

future food experiences

designing good food for the 21st century



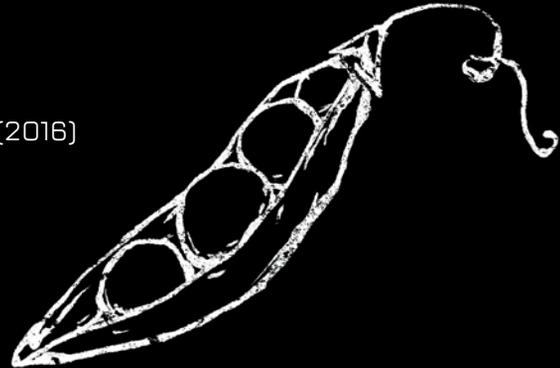
INSTITUTE FOR THE FUTURE

FOOD

FUTURES LAB | iff.org

“**Food Design** makes us explore food from a much more holistic perspective ... It forces us to question the validity and efficacy of the way we grow, process, cook, and eat food.”

–Dr. Richard Mitchell, International Journal of Food Design, Vol. 1 (2016)



The experience of food is an ever-changing sensorium of taste, smell, texture, and community. It's the experience of the farmer and soil scientist working together to cultivate a crop. It's the overworked volunteer team preparing 5,000 meals a day in a camp for climate refugees. It's the chef working with the biohacker to invent new proteins and the food retailer working with the VR game designer to reimagine how to shop for groceries.

Over the next decade, the landscape of food experiences will be transformed. Future forces will intersect with inspired design to reshape the entire cycle of food activity, from production, distribution, and manufacturing to shopping and eating. At this intersection, a great opportunity is ready for the harvest: The opportunity to combine futures thinking—which explores a range of possibilities, motivations, and aspirations for the future—with design tools to reinvent all our encounters with food and transform the food system. This map and companion toolkit will point the way.

PROVOCATIONS

from core zones of innovation

Food experiences have three things in common: a **human** engaging with **food** in a particular **context**.

Each is a zone of innovation, driving unexpected futures that will emerge as provocations for food design over the coming decade. Combining provocations across the three core zones of innovation will help you uncover possible new food experiences at the intersection of humans, food innovation, and changing contexts.



human

Humans are complex beings. We're constantly evolving and adapting as we move through life's stages and respond to rapid changes around us. In the next decade, we'll expand the known boundaries of what it means to be human, intervening in our own genetic activity and augmenting our bodies to amplify our perception of the world and connections within it. We'll adopt new approaches to food expression and rewrite our identities—one food experience at a time.



food

From animal-free meat options and AI-enhanced food to efforts to preserve indigenous cuisines, our food and food systems are in a period of rapid reinvention. We can expect to see a proliferation of approaches to encode resilience across the entire food system—integrating food informatics from farm to fork, adopting ecological mindsets to food production and recipes, shifting resources and skills, and rethinking the role of traditional institutions in community and global food systems change.



context

Context shapes all our food experiences. Even our physiology responds to context: alone or shared, in a loud restaurant or quiet field. Looking across radical shifts emerging around the world, from instability and volatility to automation and unconventional daily rhythms, it's clear that 21st century food experiences will happen in very different contexts from today. We'll create new eating and drinking occasions, new pathways and biozones for sourcing our food, and new strategies for ensuring safe, sovereign food in turbulent times.

PREFERENCES

to guide your design choices

The provocations point to new possibilities, but our motivations and aspirations will shape the kinds of futures we make. All future food designers may aspire to create a better future, but their aspirations, and those of eaters, can look very different. For some, a better future might mean reversing climate change through regenerative agriculture, while for others, it might mean feeding a family healthy food on a limited budget. A good food experience might maximize productivity at work, or be a celebratory gathering with friends.

We can sort these preferences into three archetypal approaches to designing the future: the pragmatic, the utopian, and the speculative. Each approach shapes the kinds of design choices we will consider, and each has its strengths and weaknesses. Ultimately, the most resilient food futures will balance all three.

As you create your own path for designing food experiences, immerse yourself in these three approaches. Use them to help you describe your preferred future, and the preferred futures of the humans involved in the food experience you're designing.

