



Hello New Harvest Donors!

Friendly reminder that you have [until May 17 to comment on the US Cattlemen's Association's petition on beef and meat labelling requirements](#). The petition requests that USDA's Food Safety and Inspection Service (FSIS) exclude products not derived directly from animals raised and slaughtered from the definition of “beef” and “meat.” Do you think this stifles the emerging cellular agriculture industry? [Submit your comments here](#). (Here's [Memphis Meats' response](#), which I thought was 🍌)

In somewhat related news around cultured meat's identity, yesterday the House Appropriations Committee unveiled the 2019 Agricultural Appropriations Bill, (summary [here](#), full text [here](#)) which included some language about the regulation of cultured meat products.

“For fiscal year 2018 and hereafter, the Secretary shall regulate products made from cells of amenable species of livestock, as defined in the Federal Meat Inspection Act, or poultry, as defined in the Poultry Products Inspection act, grown under controlled conditions for use as human food, and shall issue regulations prescribing the type and frequency of inspection required for the manufacture and processing of such products, as well as other requirements necessary to prevent the adulteration and misbranding of these products.”

I found this interesting for a few reasons:

- To understand if cultured meat is/is not adulterated, **we need to establish a standard for cultured meat**. How will this standard be established? Would it be based on gene expression - so we know that the cell is a muscle cell? Or nutritional profile - so we know if cultured meat can offer the same protein content as meat from slaughtered animals?

This quickly descends down a rabbit hole based around the fact that meat is easy to define today because it is easy to define an animal. But it is harder to define a cell, let alone a tissue.

- Given the above, I would imagine that the inspection of a slaughterhouse and meat processing plant may be very different than the inspection of a cultured meat facility (or [carnery](#), as some have called it).
- How easy will it be to implement these regulations in the absence of a robust cellular agriculture research community? Surely it is this community who will be crucial in determining cellular standards and being appropriately skilled to carry out inspections.

So far, by my calculations, the amount of US federal funding that has been given to cellular agriculture research, ever, is less than \$1 million. That's a negligible fraction of agriculture research funding. To me, it seems only reasonable that this bill should also include, in its \$3.1 billion agricultural research budget, a dedication to cellular agriculture work, *at very, very least* to meaningfully support the statement about cultured meat regulation.

Those are my thoughts, what are yours?

And now, for the latest from New Harvest:

5/1/2018 YTD SNAPSHOT

+ Raised **\$149,628***
+ **29** new donors
+ Spent **\$92,106** in research grants
+ **5** speaking engagements
+ **35** media engagements

