



# BURGERS, BREADS AND SPREADS

\_BY LINI S. KADABA



The Drexel Food Lab is an unusual mix of food science, culinary arts and tech transfer, where future chefs work with industry partners to invent delicious new “good” foods in support of sustainability, nutrition and access.

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he Tale of the Blended Burger, like all good stories, begins with a grueling quest.

It includes, of course, a determined heroine, a king of sorts, a wise counselor, a cast of dozens and, this being Drexel University, a dragon. And while there isn't a villain, exactly, there have been obstacles along the way to overcome, and perhaps worse, picky taste testers to please. All well worth it.

Starting in 2019, Comcast Spectacor plans to roll out a mushroom-and-beef blended burger created at Drexel's one-of-its-kind Food Lab to four of its venues, after a pilot last summer whetted appetites for more.

“This wasn't just a recipe that Drexel created in Food Lab,” says Scott Swiger, vice president of culinary excellence for Spectra, a unit of Comcast Spectacor. “It was really a product Drexel was looking to bring to market and looking for a partner to do that.”

Many culinary schools help outfits with recipe development, but Food Lab has aimed for the stars — and, based on its track record, regularly makes good. The student-driven, interdisciplinary research group solves real-world culinary problems for chefs, food suppliers and food marketers, and has earned a reputation for innovation that includes patent applications and various licensing agreements.

Unusually, many of the projects tackled in the program are motivated by a progressive desire to address food system problems. Using the skills a food scientist might deploy toward making junk food more munchable, Food Lab students and faculty work on sustainability (food waste recovery), health promotion (therapeutic foods) or access (allergen-free and accessible/affordable products).

For instance, the Food Lab worked with the anti-hunger organization Philabundance to create a marketable “upcycled” chutney out of vegetables headed for disposal. Students and faculty are developing functional stool-softening candies for Children's Hospital of Philadelphia patients who counter constipation caused by painkillers.

## BRINE\_TIME

The Food Lab worked with anti-hunger organization Philabundance to create a relish “upcycled” from vegetables that would have otherwise been discarded.



For F&S Produce, they're designing fresher green salads that use fewer carbs and mayonnaise. And they're helping bread company Amoroso's design a hoagie roll that meets Philadelphia's nutrition guidelines for sodium reduction and whole grains.

Of all the innovative foods created by the lab, the one with the potential to have the greatest public appeal is the Blended Burger.

But let's start from the beginning.

Once there was a 10-pound, plastic bag that contained button mushroom scraps very much in need of a scrub.

In 2014, our heroine Alexandra "Ally" Zeitz (BS '15, MS '18) was a junior at Drexel studying culinary arts. Earlier that year, she had gathered classmates eager for hands-on experiences — an informal club that evolved into Food Lab — and joined forces with Jonathan Deutsch '99, a Drexel professor of food and hospitality management, who had industry clients looking for help.

"He wanted me to make something with them," says Zeitz, who became Food Lab's manager in late 2015 after a post-graduation stint as a baker. Dressed in her usual chef whites and black clogs, her brown hair pinned away from her face, she recounts the tale during a break from the sixth-floor teaching kitchens of the Academic Building on North 33rd Street, where most Food Lab work is conducted.

The "he" is Harris S. Cutler, president of produce company Race-West in Clarks Summit, Pennsylvania.

Cutler wanted a mushroom-and-beef burger, known as a "blended burger" in industry speak. Mainly, he wanted a way to generate demand for mushroom scraps that were hard to sell to grocers. He also liked the idea because it married his surplus produce with his brother-in-law's meat business. (Joel I. Brodman is head of Casanova Meats in West Babylon, New York.)

For years, marketers, dieters and environmentalists have sought a burger with less beef. Worldwide, livestock contribute as much as 18 percent of human-caused greenhouse gases, according to the United Nations. Less beef content in burgers translates to a smaller environmental footprint. Blended burgers also contain less saturated fat and are often less expensive.

Since 2015, the nonprofit James Beard Foundation has sponsored the Blended Burger Project, seeking a sustainable patty through competition. More recently, Bill Gates has backed the Impossible Burger, a plant-based patty that has a meaty taste.