PRAGMATIC FUTURES

VALUE PRECISION, EFFICIENCY, AND SCALE

They work within constraints and repurpose existing assets. However, they're vulnerable to disruption, especially if too focused on incremental innovation and current metrics.

UTOPIAN FUTURES

VALUE COMMUNITY, INCLUSIVITY, AND SOCIAL JUSTICE

They seek idealism or sometimes even nostalgia. However, they can be difficult to scale and may require uncommon partnerships.

SPECULATIVE FUTURES

VALUE ADVENTURE, CREATIVITY, AND MYSTERY

They aren't afraid to challenge the status quo and break rules. However, their experimental nature can make them seem alienating, risky, or impractical.

PROCESS

blending futures thinking + food design

The future offers opportunities to invent new rituals, create new markets, pursue new goals, and even rewrite the rules that govern our food system. Combining futures thinking and food design can help you move beyond incremental product innovation to transformation, whether that means reaching a new market, reducing environmental footprints, or offering eaters healthier options. It can help you set ambitious goals and ground them in tangible plans and tactics that make things work in the short term. Blending futures thinking—which explores a range of possibilities, motivations, and aspirations for the future—with design can help you balance opportunities with constraints for more resilient approaches to food systems challenges.

Along your path to designing future food experiences, open the design aperture and take a food systems view by considering how your design fits into the full cycle of food experiences—production, distribution, manufacturing, shopping, and eating. How could these areas enable and amplify your design? What are the impacts of your pragmatic, utopian, and speculative design choices across the full cycle of food experience?



I'd like to suggest that with their newfound importance and power, designers also have much greater responsibility and in turn need to open the design aperture ... to take a broader view of the project they're working on, and to exercise design muscles they haven't used for awhile."

—Karel Vredenburg,
Director, IBM Design

Whether you're a food scientist or a farmer, a chef or a product designer, this map and the companion toolkit will guide you through forward-thinking processes to design good food in the 21st century. Use the four processes in this map and the companion toolkit to blend futures and design into a supercharged platform for food innovation:

EXPLORE the 12 design provocations and the signals that illustrate them to tune up your imagination about what's possible in the coming decade. Each provocation is a forecast of a future that you can tap into as you design new food experiences.

What new possibilities can I design with in this future?

REVEAL unexpected possibilities by combining provocations across the three core zones of innovation to uncover possible new food experiences at the intersection of humans, food innovation, and changing contexts.

What new food experiences will people seek where these futures meet—and who will create these experiences?

IMMERSE in the three preferences—pragmatic, utopian, and speculative. You might inherently favor one preference, but the most resilient futures will balance all three. Consider each preference's design principles to help you achieve this balance and accelerate the kind of change you want to see in the food system.

What do I want to accomplish in designing food experiences—and what design choices will achieve my goals?

PROTOTYPE a future food experience that balances the alternative preferences, keeping the larger systems view in mind. What would it take for you to make this future real? Ambitious future-making often requires reaching across boundaries—of teams, of organizations, of cultures.

How can I combine all these elements to create not only a new food experience, but also food systems transformation?



12 PROVOCATIONS

Twelve design provocations across three zones of innovation—**human**, **food**, and **context**—present a forecast of a future that you can tap into as you design new food experiences. Explore these below, as well as the signals that bring them to life on the inside of the map, to stretch your thinking about what's possible in the coming decade.



PROGRAMMABLE PHYSIOLOGY

Toward personalized approaches to nutrition & health

From the microbiome to the human genome, unprecedented information about our bodies has opened up new questions that are driving innovation. Our genes provide physiological instructions, but our epigenomes regulate how we respond to stimuli, much like a smart thermostat tracks internal humidity and external weather to determine when to heat. As we unearth complex interactions and their impacts on health and happiness, we'll seek new ways to program our epigenetic codes through diet, lifestyle, and synthetic modification. The next decade will bring demand for actionable personalized epigenetic information, but the inadequacy of early solutions will foster disillusionment as much as fuel efforts to uncover the next breakthrough.