*Income & pledges in 2018

Conference



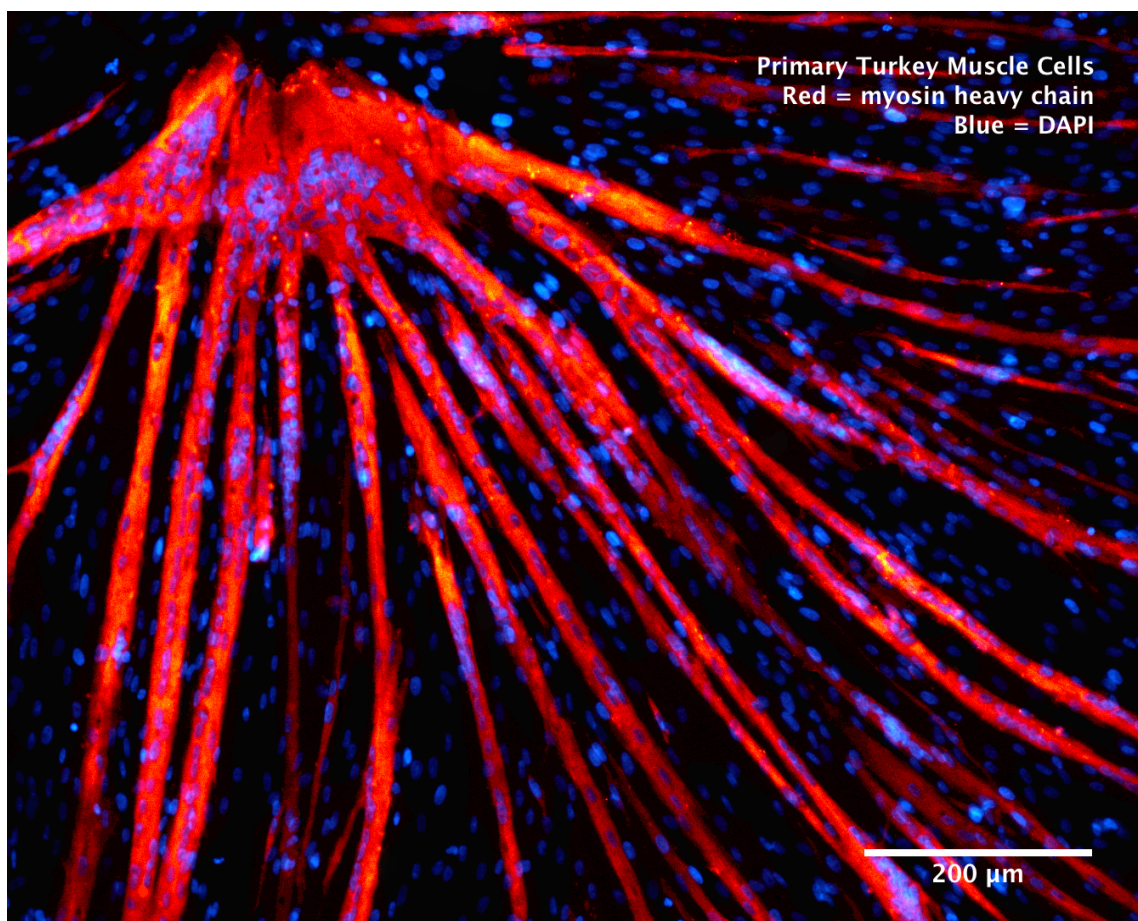
- **We're quickly accelerating towards the New Harvest conference**, and we couldn't be more excited about our lineup of speakers and the topics they're covering. In case you missed it last year, [these were the 498 questions](#) that our audience asked throughout last year's event. That's serious engagement. We hope you'll join the conversation this time around at MIT. Check out the topics to be discussed [here](#).
- Our conferences are made possible through the financial support of sponsors. If you or an entity you know are interested in **sponsoring our conference**, please [get in touch](#).