Cutler approached Drexel with a different focus. This blended burger must be tasty above all else, he pronounced. What's the point of a sustainable, cheaper burger if no one wants to eat it? he argued. Cutler wanted the product he and his brother-in-law dubbed the Casanova Burger "to be as good in meat as Casanova was as a lover." Zeitz, a competitive food junkie and chef-to-be, was inspired.

"We started working on the mushroom burger," she says. "It was a challenge."

And so began the journey to create a new product from scratch — one that has taken five long years and has proven Food Lab's most ambitious undertaking.



Zeitz, the twin daughter of a machine shop manager dad and paralegal mom (whose own love of cooking inspired her), arrived at Drexel eager to try culinary arts.

The Southampton, Pennsylvania, native was one of those students who devoured her classes and was always hungry for extra projects.

Deutsch, a Culinary Institute of America-trained chef, had joined Drexel in 2013 after many years teaching at the City University of New York's Kingsborough Community College and Graduate Center cam-

pus. Perhaps more important, he had to-die-for contacts as an industry consultant and the knack to develop more.

"So," Deutsch says, "we brought some of those consulting opportunities to students."

Culinary arts training is typically found at culinary institutes. But at Drexel, the culinary arts and science degree allows for an unusual, seamless blend of research, experiential education and industry involvement — all from the perspective of future chefs.

For the students' first project, they traveled to 16 Handles, a frozen yogurt company based in New York, to brainstorm products for a new menu during a day-long ideation session. The trip was successful enough that it proved preamble to Food Lab, which took off in 2014 with co-founders Zeitz as student manager and Deutsch as director/idea man/fundraiser.

Senior Isabel Guerriero says Food Lab cemented her career interest in product development. "I never knew how capable I was of creating new recipes and products until I was handed half an onion, a wrinkly eggplant and three tomatoes and told to create something totally new," the double major in culinary arts and science and hospitality management says. (She made a vegan pot pie.)

"Food Lab provides students opportunities to work with industry before they've graduated and, in many cases, before they've even done co-op," says Rosemary Trout, the University's program director of Culinary Arts & Food Science. "That's the best thing, frankly...It fits in with Drexel's vision of community engagement."

Initially, Deutsch expected to use a Robin Hood model, taking proceeds from private industry contracts to fund research into food ideas that solved access, health or sustainability problems. "We found almost immediately that there was a lot of demand from private industry, nonprofits and government to do this type of good food work," he says, "and help with the needs of consumers."

Lila Colello, the owner of the Philadelphia-area gluten-free pastry business Flakely, approached Food Lab in 2016 to create a tasty, quintessentially flakey croissant that was also gluten-free. After many experiments, Zeitz delivered the dough.

"We evaluated it just like we would any other invention," says Bob McGrath, senior associate vice president of technology commercialization at Drexel Ventures, which is the University's startup and tech commercialization arm. Well almost. Unlike most advances that cross his desk, this involved yummy samples. "We figured out they'd invented a new manufacturing process for croissants," McGrath says.

In April 2017, Drexel filed for a patent application.

"That opened the door for a whole host of interactions with us," McGrath says. "It became clear that they had a lot of expertise and were being approached by large and small companies all the time." To date, Drexel has secured four licensing agreements between the Food Lab and food purveyors, with more expected.

"We know enough food science to have conversations with clients," Deutsch says of Food Lab's unique position. "A lot of chefs have great ideas, but they can't necessarily translate their ideas to manufacturing."

In contrast, a food science program predominated by chemistry types might have trouble making it taste good, Deutsch says. "To be able to combine those things is a different way to do culinary education," he says.

Food Lab's backbone is a partnership with Cook for Your LIFE, a New York City-based nonprofit that provides healthy, easy-to-make recipes for those touched by cancer.

Deutsch, who serves on the organization's board of directors, suggested in 2014 to chairwoman Nancy Rutter Clark that Food Lab could help by testing and developing recipes pro-bono.

"Our constituents are sick, and you don't want to have recipes that fail," says Clark, who supports Food Lab's work with grants through her own foundation. She also marvels at the lab's creativity in making healthy and tasty home cooking accessible for stressed and ill patients: pumpkin ravioli made with wonton wrappers, for one.

