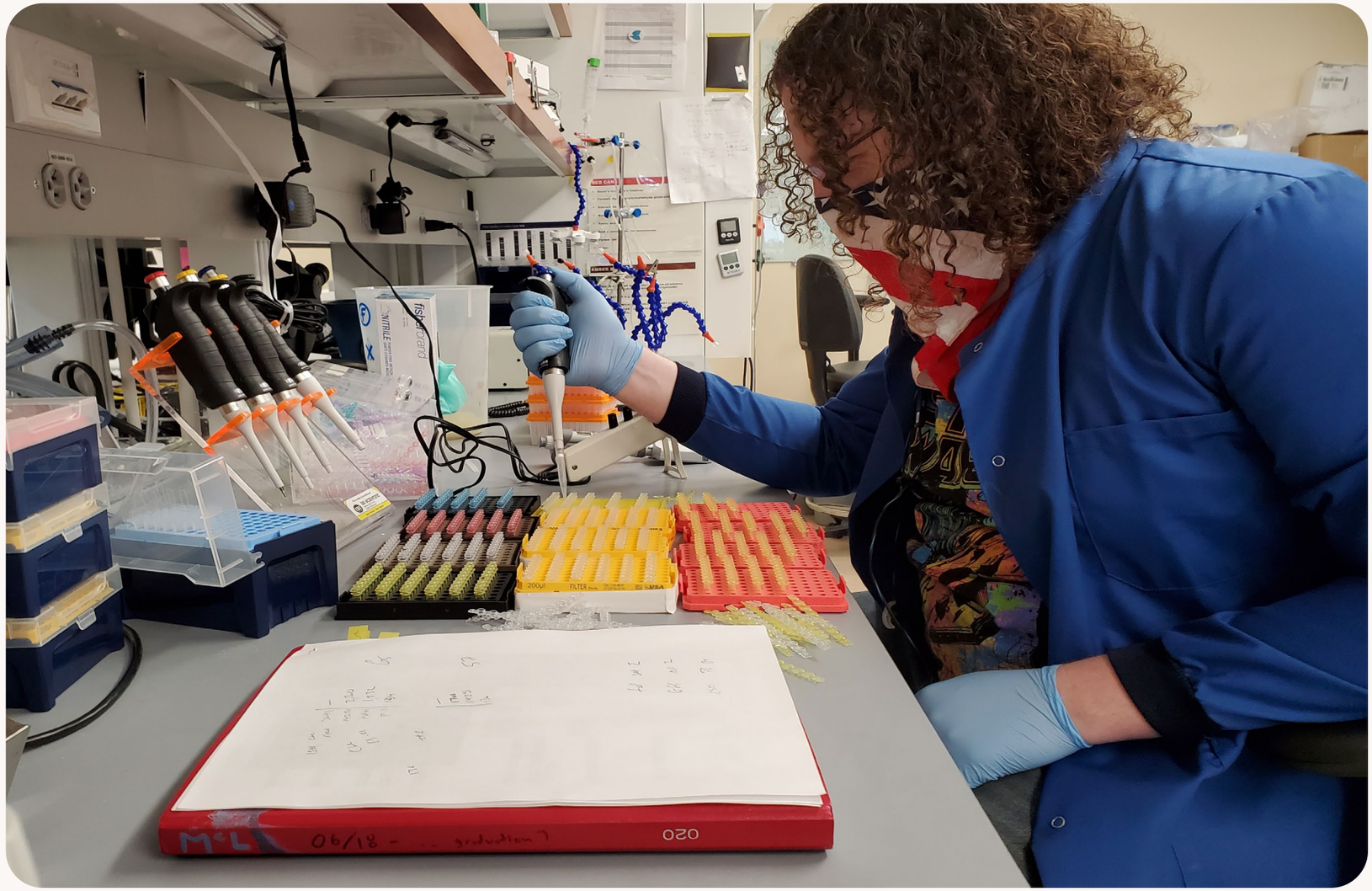
Vanessa Haley-Benjamin, *New Harvest Research Fellow, The Bahamas/New Zealand*



Research-Driven Change

By supporting a global network of scientists working on foundational, exploratory research, we seed the field of cellular agriculture with scientific experts. Their work is helping to grow the field and accelerate breakthroughs.

Here are some of the ways that our donor-funded researchers contributed to the cell ag ecosystem in 2020 ▼



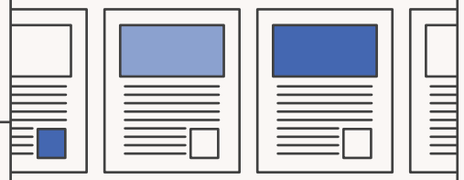
Research-Driven Change

3 research fellows **developed and taught a cellular agriculture course at Tufts University**, which was so successful it is running again in 2021

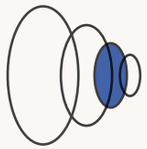
4 research fellows served as **reviewers for Cellular Agriculture, a short textbook on cellular agriculture** published by the American Chemical Society in March 2021

4 research fellows **presented at the Cellular Agriculture Online Symposium**

9 peer-reviewed scientific publications published



Research fellow Ricardo Gouveia served as **guest editor for "Current Advances in Cellular Agriculture,"** a special issue of the *International Journal of Molecular Sciences* that will be published in 2021