Fundraising

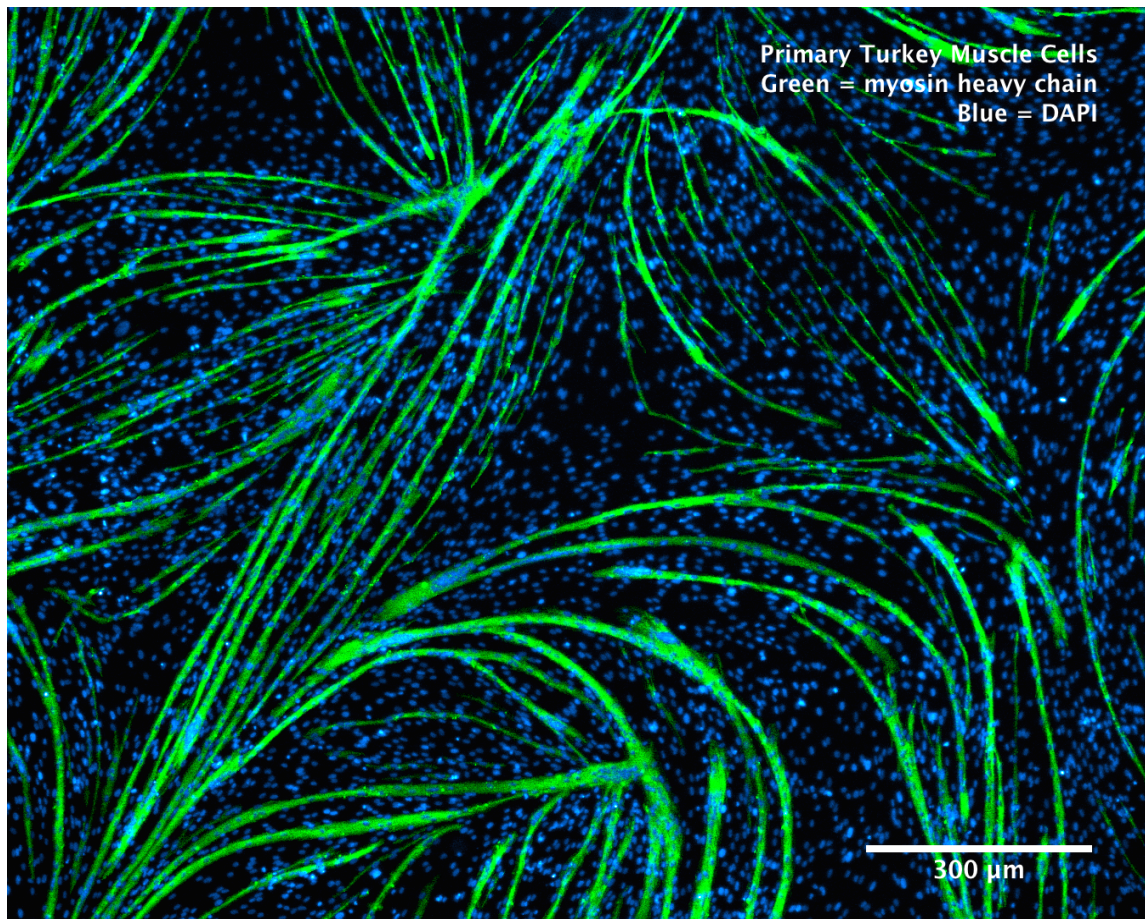
- **Fundraising status.** New Harvest has received **\$149,628** in donations and pledges in 2018 to date. This does not include conference ticket sales, sale of merchandise, or income from speaking engagements.

Research

- In 2008, New Harvest funded [an environmental impacts study of cultured meat compared to conventional meat production](#), conducted by Dr. Hanna Tuomisto. This influential study has led to a growing group of scientists investigating the impact of cellular agriculture - independent of New Harvest funding support. Dr. Tuomisto is now leading a lab at the University of Helsinki, where **she is seeking to onboard 2 cellular agriculture PhD students: one for assessing environmental impacts of cellular agriculture and one for exploring consumers perceptions of the products from cellular agriculture**. The selected PhD candidates will join her research group at the University of Helsinki. More information [here](#)!
- **New Harvest Fellow Jess Krieger** is growing primary turkey muscle cells in the lab. Here she's stained her cells with myosin heavy chain, a muscle marker. Cell nuclei are stained blue with DAPI.