AUGMENTED SENSORIUM

Toward a neuroscience of evolving sensory perception

Humans have only about 10,000 taste buds compared with a catfish's 175,000, and five times fewer olfactory receptors than the African elephant. Yet we have what neurobiologist Gordon Shepherd calls "a much more highly developed sense of flavor because of the complex processing that occurs in the large human brain"—a unique sensorium that processes information such as tastes and smells, along with cognition, emotions, and memories, to perceive flavor. Through neurogastronomy, an emerging field that explores the dynamic processes of flavor perception in the brain, we'll have the tools to develop rich multisensory food experiences that optimize the neural processes of flavor perception and can be shared with others and even experienced across distances.

WEARABLE DATA

Toward the body as landscape for food information & expression

From body art made from the jagua fruit in Central and South America to social media stars donning gastronomic hats, our bodies are a canvas for creating and sharing our food experiences. As the human body becomes a frontier of technology adoption, we'll embed computing power in devices in, on, and around our bodies to transform what we eat, how we track our health, and how we share these experiences. Advances in sensing technologies, epidermal and ingestible electronics, materials science, and cloud-connected hardware will enable these devices to fit seamlessly into our lives. We'll wear them for style and for function, passively providing a constant flow of biometrics. And they'll translate our biosignals and the aura of digital information that surrounds us into new forms of expression.

FOOD IDENTITIES

Toward food experiences that expand human connections

Humans are driven by a desire to be part of something larger than themselves. Food is a marker of both our belonging and our individuality. As we enter a decade of global disruption, hyperconnectivity, and food systems transformation, we'll enlist tools and technologies to mark our place in the world. New categories of food will rewrite the rules for edible identities, such as religious affiliation or veganism. Personal technologies with embedded streaming capabilities and virtual avatars will enable new strategies to cultivate and monetize our digital food identities. As social structures transform due to urbanization and the rising global middle class, we'll look to food experiences to stay connected with our roots as we venture into new territories.



COGNIFIED FOOD

Toward artificial intelligence for every food designer

Cognifying, as defined in Kevin Kelly's book *The Inevitable*, is the process of embedding intelligence into inert things, a technological force potentially "hundreds of times more disruptive to our lives than the transformations gained by industrialization." Cognifying will transform how we plant, harvest, manufacture, and cook foods. Even the smallest farms can already use precision agriculture and machine learning technology once accessible only to the largest players. Over the next decade, this will expand as we develop a systems-wide, standardized language for food informatics from farming to nutrition. And as we quantify the connections across the cycle of human food activity, we'll enable food designers to encode efficiency, personalization, and resilience across the food system.

ENGINEERED ECOSYSTEMS

Toward closed-loop food production systems

Climate disruption is already undermining traditional methods of food production, but our understanding and command of systems science is creating new pathways to simulate and design entirely new closed-loop ecosystems for food production. In the coming decade, a confluence of biologists, engineers, architects, and urban planners will merge their disciplines to build large-scale indoor growing systems that overcome natural limiting factors, such as sunlight, water, and growing seasons. They'll create the infrastructure for cellular agriculture, producing meat, milk, and eggs in large-scale bioreactors without any animals. For these and traditional agriculture, we'll simulate the ecosystem effects of changing even the smallest variables. The next decade will mark an historic transformation in how we organize our resources and skills to feed the planet.

SCALABLE FOOD JUSTICE

Toward anchor institutions as hubs of food system reform

Anchor institutions such as hospitals, schools, prisons, and corporations with large food-service programs are stepping up to overhaul food systems. Driven by rapid urbanization, climate change, and economic burdens of chronic disease that disproportionately affect low-income, minority communities, these institutions are transforming their procurement plans to source food locally and even grow their own food with environmentally resilient and socially just practices. From New York City to Brazil, we can already see a shift in how we design policies and business models to boost local economies and increase access to healthy food for vulnerable populations. Spreading promising practices into more institutions over the next decade will realign food and health priorities, support local food producers, and put institutional economic engines to work to make real strides in food justice.

REGENERATIVE RECIPES

Toward meals that cultivate resilient food systems

A growing movement toward regenerative business models makes it an economic imperative for environmental handprints (what is contributed to an ecosystem) to outsize the footprints (what is extracted). Food designers can reap short-term rewards while building long-term resilience by devising creative recipes that have net-positive impacts. Chefs will lead the way to increase eaters' literacy on the environmental impacts of a meal, while entrepreneurs will build manufacturing tools that harness fewer resource-intensive ingredients and reinvent the food supply web. In the coming decade, we'll develop new recipes and new business models for delicious food that nourishes people and the environment.