3 of our funded researchers **presented their research at the 6th International Scientific Conference on Cultured Meat**

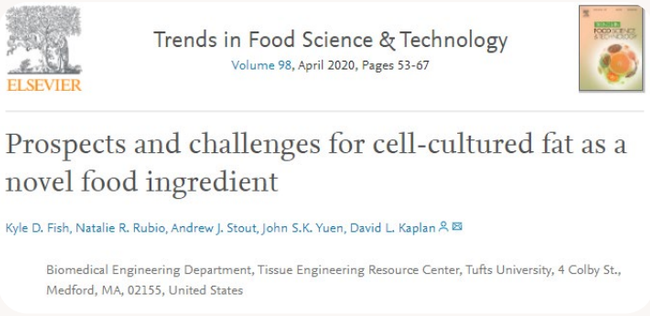
Our **first research intern Emily Soice went on to co-found Cell Ag @ MIT**, a student club at her home institution, which has hosted several New Harvest research fellow supervisors as guest speakers

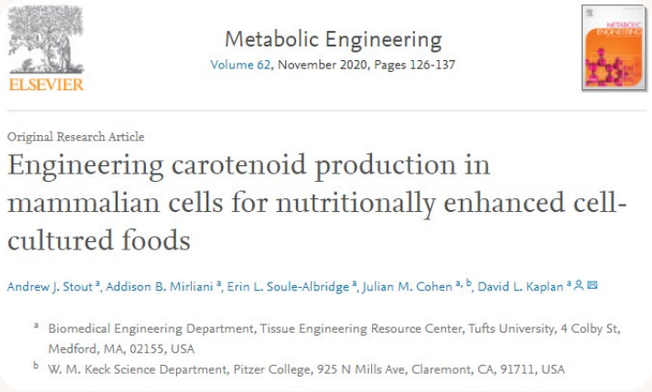
Our research fellows and team spoke at:

- Alternative Protein Conference
- Canada SynBio 2020
- Carlmont High School Biotechnology Institute
- Cellular Agriculture Canada
- Build with Breakthrough Science
- CU Boulder Alternative Protein Club
- Cultured Meat Symposium
- Custom Technology for Bioprocesses Webinar hosted by IRNAS
- Genetic Matters hosted by the Discovery Museum
- Good Food Institute Seafood Webinar
- Industrializing Cell-Based Meats Summit
- Institute of Food Technologists
- International Fragrances and Flavors Plant Festival
- MIT Cell Ag Club
- New Canaan Library
- New York Aquarium Alternative Seafood Workshop
- Pint of Science
- Toronto Vegetarian Society
- UC Davis Alternative Protein Project
- YFood London Food Tech Week

Peer-Reviewed Publications

Unlike other fields, cellular agriculture has yet to form a canon of knowledge that serves as the scientific basis for a field. In 2020, New Harvest Research Fellows contributed nine peer-reviewed publications to this shared body of foundational knowledge, which will help accelerate breakthroughs and contribute to our collective progress. *Click on the titles to read more!*

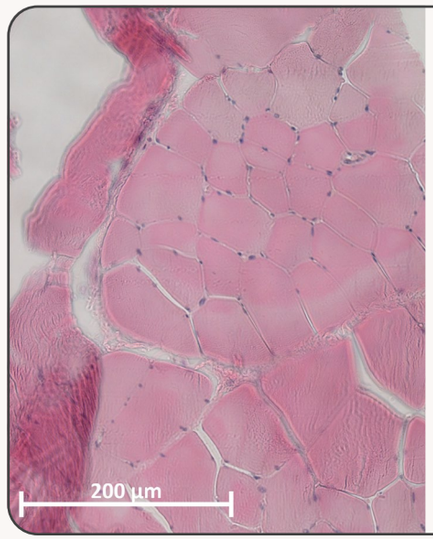




Inside the Lab: Research Highlights

◀ Curved cell culture surfaces

Research fellow Ricardo Gouveia's first batch of curved surfaces are allowing him to investigate previously untested cell culture conditions and generate a massive amount of data on the biology of muscle cells. These are custom-made borosilicate glass half-pipe surfaces he used to test the impact of substrate curvature on muscle cell behavior. They have different diameters to test which curvature best helps cells achieve optimal growth.



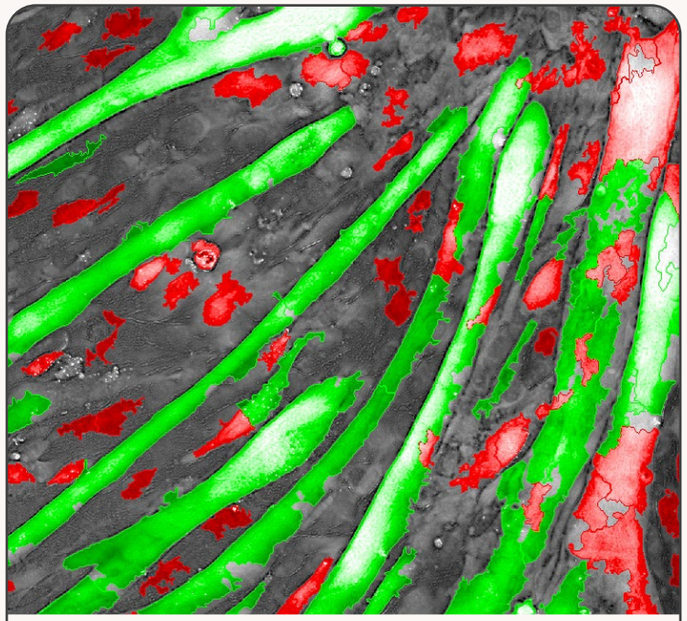
◀ HE-stained native porcine (pig) muscle tissue

