



THE ALT.MEAT PROGRAM AT THE SUTARDJA CENTER FOR ENTREPRENEURSHIP AND TECHNOLOGY, UC BERKELEY

The Alt.Meat Applied Program gives UC Berkeley students the skills needed to create the next generation of abundant, sustainable, healthy, nutritious and affordable alternatives to animal-based products. UC Berkeley entrepreneurs will lead the change from animal-based food, with all its negative consequences, to more sustainable plant-based and clean meat products. We are poised to take this industry to its next level, by leveraging UC Berkeley vast resources — both STEM and non-STEM — in conjunction with a powerful network of companies, start-ups, venture capitalists and incubators.

Background

Two years ago, with the active support of The Good Food Institute, we launched the first entrepreneurial class on alternatives to animal-based foods. So far 160 students have taken our classes, exploring varied topics such as how to use CRISPR technology to block the bitter aftertaste in peas, how to incorporate fat into texturized protein products or the production of plant-based scaffolds for clean meat. Former students are working in related industries (Impossible Foods) or have created novel ventures. For example, Terramino Foods has recently received an investment of \$4.3 million to scale up the production of salmon-like meat based on fungal fermentation.

Based on this experience, we have learned that:

- Despite having a large proportion of students from chemistry, chemical engineering, nutrition sciences or biochemistry, our students need a more in-depth scientific and technological background on food science, specifically applied to the production of plant-based and clean meat.
- We need to better understand how these novel products will be accepted by consumers. The consumption of meat and animal-derived products are deeply dependent on culture, religion and socio-economic status. Changing our eating habits is a complex challenge that needs the expertise of non-STEM UC Berkeley departments, such as design, psychology, sociology, agricultural economics, public policy and economics.
- More In-depth research is needed. This emerging field is still in the discovery phase, requiring more in-depth research to solve crucial questions. This can be achieved by working with selected students (both graduate and undergraduate), mentored by industry experts and world-class UC Berkeley academics.

The Alt.Meat Program

To tackle these challenges, starting in January 2019 we will grow the Alt.Meat Program, a multiyear commitment by the SCET supported by UC Berkeley's vice chancellor for research, by expanding our activities outside of the classroom. In 2019, we will offer a new class and our academic staff will work with selected students on in-depth research topics. We believe the new courses will significantly improve the quality of the projects that the students develop in the Challenge Lab class. The in-depth research work will allow us to gain a deep understanding of the key scientific and societal hurdles faced by this emerging field. All of this will effectively connect industry with world-class academics at UC Berkeley.

2019-2020 Proposed Classes

1. **Meat-Alternatives: the human dimension (NEW-2019).** This multidisciplinary class will study in detail those human behaviors and leverage points that are key to drive the dynamics for large-scale change. The class will be conducted by multidisciplinary team of experts both from UC Berkeley (anthropology, psychology, design, behavioral economics, system design, etc.) and collaborating institutions.
2. **Meat-alternatives: scientific and technological foundations (NEW-2020).** This multidisciplinary class will cover the topics needed to understand the complexity of producing novel non-animal based food products. Special emphasis will be given to food methods to determine product quality, as well as advanced topics on the link between food microstructure to attain adequate taste, texture and overall eating experience. The class will leverage the academic richness of UC Berkeley, plus external collaborators from universities and research centers (e.g. UC Davis, Wageningen, U Penn, USDA-Albany) and from our network of partner companies (Givaudan, Ingredion, etc.).
3. **Applied Alt.Meat. Challenge Lab.** This class will follow up a similar program of what we teach today, with hands-on, team-based projects set by industry. In this class students will develop innovative solutions from early concepts to prototypes. The class will balance technically sound innovations and a positive customer perception based on a detailed ethnographical customer discovery process. The outcome is a VC-type pitch with a preliminary business model and go-to-market strategy. Students will be able to sign up for the class only if they have completed the two previous classes.

FUNDING 2019-2021

The minimum funding required to start the program in 2019 is \$250,000 (see Table 1). Our strategy is to become fully funded by corporate collaborations and research grants by 2021. During 2019, we expect to have two corporate sponsors (\$25,000 per year) and one Corporate Sponsor (\$50,000 per year/ 3-year commitment). (See attached document with details of different ways industry can engage with our program.)

With this scheme, our industry partners will provide the resources for the research students, as well as part of the administrative costs. To finance the remaining costs (primarily the extra costs

of the new courses), we will submit research grants (EDA Grant submitted July 2017) and we will actively search for philanthropic support and donations. **Please address questions to Ricardo San Martin, rsanmartin@berkeley.edu**

Table 1: Estimated costs and industry income for the Alt.Meat Program 2019-2021

ESTIMATED COSTS	2019	2020	2021
Personnel			
Program Director	60,000	60,000	60,000
Administrative support	20,000	20,000	20,000
Sub-total	80,000	80,000	80,000
Courses			
Understanding customers	50,000	50,000	50,000
Technical foundations		50,000	50,000
Challenge Lab	50,000	50,000	50,000
Sub-total	100,000	150,000	150,000
Research			
Independent study students			
Number per year	10	12	15
Cost per student	1,500	1,500	1,500
Research materials	10,000	15,000	15,000
Sub-total	25,000	33,000	37,500
Sub-total	205,000	263,000	267,500
10% contingencies	20,500	26,300	26,750
UCB Campus Overhead	22,550	28,930	29,425
TOTAL	248,050	318,230	323,675

SOURCES OF FUNDING

Corporate Sponsors

Number	2	4	6
\$ per year	25,000	25,000	25,000
SUB-TOTAL	50,000	100,000	150,000

Corporate Partners

Number	1	2	3
\$ per year	50,000	50,000	50,000
SUB-TOTAL	50,000	100,000	150,000

Total Industry funding	100,000	200,000	300,000
DEFICIT	-148,050	-118,230	-23,675