

The Local Culture of

BIOHACKING

in Savannah, GA



IDUS 711

Methods of Contextual Research

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What is Contextual Research?

Contextual research is a form of inquiry that uses various methods and tools to understand a culture's wants, needs, and goals from within the context of their day-to-day lives. The goal of contextual research is to reveal information through observations on behavior that otherwise wouldn't be articulated.

What is Ethnography?

Ethnography is the study of people's behavior systematically by deep immersion within an environment and culture. The purpose of ethnographic research is to develop empathy for a social group and understand the world from their perspective.

The Team

Project Scope

The Biohacking Team

Liza Battestin



MFA Design Management

Furkan Bozgoz



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Natalie Budiman



MA Graphic Design/Visual Experience

Cristina Morejon



MFA Design Management

Eugenia Perez



MFA Graphic Design/Visual Experience

Karan Shah



MFA Industrial Design

Peter Sharp



MFA Service Design

Project Scope

Week 1- 5

Data Collection

Documentation of Primary and Secondary Research
Applying tools and methods from 101: Design Methods

Week 6-7

Affinitization

Gathering all data sets with individual data points
Yellow stickies, Blue stickies, Pink stickies, Green

The Methods of Contextual Research class was tasked to study the local culture of Savannah, GA. The topic selected was Biohacking and the main assignment revolved around gathering data to affinitize and analyze for results of what is Biohacking and what it means in the context of Savannah, GA. The class was divided in three main phases that included: data collection of secondary and primary research then affinitization of mindsets followed by analysis and framing solutions.