That is one thin cut of pork! **Research fellow Jannis Wollschlaeger stained this slice of pig muscle tissue** with Haematoxylin Eosin to hone his embedding and slicing techniques and learn more about the structure of the muscle. All in a day's work toward his goal of 3D printing marbled cultured meat!

◀ Alginate caviar

This cultured delicacy was prepared for an end-of-year Zoom potluck for **the cellular agriculture undergraduate course our research fellows taught at Tufts University**.

Inside the Lab Cont'd

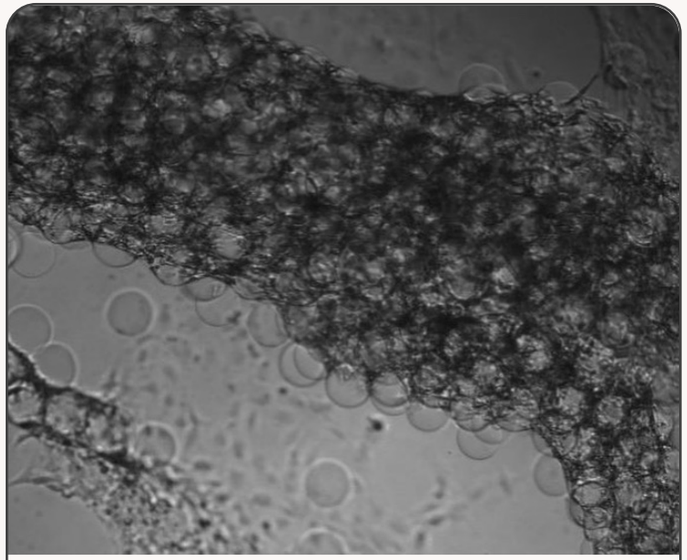


▲ An image of muscle fibers at 10x magnification colored by an image analysis algorithm

Research fellow Kai Steinmetz has been experimenting with automated image analysis to pick out cell types by their shape, eliminating human error in the process. This has the potential to make research on differentiation of cells much more efficient.

▲ Salmonella enterica serotype infantis on XLD agar

Research fellow Sam Peabody is modelling the fate of potential pathogens, like Salmonella, under various conditions so they can be avoided and controlled in the production of cell-based meats.

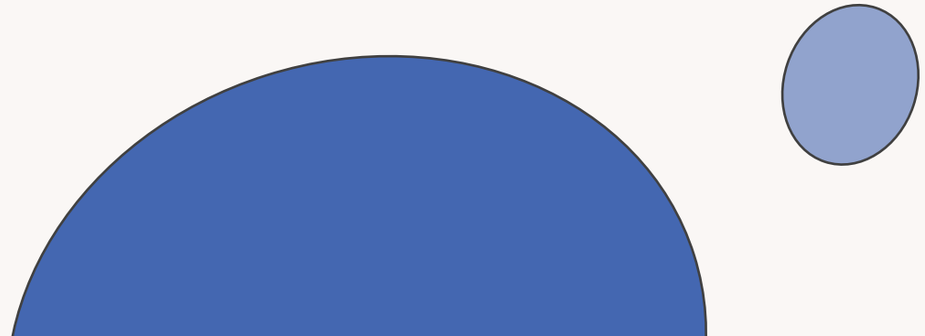


▲ Fat cells on microparticle scaffolds

Fat gives meat texture and flavor, so it is crucial to develop a scaffold on which both muscle *and* fat cells can be cultured together. Unfortunately, the two prefer different growth environments, so **research fellow Stephanie Kawecki is working on creating a scaffold with regions of varying stiffness** that cater to each cell type.

“Working in cellular agriculture, there’s a feeling of being lost because it’s such a new field. It’s so valuable being able to connect with and learn from others who feel just as lost. New Harvest brings people and research together so we don’t have to solve every single problem we encounter from scratch every time, which makes us much more effective.”