FOOD INSTABILITY

Toward innovation & improvisation for global food security

Climate volatility, conflict-induced migration, toxic environments, and income inequality form a global backdrop of food instability. Lack of trust, access, and reliable institutional remedies color food experiences throughout the food web. In the next decade, expect to see high-tech innovations in food tracking, monitoring, and purifying platforms and watch for improvisational foods—unexpected sources of nourishment produced by unexpected methods. Improvisations may be driven by nearby resources or self-organizing communities. Don't mistake these for small-scale solutions to local problems. In our highly-connected world, innovations and improvisations will create more resilient, sustainable food webs worldwide.

BRANDED BIOZONES

Toward new models to elevate food provenance

Industry associations for world-famous products like Champagne have protected their brands' name as a marker of quality and promoter of food tourism. Over the coming decade, new technologies create pathways to brand biozones in entirely new ways, from the microbial to the hyperlocal. Coined by Tender Greens founder Erik Oberholtzer, branded biozones will grow local food economies and reframe how we experience the origin of our food. Automated farming and cooking systems will lower the barriers to meeting local quality standards, while the ability to cultivate distinctive microbial communities will enable the creation of unique tastes and nutritional profiles. Beyond production, branded biozones will attract food tourists to experience the taste of place, virtually and in person, creating a rich zone for designing new experiences.

AUTOMATED RESTAURANTS & RETAIL

Toward self-managing food services

Meeting the needs of busy people scrambling to fit food into their lives has driven innovation for new food experiences. In the 21st century, the story of convenient food access will be rewritten by automation. Over the next decade, robots and algorithms will transform the way we access food on the go. Already, robots are cooking and assembling fast-food burgers, allowing for on-demand customization without sacrificing speed and efficiency. Automation is turning grocery stores into super-sized vending machines and food carts into self-delivering food services. As platform apps connect people to these services, the technologies will get smarter, and the experiences will become more streamlined and customized.

REMIXED RHYTHMS

Toward food personalized to changing daily schedules

When we eat has an impact on how well we do everything, from sports to concentrated work. Over the next decade, we'll fine-tune eating schedules according to our body's chronobiology to boost performance from creative problem solving to conflict resolution. As we tune up our gastronomic cycles, we'll create new occasions for eating—a break at a fermented food bar might be on the schedule to boost specific gut bacteria and the focused mood they support. Work and science aren't the only drivers of this rhythm remix. As people split workdays across multiple jobs, they'll find new, unconventional times to mix fun and food, not just for nutrition but to promote endorphins and oxytocin. Daily food schedule innovations will propagate across calendars, creating new weekly, monthly, and annual food rituals to celebrate.

human
zone of innovation

food
zone of innovation

context
zone of innovation

future food experiences

designing good food for the 21st century

human zone of innovation



PROGRAMMABLE PHYSIOLOGY

Toward personalized approaches to nutrition & health



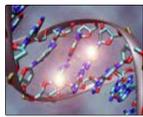
Commercializing epigenetic sequencing tools

In 2016, Cambridge Epigenetix raised \$21 million to develop epigenetic sequencing tools. If the regulatory and privacy challenges of direct-to-consumer genetics tools are any indication, these are likely to face hurdles in the coming decade.
TechCrunch, Cambridge Epigenetix



Programming human development with diet

A study of women in The Gambia found maternal nutrition and body mass index at conception predicts infants' epigenetic patterns.
Nature, image source: Rebecca Chesney



Designing synthetic epigenetic interactions

Duke University bioengineers are developing synthetic epigenetics, the design of artificial epigenetic pathways to regulate gene expression for intended outcomes. The researchers suggest that the CRISPR/Cas9 genome editing tool could allow for targeted changes at multiple sites simultaneously.
Clinical Epigenetics, image source: Wikimedia



Optimizing flavor perception through neurogastronomy

In 2015, chefs teamed with food technologists, neuroscientists, and physicians to create a meal that would taste good to people experiencing taste and smell alterations caused by chemotherapy. Such efforts could make for more intense or entirely new flavors even for people with their full sensory capacity.
International Society of Neurogastronomy