"I'm extremely proud to be part of it," Clark says.

The rest of Food Lab's enviable client list includes the hip — Soom Foods, known for its tahini; St. Lucifer Foods, a spice company; the Cow and the Curd food truck, which sells fried cheese curds; and GetRealGetRaw, a maker of the Groothie, a green smoothie — as well as household names such as Aramark, Bimbo Bakeries and Hain Celestial.

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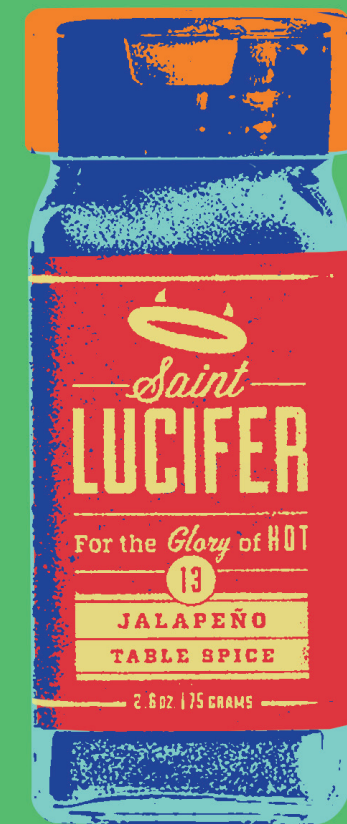
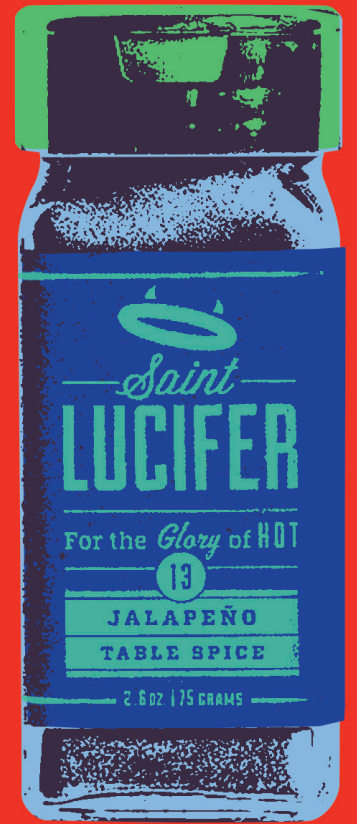
JONATHAN DEUTSCH

Here's a tasting of the lab's delicious inventions:

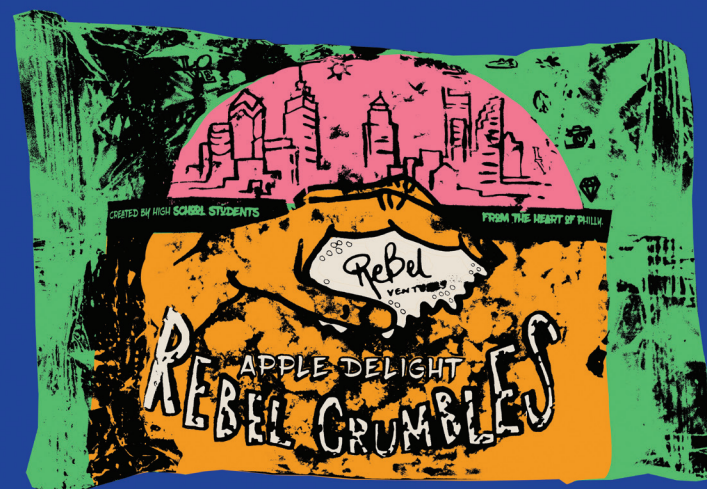
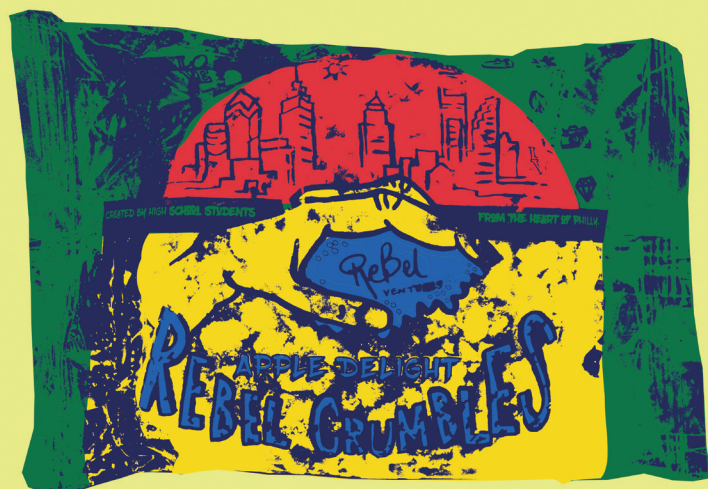
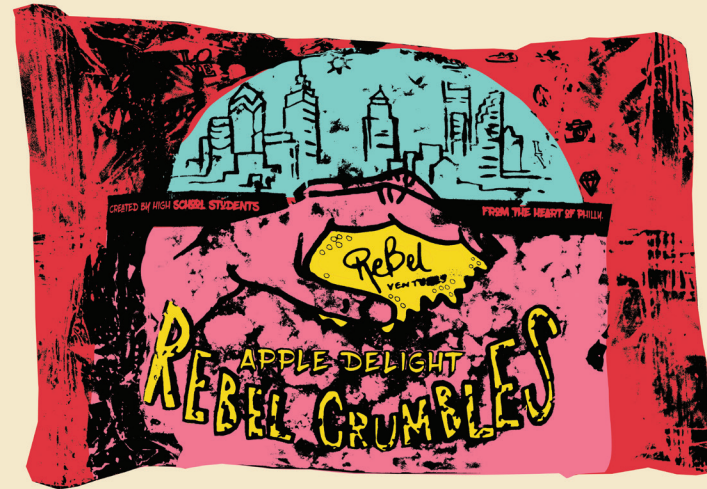
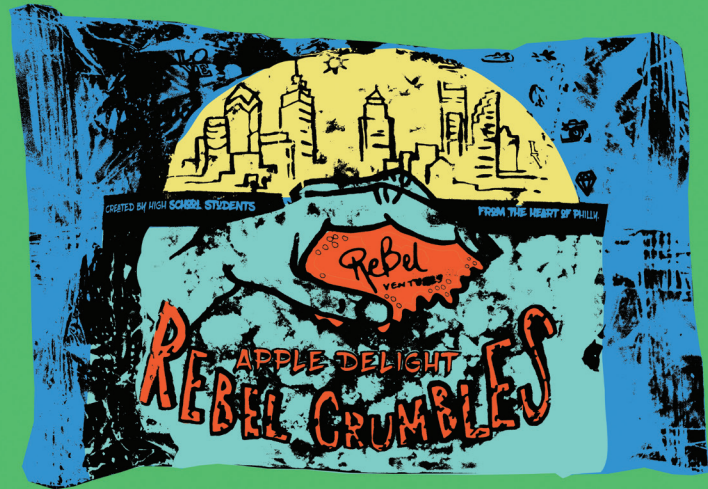
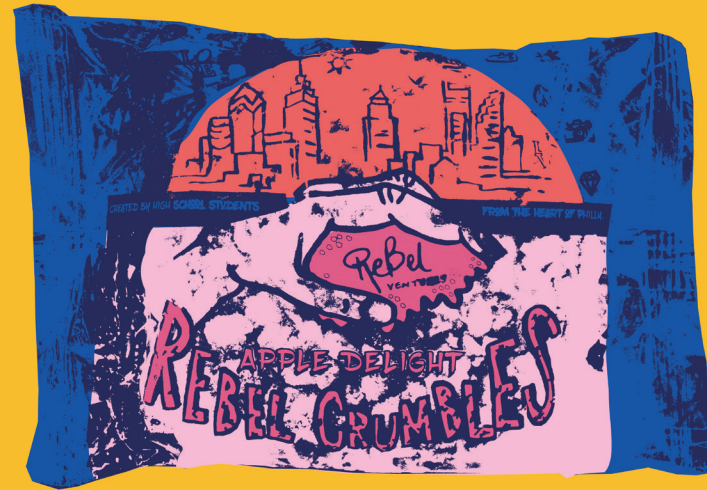
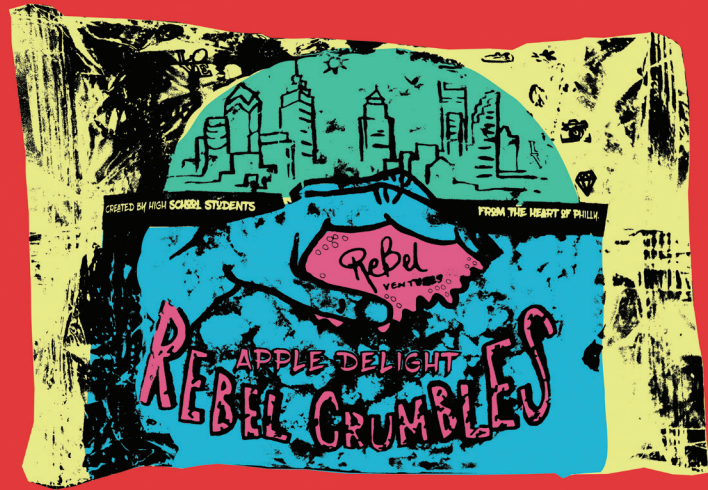
- **The Cow and the Curd:** Food Lab students spent days testing a flash-freeze process to create a frozen cheese curd product that restaurants and other venues could easily fry.
- **Bimbo Bakeries:** Students in a food product development course cooked up creations that use the company's past-due date returns of breads, muffins and pastries. During Food Lab, the ideas (fermented beverages, condiments, new sweet baked products and even a non-edible, bread Frisbee) were evaluated by Bimbo executives. The company is refining concepts of interest with students. "It was great to have extra hands," says Bimbo's Senior Manager of Product Innovation Rebecca Etter. "It enabled us to do product development quicker, but more importantly, it was good quality work with different perspectives and connected to a larger community."
- **Aramark:** When Aramark's food services business wanted to expand vegetarian and vegan dishes at college cafeterias, it turned to Drexel. Last summer, graduate students identified hot trends and developed new recipes in the Food Lab — essentially conducting R&D for the company. In January 2019, Drexel Campus Dining's U.C. Veg (a vegan and vegetarian dining concept) added three items (buffalo cauliflower wrap, roasted beet and goat cheese sandwich, and Korean mushroom sandwich), which Aramark's Culinary Development Kitchen and Zeitz helped scale. "Who better than students to develop menu items for students?" asks Michael Gilligan, Aramark's senior director of brand development. "To have a resource in Drexel's Food Lab so close to Aramark's headquarters is a tremendous benefit."