Kai Steinmetz, *New Harvest Research Fellow, New Zealand*



ENGAGEMENTS AT NEW HARVEST

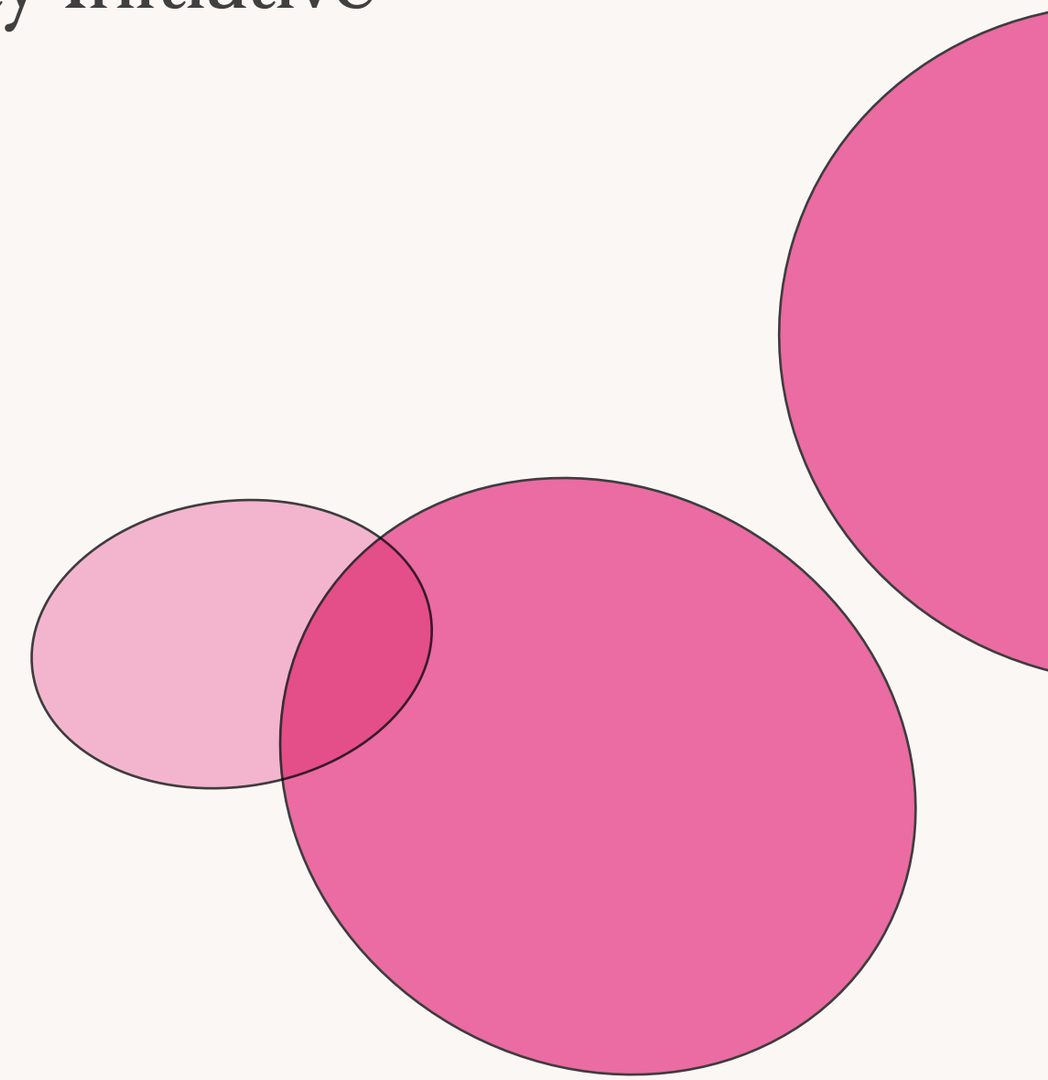
Cultured Meat Safety Initiative

A Global Collective Action

One unsafe bite. That's all it would take to undermine the promise of cellular agriculture. The future of cultured meat hangs in the balance if safety isn't brought to the forefront and dealt with proactively.

In 2020, we spearheaded a year-long collaboration with Vireo Advisors—seasoned consultants on safety and risk assessment for emerging technologies—to address this concern. The goal? To unite the field around a shared understanding about the safety needs for cultured meat.

The findings from this collective effort will be published in an open access journal to help raise the bar on cultured meat products and pave the way to market acceptance. Much more than a paper, this is the first global collective action in the field of cellular agriculture, bringing together an unprecedented number of stakeholders to tackle a shared, precompetitive problem: safety.



Cultured Meat Safety Initiative Cont'd

The Impact

As the first of its kind, this initiative identifies what data is required to demonstrate the safety of cultured meat. And data helps the whole ecosystem.

- **Investors** are empowered to address and understand companies' strategies towards developing safe products.
- **Companies** have a level playing field. Even new companies, without the funds to hire safety experts in-house, can use the data to make informed and strategic decisions about their manufacturing process.
- **The public** is given a window into cultured meat's safety considerations from the very beginning.
- **Regulators** are adequately equipped to consider appropriate regulatory processes for cultured meat.

Mobilizing the Ecosystem

- 87 individuals from 50 companies participated (representing over 61 percent of the global industry in 2020)
- 3 virtual workshops and months of 1:1 conversations

Collective Value Creation

- 1 peer-reviewed, open access publication forthcoming. Read the pre-print here.
- 1 open access digital course forthcoming