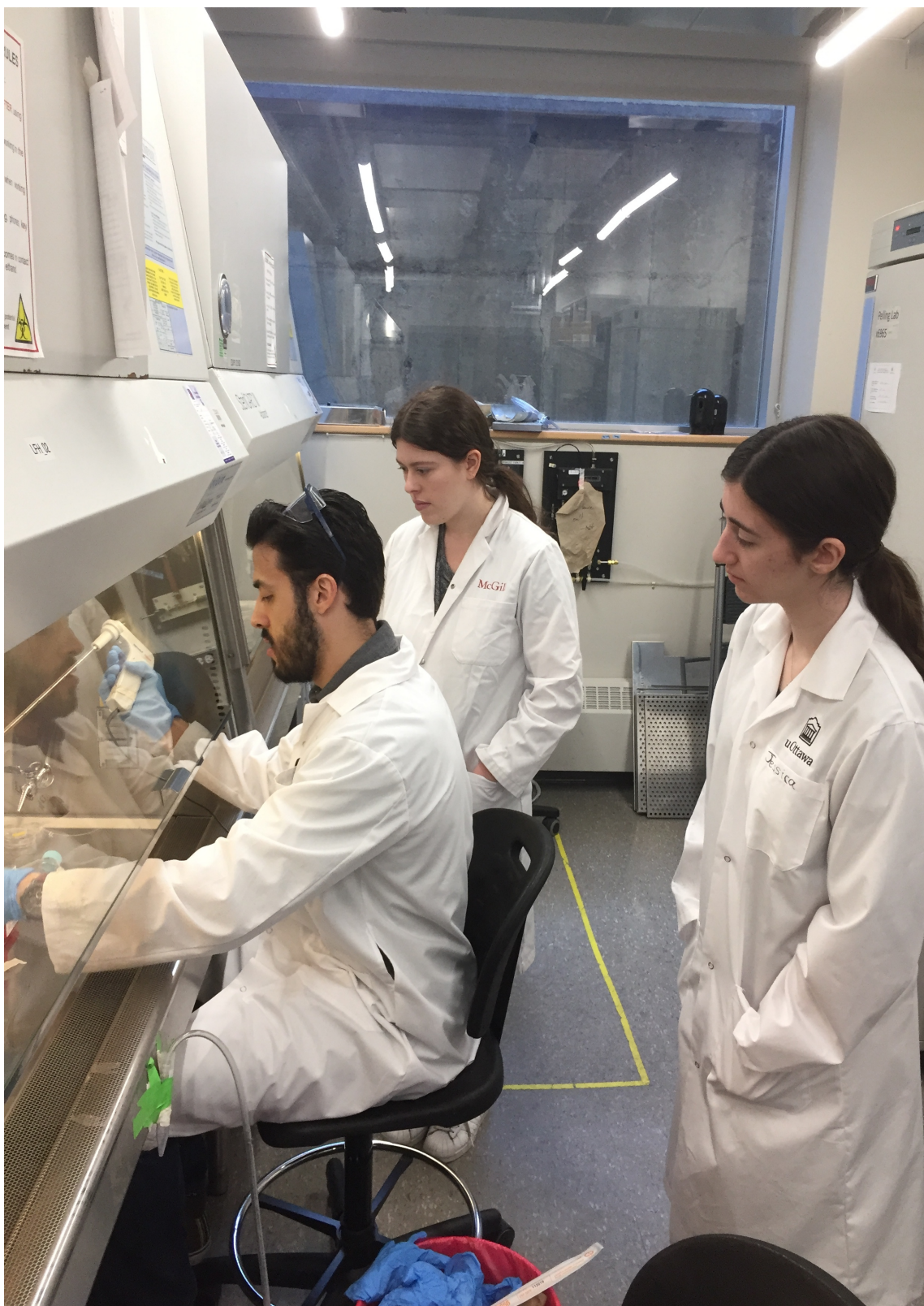


Jess's turkey muscle cells stain strongly for myosin heavy chain - a muscle marker.



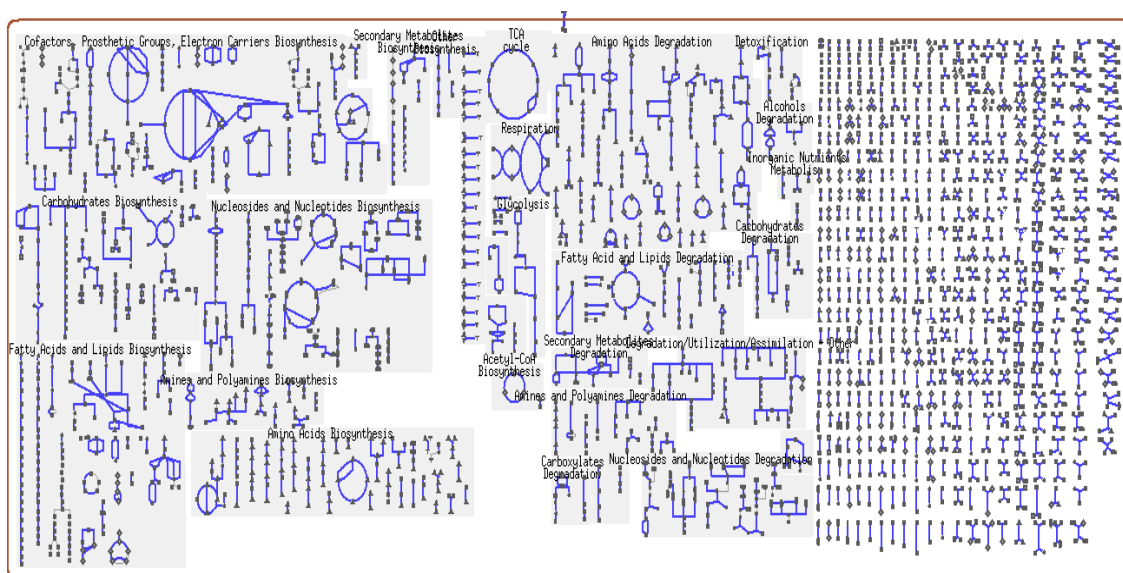
Another image of Jess's turkey muscle cells - this time, myosin heavy chain is shown in green.