Training the senses with video games

Swedish researchers are combining brain-training video games with smells to improve the sense of smell and help change food behaviors associated with flavor perception and memory, such as managing cravings and encouraging children to try new foods.
Malmö University, Our Unique Sense of Smell research group, image source: Flickr User Kortini



Transmitting senses directly to the brain

DARPA is developing an implantable neural interface that will augment human senses by communicating between the brain's electrochemical language and digital bits and bytes to transmit high-resolution audiovisual information—and potentially smells and tastes—directly to the brain.
DARPA, The Next Web, Newsweek

AUGMENTED SENSORIUM

Toward a neuroscience of evolving sensory perception

WEARABLE DATA

Toward the body as landscape for food information & expression



Informing with temporary body art

The Soba Allergy Tattoo Checker, a temporary tattoo featuring Japanese artistic motifs, enables tourists in Japan to check for a buckwheat allergy before eating soba dishes, pointing to a future in which body art embedded with epidermal electronic sensing and transmitting capabilities enable insights at the moment they're needed.
J. Walter Thompson, image source: spoon tamago



Counting calories with intelligent wearables

AutoDietary, a device developed by engineers in the U.S. and China, uses a microphone worn near an eater's neck, a library of chewing sounds, and an app to algorithmically detect the food its wearer chews with about 85% accuracy and estimate calories consumed.
IEEE Sensors Journal



Visualizing personal data with conductive materials

The EighthSense jacket is made with conductive fabric that changes color based on electrical brain activity transmitted from an EEG reader attached to the wearer's head. Imagine a restaurant using tablecloths that change color throughout a meal, or packaging materials that reflect your mood.
The Unseen

FOOD IDENTITIES

Toward food experiences that expand human connections



Biodesigning new kosher foods

New Wave Foods, a startup engineering a shrimp substitute from plant proteins and algae, has found an unexpected market—people following a traditional kosher diet. Reinventing foods and production methods will open new options as we seek to align our tastes with our beliefs and cultural identities.
Newsweek, New Wave Foods



Streaming meals to virtual communities

AfreecaTV is a platform that South Koreans use to livestream their meals, redefining the sociality of eating. Some broadcasters become digital superstars, earning enough money from devoted fans to quit their traditional jobs.
Fusion, BBC



Investing in agrarian roots

In a country where owning cattle is a symbol of wealth and prosperity, Johannesburg-based Livestock Wealth allows new urbanites to invest in rural cattle and stay connected to their farming roots.
The Guardian, Livestock Wealth

food zone of innovation



COGNIFIED FOOD

Toward artificial intelligence for every food designer



Analyzing plant development with pragmatic AI

Tel Aviv-based Prospera uses computer vision and deep learning algorithms to help farmers analyze plant development and optimize water and nutrients at the scale of a small field.
agweb.com



Building an ontology for food informatics

The uc.Eating ontology, developed by Dr. Matthew Lange at UC Davis, seeks to create a food systems-wide, standardized ontology for health, nutrition, food science, agricultural, and environmental data.
github.com



Training robotic cooks with AI

Zoe McCarthy, a researcher at UC Berkeley, is using a combination of virtual reality and motion capture technologies to train robots to complete human tasks. With the addition of AI, these systems will be programmed for human-like reflexes. Zoe suggests the first application could be for training robots as cooks in homes, factories, or restaurants.



Building bioreactors at scale

University of Bath's Marianne Ellis is creating a program to understand the fundamental biological requirements of scaling cultured meat to enable modeling of the energy inputs and outputs, safety, and costs of cellular agriculture—calling for a multidisciplinary engineering approach.
newharvest.org, image source: flickr user mjanicki



Growing a generation of indoor farmers

Square Roots trains young entrepreneurs to farm using climate-controlled hydroponic vertical farms the size of a shipping container that can produce the equivalent yield of two acres of land.
squarerootsgrow.com



Simulating effects of variables on agriculture

The Agricultural Production Systems sIMulator (APSIM) models effects of variables such as soil, climate, and management decisions for agriculture and was used at a 2016 conference in Pakistan to understand how to reduce deforestation and pollution while increasing small farmers' incomes.
breconder.com