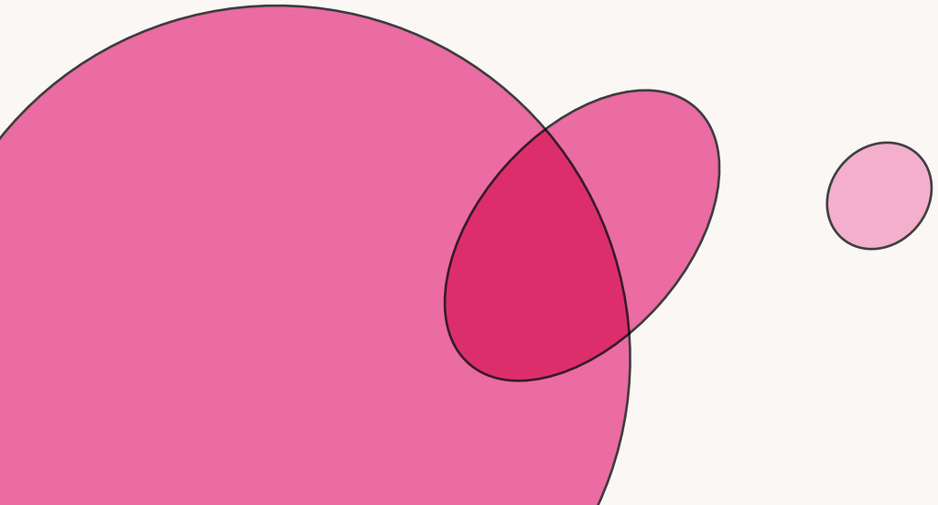
Empowering Emerging Leaders

- Highlighted the work of Vireo Advisers, positioning them to become the go-to safety experts in cultured meat

✦ **Supporters** Robert Downey Jr.'s Footprint Coalition, Center of Complex Interventions, Tipping Point Private Foundation, and Erin Culley and Richard Carlson

“New Harvest has the connections and expertise needed to bring companies together to share information and learn from each other. As a trusted, neutral third party, it’s one step ahead of regulatory agencies in encouraging openness.”

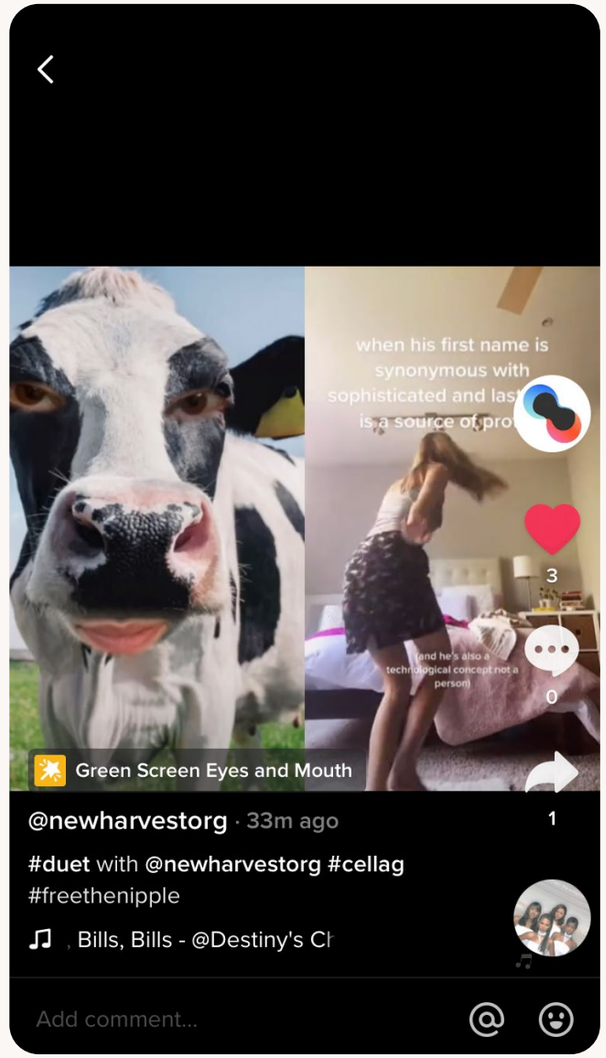
Ka Yi Ling, *Shiok Meats CTO/Co-founder, Cultured Meat Safety Initiative Participant*



Engagement Experiments

New Harvest hosted the first cellular agriculture conference in the world in 2016. Since then, we've put on four annual conferences to facilitate the creation of a robust global network, discuss thorny issues, and lower the barrier to entry for newcomers.

Last year the pandemic forced us to cancel this signature event. Rather than host a digital version, we decided to take this time as an opportunity to experiment with new ways to engage and activate our community ▼



CELL AG SWAG SWAP RESULTS: DAY 11

TODAY'S CELL AG FAN RECEIVING MERCH IS...