- Over the past couple of weeks, **New Harvest Fellow Santiago Campuzano** has been training two undergraduate researchers, Jessica and Nikki. He's been teaching them how to passage cells and how to grow cells on cellulose-based scaffold materials.

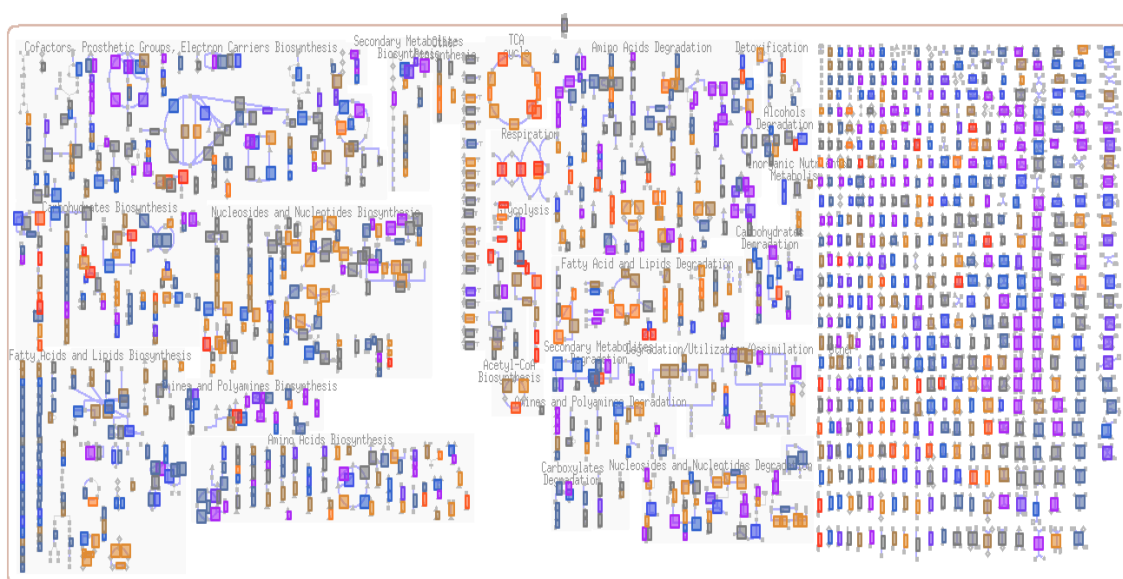


Santiago in the tissue culture hood - passaging cells and passing on skills!

- **New Harvest Fellow Andrew Stout** is using metabolomics to study the differences between cow breeds. He's shared some bovine whole-genome metabolic models and expression maps- visualizations of all the materials that cells make - from lipids to carbohydrates, to amino acids.