ENGINEERED ECOSYSTEMS

Toward closed-loop food production systems

SCALABLE FOOD JUSTICE

Toward anchor institutions as hubs of food system reform



Implementing policies and infrastructure to scale regional food

New York City overhauled procurement policies, pledging to buy more local food for the 250 million meals it serves annually. A planned \$20 million distribution facility nearby will reduce bottlenecks between farmers and city eaters to help achieve the city's goals.
civilians.com



Tapping smallholder farms to feed schools

A 2009 Brazilian law requires that at least 30% of the budget for its 45 million daily school meals be spent on produce from smallholder farmers. This not only guarantees family farmers and cooperatives a local market but also helps expand land rights.
reuters.com, image source: sweetgreen



Farming for the city and an education

Paul Quinn College, an historically black college in Dallas, Texas, transformed its football field into an organic farm that provides food for city restaurants, jobs to help students pay tuition, and a hands-on education in local food systems.
weovermefarm.com

REGENERATIVE RECIPES

Toward meals that cultivate resilient food systems



Developing climate-positive dishes

The Perennial restaurant partners with farmers that follow regenerative practices to help reverse climate change, serving breads made with perennial grains and "climate beneficial beef" raised using carbon farming protocols.
theperennialist.com, civilians.com



Formulating new environmentally-friendly foods

The Not Company, founded by Chilean engineers, uses its Giuseppe artificial intelligence model to formulate animal-free foods that enhance nutritional availability for eaters but are better for the environment.
thenotcompany.com



Connecting home cooks to system-scale challenges

Hungry Harvest delivers boxes of produce that were rejected because of aesthetic imperfections to homes in the mid-Atlantic region of the United States.
hungryharvest.net

context zone of innovation



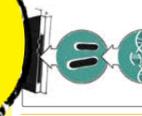
FOOD INSTABILITY

Toward innovation & improvisation for global food security



Titling land on the blockchain

BitFury is partnering with the Republic of Georgia to pilot a project to securely and transparently record land titles on the blockchain. An estimated \$20 trillion in untitled land worldwide includes vast tracts of arable land that's the foundation of the global food web.
Forbes



Ensuring food safety with microbes

The Arsenic Biosensor Collaboration at Cambridge University is developing an inexpensive, handheld microbial biosensor that detects arsenic in water—just one of many devices likely to empower individuals to test their own food and water.
arsenicbiosensor.org



Improving urban food by neighborhood

The Hood Health Handbook helps people living with the unique challenges facing low-income people of color in large U.S. cities to find and make healthy food while sustaining their livelihoods and identity.
The Source



Developing a local microbial terroir

A study by Hungarian and Chinese biologists entitled "How to assemble a beneficial microbiome in three easy steps" points to an emerging library of theoretical and practical frameworks for cultivating and potentially branding local microbial terroir.
Ecology Letters Journal, image source: Modern Farmer



Scaling farm-to-fork experiences

Can you replicate and brand the special relationships that chefs have begun to create with local farmers to produce farm-to-fork experiences at scale? Tender Greens is a chain of casual dining restaurants that's attempting to do just that with restaurants and farmers in four West Coast regions.
Tender Greens



Connecting eaters to places digitally

Even established brands are looking for ways to connect eaters to their local biozones. In 2016, McDonald's UK launched a virtual reality campaign, Follow our Foodsteps, to highlight young British and Irish farmers producing food for its restaurants.
Huffington Post

BRANDED BIOZONES

Toward new models to elevate food provenance



AUTOMATED RESTAURANTS & RETAIL

Toward self-managing food services



Automating fast food production

Momentum Machines is developing a first-of-its-kind robotic restaurant in San Francisco. The machines can slice ingredients, grill patties, and assemble up to 400 burgers per hour.
technoaid.io



Automating urban food trucks

In a project called Automon, a group of artists in Toronto conceptually prototyped the autonomous food cart that makes its daily circuit, delivering consistent, high-quality food to customers along its route without much human help.
Sophia Fresh



Automating grocery stores

Oasis 24seven in Des Moines, Iowa, is piloting a 260-square-foot robotic store that offers 800 refrigerated products that customers select via touch screen panels, bringing high-tech solutions to local food access challenges.
NBC News