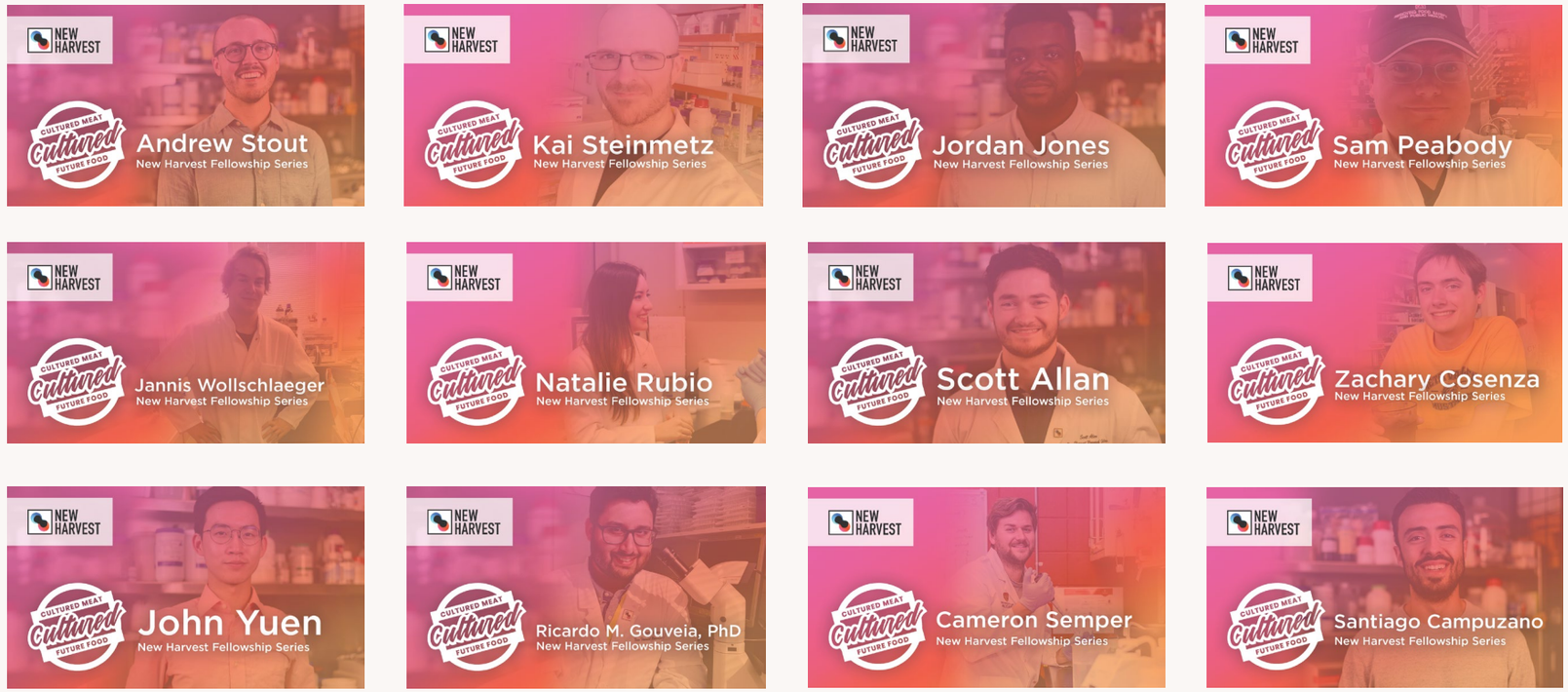
Engagement Experiments

Fellowship Podcast

Project: Launch the New Harvest Fellowship Series on the *Cultured Meat and Future Food Podcast*

Goal: To highlight our fellows and their groundbreaking research, as well as outline the different career pathways into the field

12 of episodes recorded
8247 of listeners to the series
1900 of subscribers to the podcast



Listen Up! Click on the icons above to check out each New Harvest Fellowship Series episode.

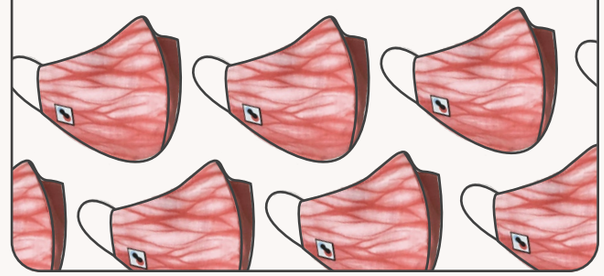
Engagement Experiments

Cultured Meat Masks

Project: Design and distribute custom-designed cultured meat masks

Goal: Drive a feeling of connectedness and community across the field

450+ of masks distributed
40+ of social media photos
78% of mask purchasers were first-time donors



Engagement Experiments

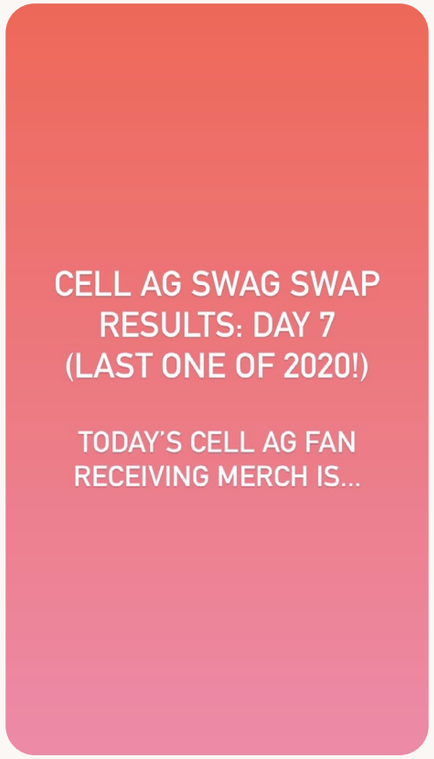
Swag Swap

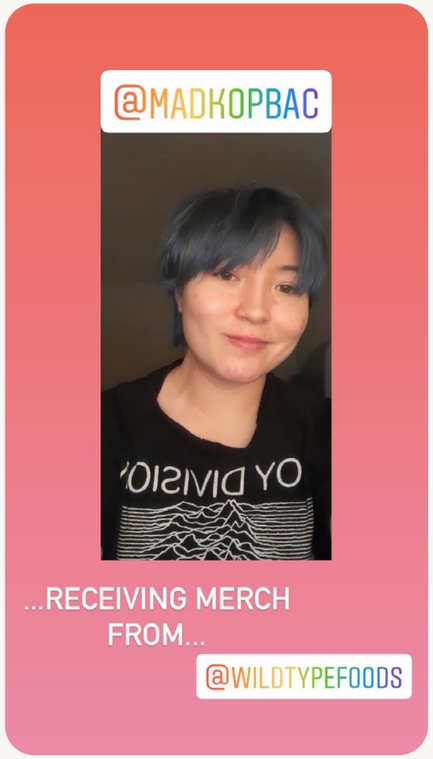
Project: Host a social media contest where community members can enter to win merch provided by cell ag companies and authors