#### HOT\_SPICE

Jalapeño Table Spice #13 can be found in retail stores around the country and online at saintluciferspice.com.







## KID\_CRAFTED

Through Rebel Ventures, Philadelphia students create tasty, healthy snacks for the Philadelphia School District.

The blended burger, Food Lab's longest-running project, had a bumpy start.

Getting the mushroom bottoms — the part of the stem that's below the ground — clean proved impossible. Then-student Andrew Rosenbach '16, who was interested in product development, even tried a wheat tumbler to no avail. The use of such scraps was scrapped.

Rosenbach took up another challenge. How much mushroom — by then a mix of button mushrooms and portabella stems — could be squeezed into a patty without it falling apart? (Food lesson: Mushrooms are mostly water, making it difficult to bind to the beef.)

"My big focus, as a food scientist, was to push the envelope," says the 26-year-old, now an associate staff quality assurance specialist for Reese's Peanut Butter Cups at the Hershey Co. "It was a science experiment for me."

Rosenbach tried sautéing the mushrooms and using eggs as a binder to achieve 70 percent mushrooms in a patty. But at that stage, he didn't care about taste, he allows. Enter Zeitz.

"She came and took that knowledge and turned it into something that tasted good," Rosenbach says.

By senior year, Zeitz had developed a way to dehydrate the mushrooms, which when ground up had a meat-like texture and held together with beef without binders. Her process also concentrated the flavor, boosting umami, or savoriness, a much-desired fifth basic taste after sweet, salty, bitter and sour.