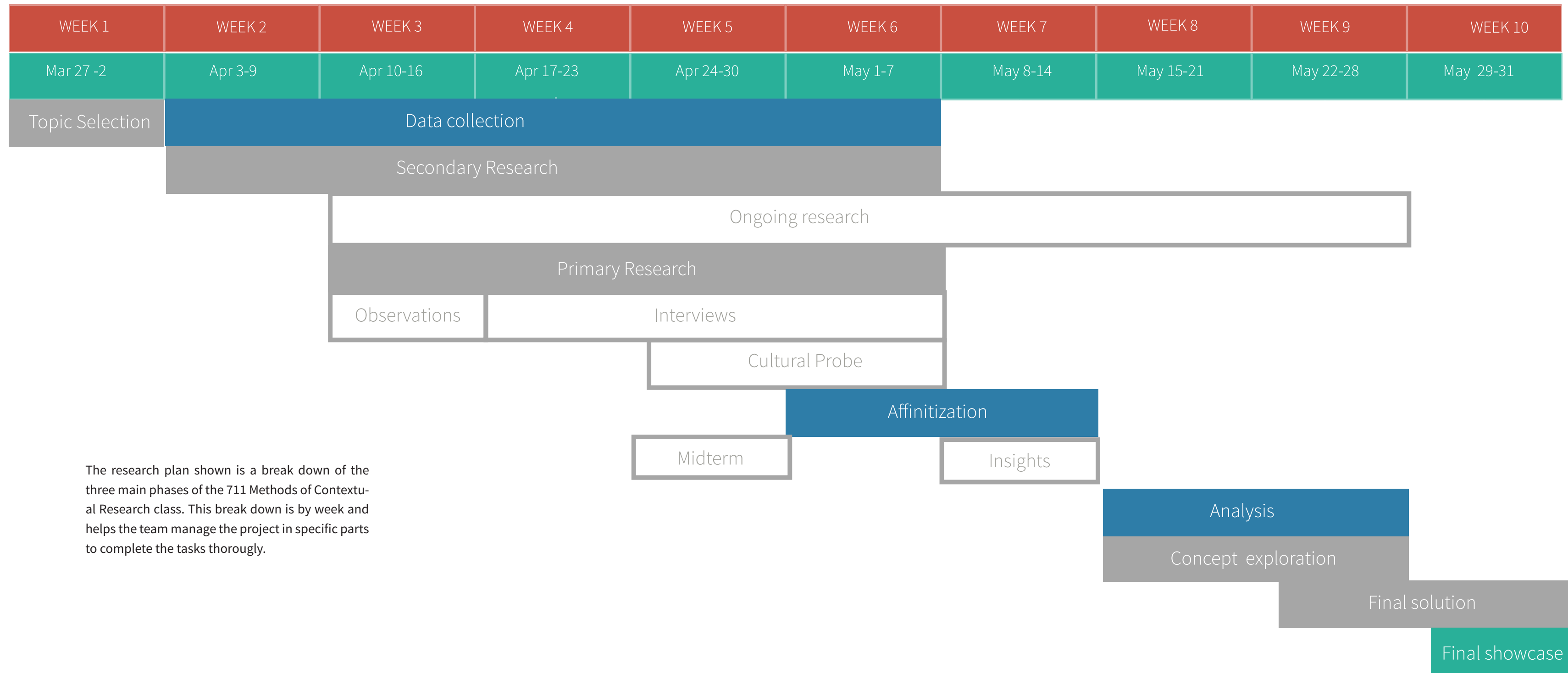
Week 8-10

Analysis

Exploring concepts, framing solutions
and realizingwww

Schedule

Research Plan



The research plan shown is a break down of the three main phases of the 711 Methods of Contextual Research class. This break down is by week and helps the team manage the project in specific parts to complete the tasks thoroughly.

Secondary Research

What is Biohacking?

Buzz Reports

Key Facts

Offering-Activity-Culture Map

Popular Media Search

Publications Research

Eras Map

Secondary Research

What is Biohacking?


Biohacking is the exploration and pursuit for deeper knowledge and control over biology, internally and externally, with the desire to improve humanity.

Secondary Research

Buzz Reports

Buzz Reports constitutes gathering information about what is trending from a wide array of sources such as news websites, twitter, facebook and what people are currently talking about in that moment. These buzz reports can help the team gather a feel for what is currently significant and encourages curiosity about latest developments.

#biohacking




Microchips implanted in hands

Some workers are electing to have a chip the size of a grain of rice implanted in their bodies to help them unlock doors, operate printers with the wave of their hand.

MakerspaceCT @MakerspaceCT · 8h

5 Labs including @LondonBioHack & @CounterCultLabs That Use #3DPrinting for #Biohacking Projects buft.ly/2ovr8Zz via @IHtsafari



3D Printing for Biohacking

Bioprinting for 3D organ transplants
Bioprinting for plant life

Nov 19, 2015

CRUNCH NETWORK

The Evolution Of The Biohacking Ecosystem

by **Geoffrey Woo**

Silicon Valley efforts in the biology and health domains have recently seen increased public interest because of the questions around the legitimacy of Theranos' technology and medical claims and the recent FDA approvals for a number of 23andMe's genetic screens. These data points are just two of the most visible examples of a broad ecosystem of companies and startups in Silicon... [Read More](#)




Beating Heart Tarot! @BTINGHEARTAROT · 4h

The future of medicine fascinates me. It is going in an amazing **biohacking** direction which is gentler than the current druggie stuff



Unicorn Wearable Uses Neuroscience to Help Kids

“Turning her attention to kids with ADHD, tech fashion designer Anouk Wipprecht teamed with researchers at Ars Electronica to create a playful, bio-sensing unicorn headset that keeps a watchful eye on what peaks their interest.”

-Ken Kaplan Executive Editor, iQ by Intel




Enhance Mind IQ

UNLOCK YOUR POTENTIAL WITH ENHANCEMIND IQ.

Natural Stacks

Top Nootropics for Each Unique Brain:



Top Nootropics for each unique brain:

1. LSD
2. Psilocybin
3. Beta hydroxybutyrate (Ketone salt)
4. Quaila
5. CBD Oil
6. Medicinal mushrooms
7. Methylene blue
8. Fasoracetam
9. Vitamin D
10. Modafinil

ADVERTURE @adventure · 4h




Flow Genome Project


@FlowGenome

Mapping the genome of human Flow by 2020 - The deep science of ultimate human performance.