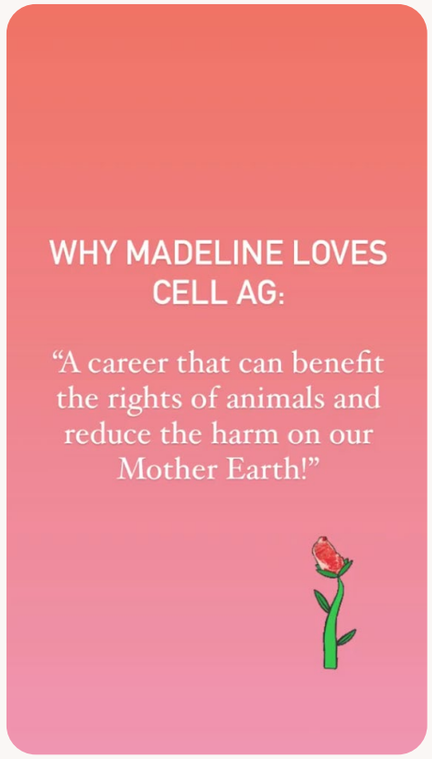
Goal: Get our audience excited about being a part of the cell ag community, while highlighting the work of different cell ag companies

100+ community members entered to win get free merch

15 companies participated







Engagement Experiments

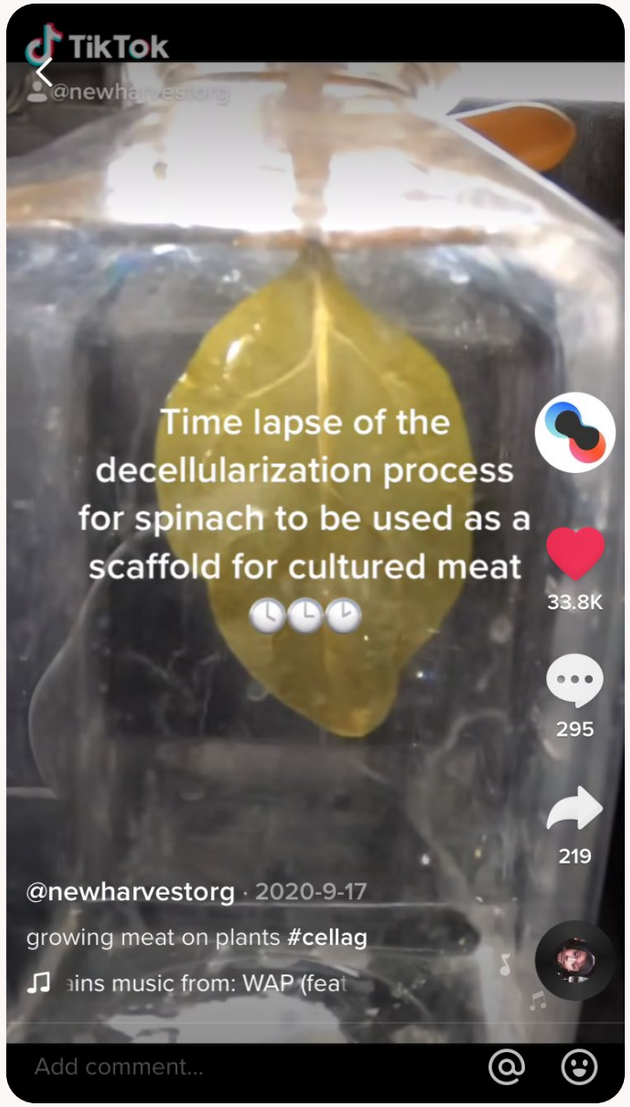
TikTok

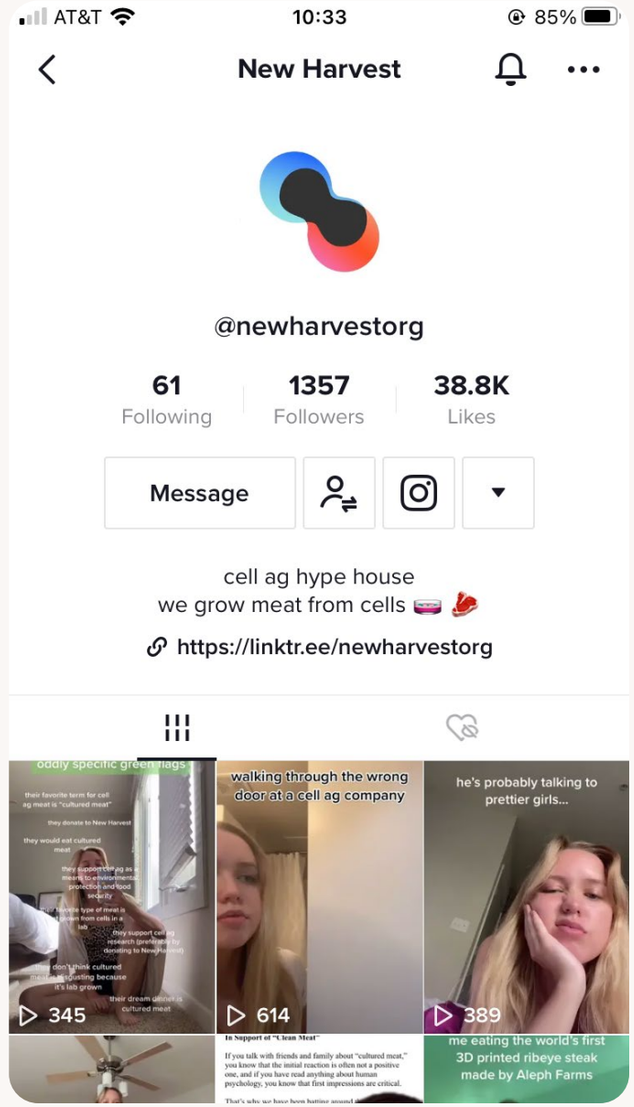
Project: Share cultured meat research content on TikTok

Goal: Engage with Gen Z, the future consumers of cell ag

427.2K views of research fellow Jordan Jones' time lapse video. *Click the screenshot to watch!* ▶

Daily Dose of Internet YouTube channel included the above clip in one of their compilations, directing a flood of listeners to Jordan's episode of the *Cultured Meat and Future of Food Podcast*





Engagement Spotlight

Robert Downey Jr. Makes the Case for Cellular Agriculture

Robert Downey Jr. (aka Iron Man) narrated an animated video about the merits of cellular agriculture. The video accompanied a charitable grant made by Robert Downey Jr.'s FootPrint Coalition to support New Harvest's safety initiative.

"If we continue to innovate and scale, cellular agriculture can usher in some balance that our world so desperately needs."

- Robert Downey Jr.

▲ Frame from FootPrint Coalition's video on cellular agriculture

Media Hits

Our team and grantees were featured in:

BUSINESS INSIDER

The New York Times

FAST COMPANY

MIT Technology Review

Calgary Herald

The Globe and Mail

QUARTZ

nature

OneZero

The Counter

Massive

SCI FRI

Click on the logos to check out the stories!

Staff Picks

nature

Will Cell-Based Meat Ever be a Dinner Staple?

"An annotated version of one of the most thorough pieces of reporting on cell ag I've read, showing how small and interconnected a world this field still is."

- Jeremiah

SCI FRI

What is the Future of Meat?

"Years ago, Pat Brown, the founder of Impossible Foods, went on the record calling cultured meat the stupidest idea he has ever heard. In this interview, Pat goes head-to-head with Isha directly about why he's so skeptical of cultured meat's ability to scale."

- Meera

THE GLOBE AND MAIL

Milk's Next Frontier

"An amazing dive into Canada-specific considerations to cell ag, published right before the pandemic and my own repatriation to Canada!"