As Food Lab manager, Zeitz strives for a take-chances vibe.

"Our students want to apply what they're learning in class from the beginning," she says. "Food Lab is a safe space to show their creativity." Students also gain talking points for co-op and job interviews, she adds.

Zeitz, too, pursues her own creativity. Last year, she completed her master's in education, with a focus on creativity and innovation, at Drexel. She also kept tweaking the blended burger, participating in 2016's James Beard contest, figuring out the right build of bun and toppings. Zeitz tried hundreds of combos before landing on the St. Lucifer jalapeno spice blend that she developed mixed with sour cream plus fried onions (Cutler "sells a lot of onions," she says) and lettuce. She calls it the Green Dragon Burger. (See? We promised a dragon in this story.)

In January 2018, Zeitz served the creation at a meeting of Comcast Spectacor general managers in Florida. It was a hit.

"I was doing it all by hand, roasting the mushrooms, grinding the meat, mixing them together, pattying it, packaging it," she says of the days-long process of preparing hundreds of pounds for overnight shipment. "I did this thousands of times — these two hands."



On Friday last fall, Food Lab is in full swing in the bakery kitchen. Despite its name, there is not a dedicated lab or building. (As Drexel's Trout says, "Food Lab is not a space, but a concept.")

Of five students, two slice old Bimbo bread and pastries, destined for bread pudding. Another tests an adapted muffin recipe. Two more refine Cook for Your Life recipes (cream puff with squash filling; quinoa bake with roasted veggies and arugula pumpkin seed pesto).

"It's kind of like Chopped," says sophomore Lauren Miller, referring to the TV show where chefs compete to cook with unusual items. "You come in and there's a bunch of ingredients. Hmm. What can I make?"

The culinary arts and science major spotted the arugula and decided to make pesto. A box of veggies — mushrooms, onions, cauliflower, all culinary class leftovers — led to the quinoa bake, which also includes carrot tops in an effort to reduce food waste.

"It's fun to be here with people who are interested in the same thing as you," Miller adds, between bouts of blending the pesto. "We do a lot of cool projects."

Nearby, fourth-year student Erik Ildefonso checks on the baking batch of pumpkin muffins made with soy protein isolate. The client is a homeless shelter in need of low-protein recipes for residents with renal disease.

"They feel a little moist," says the culinary arts and science major, letting the muffins go another five minutes. "Last time I made them, they fell apart. This is a second try."

This is Food Lab. "It's not like industry, where you have to already know everything," Ildefonso says. "You're free to make mistakes. You're free to correct yourself, and people help you, too."

Meanwhile, Zeitz tastes student work, troubleshoots ideas gone askew. She has readied a batch of blended burgers for a visitor to try. The moist, dark brown patty with specks of seared mushroom has a nice spring when a fork is pressed against it.

How does it taste?

Trout sums up the consensus: "It's delicious. It mimics an all-beef burger very nicely."

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ALLY ZEITZ

Over the years, many have tasted the Casanova Burger patty. Once, Zeitz made the recipe in a Kosher kitchen for Cutler, an orthodox Jew who is licensing the technology used to prepare the mushrooms. "It was amazing," he says.

Some samplers are pickier. A few wanted a softer chew, but that would require a binder — a no-no in Zeitz's recipe book. Some say too salty; others, not salty enough.

"I have a thick skin," she allows.

Comcast Spectacor plans to order "tons" of the patties, as Zeitz puts it, for a roll-out to the public at two casinos, a college stadium and fairgrounds. Happy Valley Meat Co., based in New York, will produce the patties.

"We think it's something people will like," Swiger of Spectra says. The plan is to offer a customizable menu of three patty choices (blended, Impossible and salmon) with different build options — for that gourmet experience.

As the debut nears, Zeitz is her usual low-key self.

"I've worked on it so long," she says. "It's nice to see it evolve." ✕

**EPILOGUE:** In February, Zeitz took a job as culinary developer for coffee company Saxbys, one of Drexel's major co-op partners in Philadelphia. She credits her experience managing Food Lab for the opportunity to spread her wings — a chance, you could say, at a happily ever after. Food Lab, meanwhile, continues on under the direction of Jonathan Deutsch.