📍 Surfing the Earth

🌐 flowgenomeproject.com

📅 Joined December 2011



The rise of the Vertical farm

Indoor farming that will not require soil, water or much sunlight.


<https://www.wired.com/2017/01/rise-vertical-farm-weeks-must-read-stories/>

CRUNCH NETWORK

The ethics of transhumanism

by **Christoffer O. Hernæs**

While many of the ideas of transhumanism are noble, the field is accused of sharing traits with eugenics. I can't answer the many ethical, moral and existential questions raised by transhumanism. All I know is that it's inevitable that advances in robotics, bionics, AI and genetics will affect the next phase of human evolution — we shouldn't underestimate the ethical... [Read More](#)



Secondary Research

Key Facts

Key facts anchor rationale for intent statements because they build credible foundations as well as facilitates quick and early discovery. Understanding key facts also helps the team cast a wide net and conduct research.

Biohackers of the world, unite

Biohacking: Democratisation of Science or just a Quirky Hobby?

European do-it-yourself (DIY) biology: Beyond the hope, hype

This Artist Is Biohacking The Body To 3D-Print Fantastical Human Bones

<p>Biohackers of the world, unite</p> <p>The Economist</p>	<p>European do-it-yourself (DIY) biology: Beyond the hope, hype and horror</p> <p>Bioessays</p>	<p>Biohacking: Democratisation of Science or just a Quirky Hobby?</p> <p>Labitech.eu</p>	<p>This Artist Is Biohacking The Body To 3D-Print Fantastical Human Bones</p> <p>Fast Company</p>
<p>Nearly 50 cities, mostly in America and Europe, are now home to groups of biohackers or amateur laboratories where they can meet and experiment. Besides Open Wetlab, these include Biocurious in Sunnyvale, California, Genspace in New York and La Paillasse in Paris. The number of biohackers around the world is anybody's guess, but the movement's main online-mailing list boasts nearly 4,000 members and is growing rapidly.</p> <p>The amateur labs are not yet very sophisticated, according to a recent survey of 359 members of the DIYbio movement by the Woodrow Wilson International Centre for Scholars, a think-tank. Most activities involve extracting DNA, for instance from strawberries. Only 13% of the biohackers have synthesised a gene and just 3% have genetically engineered a mammalian cell. Since biohackers often have a PhD, they probably did this in a professional lab.</p> <p>Not all the groups are focused on synthetic biology. In Europe, amateur biologists often work with artists and designers, says Markus Schmidt, co-author of a paper on European DIYbio.</p>	<p>The primary challenge for DIYBio Europe is the strict regulation of biotechnology by national authorities. Groups are well aware of the biosafety risks and several of them are starting the process to become a certified lab in order to be able to work with genetic engineering projects. Dutch DIYBio has been in the process of certification since early 2013, while La Paillasse and BiologiGaragen are planning to enter the process of certification. BioArt Laboratories has an assigned biosafety officer, and diybio Singapore gets advice from trained professionals. Until now, only Irish biohacker, Cathal Garvey, has successfully obtained a license to carry out</p>	<p>In 2013, the very first survey on DIY Biology suggested the fears of biohackers are largely unfounded. According to the results, 92% of DIY biologists work at least some of the time in communal spaces rather than in their garages or basements... The spaces are composed mostly by young people — almost the 80% is under 45; and they do have some training, since 19% have attained a doctorate . Finally, only 6% claim that their research could possibly cause human diseases.</p>	<p>For Regenerative Reliquary, she is hacking bone cells to 3D-print intricately designed hand-bone replacements. Karle calls her project a fusion of generative art and regenerative medicine, the idea being that the two disciplines don't have to be so philosophically and practically distinct.</p>

Secondary Research

Offering-Activity-Culture Map

The offering-activity-culture map explores innovation opportunities by shifting focus on offerings, activities and culture. Some of the benefits of this includes broadening the mindsets and helpful for visualizing information.