-Isha

Supporters

New Harvest is 100% powered by community support. Our work is made possible by a global giving network of foundations, companies, and individuals who provide philanthropic and in-kind contributions in the form of funding, expertise, services, and goods.

In 2020, we had 317 individual donors contribute to our mission, bringing our total to **1045 donors*** since our founding. We are deeply thankful for every single gift.

We also would like to acknowledge the generous support we received from our 2020 Foundation Partners:

AVINA | InVivo Foundation | Tipping Point Private Foundation | Centre for Complex Interventions | Robert Downey Jr.'s FootPrint Coalition | DonorsTrust | Vanguard Charitable | PayPal Giving Fund

*Updated to reflect the total number of donors as of January 1, 2021.

In late 2020, we launched our new corporate donor giving program. We are grateful for the mission-aligned companies who signed up to show their support as members of our 2021 corporate donor cohort:

Merck KGaA | Finless Foods | Meatable | Peace of Meat | Aleph Farms | Upside Foods | Avant Meats | Boston Meats | Future Meat | Clara Foods | Gourmey | New Age Meats | Higher Steaks | Shiok Meats | Artemys | Because, Animals | Biomilq | BlueNalu | Bond Pet Foods Novel Farms | NuProtein | Orbillion | OneBio | Tiamat | Vow | WildType | Cultured Decadence | Defined Bioscience

STATEMENT OF VALUES

New Harvest is an independent 501(c)(3) research nonprofit. We are committed to the independence and autonomy of New Harvest's programming and initiatives. New Harvest does not accept funding that challenges the independence of our organization or the academic freedom of our grantees.

Financials: Adhering to our values of integrity and transparency, we publish our audited financial statements annually on our website here. New Harvest welcomes questions about our sources of funding and allocation of resources.

New Harvest supporters are maximizing the positive impact of cellular agriculture on the world. Join us.

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Get in touch!
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Tax ID #20-1425438. All donations are fully tax deductible.