Partying to jumpstart the day

Daily routines are undergoing reinvention with early morning sober raves. In over 20 cities from Bangalore to Sydney to London, Morning Gloryville club experiences combine sociality, dancing, yoga, coffee, and smoothies to prioritize a daily dose of exercise and fun.
Morning Gloryville



Syncing with bacterial schedules

Chronobiology—the study of the body's metabolic clocks—is rapidly evolving to provide a science of peak performance times for everything from livers and kidneys to individual bacteria in the gut. A 2016 study by University of Kentucky at Lexington researchers shows that these bacteria have their own circadian clocks that could affect how well people digest and metabolize food.
University of Kentucky, Lexington, image source: microbewiki



Eating solo on your own schedule

As daily schedules become more individualized, eating alone on your own schedule will become increasingly common. A pop-up restaurant in Amsterdam, called Eenmaal, is designed for solo eating only, breaking what some have seen as a taboo against eating alone in public.
Eater

REMIXED RHYTHMS

Toward food personalized to changing daily schedules

What food futures will you design?

The 12 provocations point to new possibilities, yet our motivations and aspirations will shape the kinds of futures we make. Exploring these provocations will immerse you in the three archetypal approaches to designing the future: **pragmatic**, **utopian**, and **speculative**. You may inherently be more comfortable with one approach, but resilient futures will balance all three. Consider each preference's design principles to help you blend futures thinking—which explores a range of possibilities, motivations, and aspirations for the future—with design to reinvent all our encounters with food and transform the food system.

PRAGMATIC FUTURES

VALUE: PRECISION, EFFICIENCY, AND SCALE

SIMPLICITY How can you simplify the complexity of the food system by making sure you're only showing the most important and relevant information?

ADAPTABILITY How can you build capacity for rapid prototyping and embrace feedback loops?

INCLUSIVITY How can you ensure accessibility to those with barriers to access—physical, social, or economic—and how might this create new possibilities for the mainstream as well?

UTOPIAN FUTURES

VALUE: COMMUNITY, EQUITY, AND SOCIAL JUSTICE

PARTICIPATION How can you increase creativity and accelerate change by engaging everyone from farmers to food technologists to eaters themselves?

IMAGINATION How can you tap into imagination by playing with new flavors and form factors or experimenting with new immersive technologies?

ANTICIPATION How can your design help people think beyond short-term gains to align present actions with future aspirations?

FOOD FUTURES LAB

IFFT's Food Futures Lab identifies and catalyzes the world-changing innovations that have the potential to reinvent our global food systems. We align the minds, innovations, and resources shaping the future of food with a long-term perspective. The Food Futures Lab challenges assumptions and reveals new opportunities to make a resilient, equitable, and delicious future of food.

INSTITUTE FOR THE FUTURE

IFFT is an independent, nonprofit strategic research group celebrating 48 years of forecasting experience. The core of our work is identifying emerging trends and discontinuities that will transform global society and the global marketplace. We provide insights into business strategy, design process, innovation, and social dilemmas. Our research generates the foresight needed to create insights that lead to action and spans a broad territory of deeply transformative trends, from health and well-being to food, technology, the workplace, and human identity.



201 Hamilton Avenue
Palo Alto, CA 94301
www.iftf.org



CC BY-NC-SA 4.0 | 2016 Institute for the Future. SR-1904

ACKNOWLEDGEMENTS

Authors: Rebecca Chesney, Rod Falcon, Ben Hamamoto, Sarah Smith, Kathi Vian

Peer review: Dylan Hendricks, Bradley Kreit

Map Design and Editorial: Robin Bogott, Jean Hagan, Trent Kuhn, Karin Lubeck, Lisa Mumbach, Robin Weiss, Carol Westberg

Program Management: Andy Keller

Business Development: Dawn Alva

Special Acknowledgements: Betti-Sue Hertz, creator of the Dissident Futures framework to explore pragmatic, utopian, and speculative approaches to the future.

Miriam Lueck Avery and Jan English Lueck for applying the Dissident Futures framework to food systems. For more, see English Lueck, J.A. and Avery, M. L., *Corporate Care Reimagined: Farms to Firms to Families. Ethnographic Praxis in Industry Conference Proceedings*, 2014.