Andrew's whole-genome metabolic model without any expression data mapping

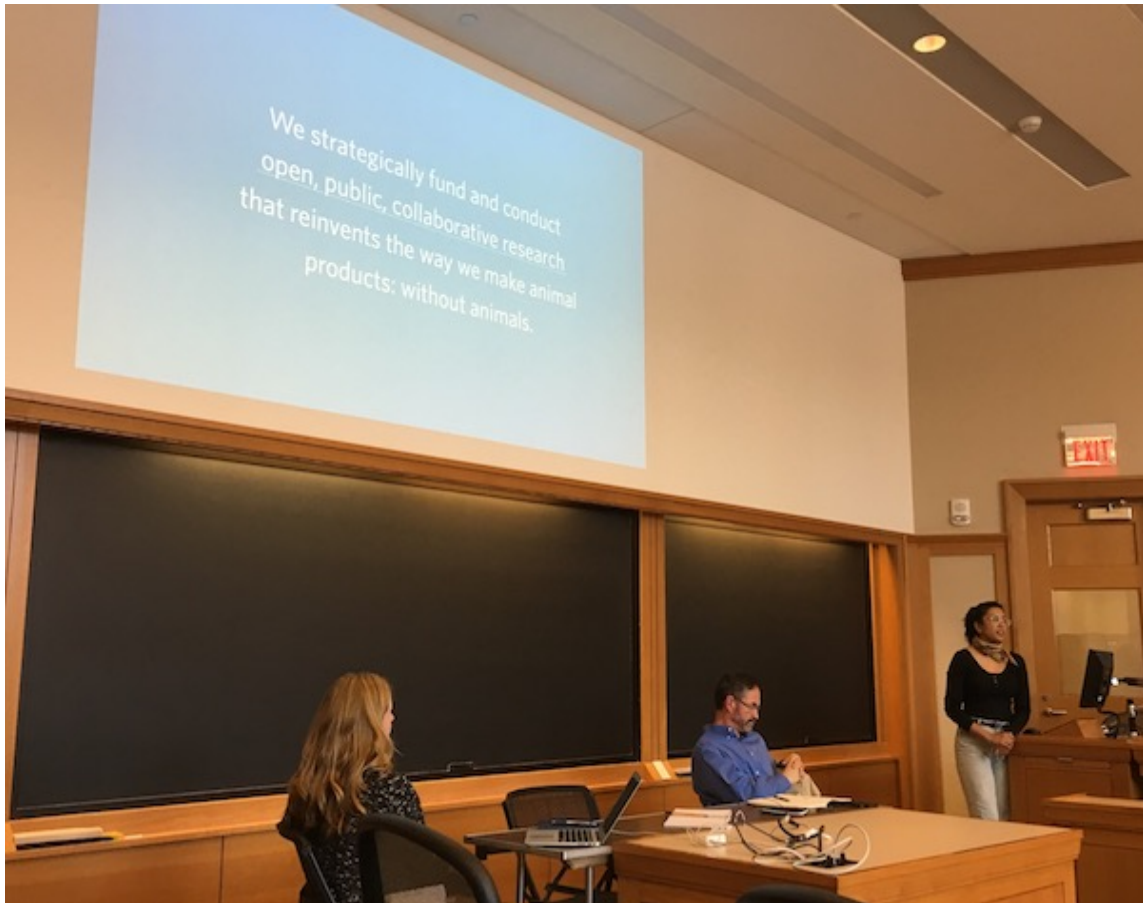


Andrew's whole-genome metabolic model with Holstein Friesian skeletal muscle transcriptome mapping

- **Did you know? – DAPI is a fluorescent molecule that binds to adenine and thymine rich regions of DNA. Its chemical formula is 4',6-diamidino-2-phenylindole. DAPI was synthesized in the 1970s as a potential cure for trypanosomiasis but proved much more valuable as a nuclear stain. You can read more about the DAPI [here](#).**

Communications

- Erin spoke about her career path towards cellular agriculture at a private event in New York for young professionals.



- I visited Harvard Law School, for a lively panel about IP issues for future food products.
- I spoke on a panel discussion organized by Urban Green Council in New York City, which brainstormed what cellular agriculture in NYC might look like, and what it would take to turn that vision into reality. It was a fun opportunity to cite a few New York cellular agriculture moments: Alexis Carrel sustained his 34 year old chicken cell culture experiment at Rockefeller University in NYC, and the first cell ag product (and first genetically modified food that was approved in the US) was recombinant rennet for cheesemaking - developed by Pfizer's NYC office.

Thank you for helping New Harvest grow! In the future, when we look back and can't imagine a world without cellular agriculture, it will be thanks to your generous support.

Until next month,

10 May 2018

Isha, Erin, & Kate

The New Harvest Team