Physical

Health

Nutrition

Outdoor

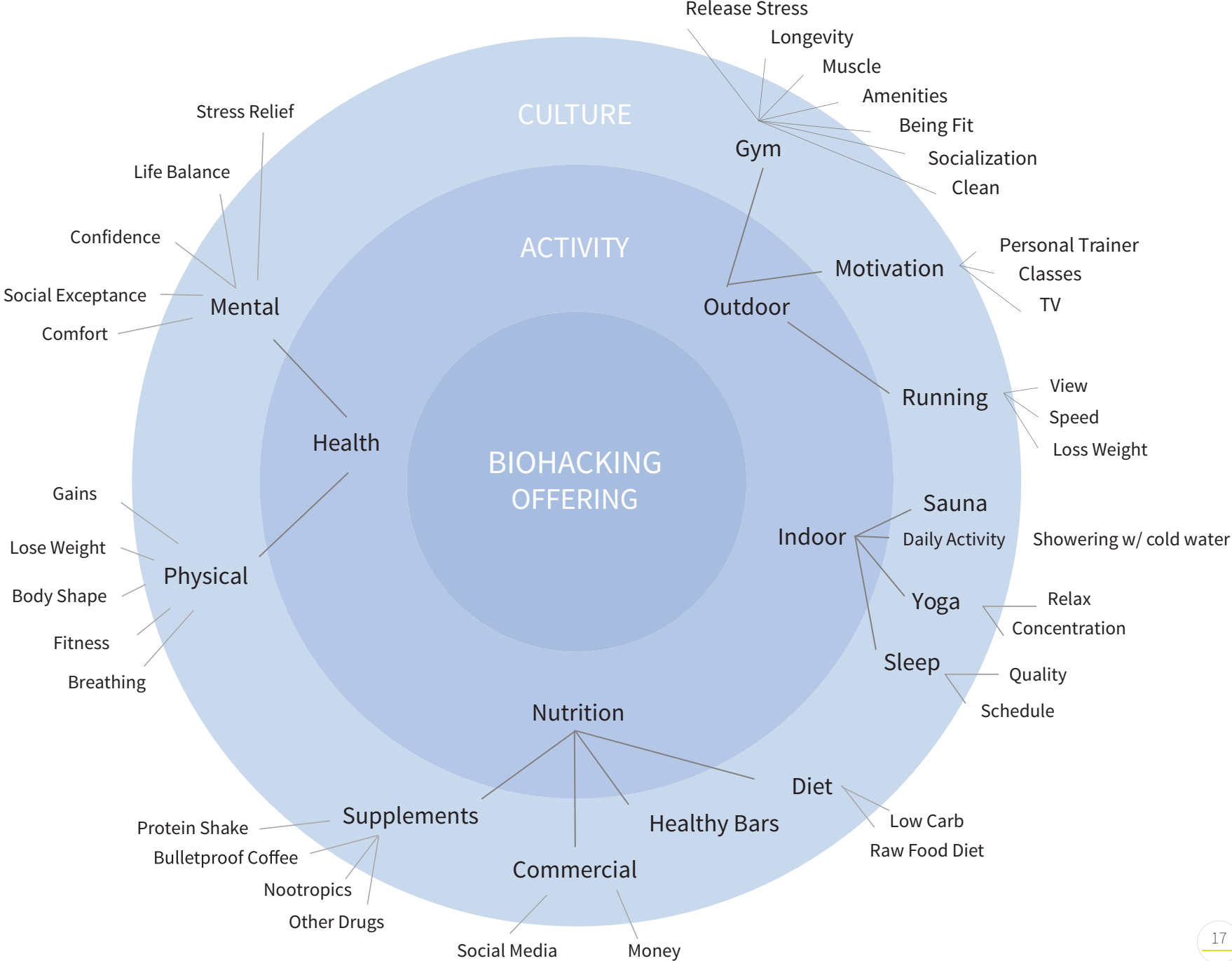
Mental

Gym

Running

Motivation

Indoor



Secondary Research

Advanced Gene Sequencing

Popular Media Search

The popular media search seeks to capture knowledge, promotes shared understanding and reveals cultural patterns. The objective of this exercise is to gather different kinds of information through scouting, web-based searches as well as library scans. It is also a summary of the range of opinions, ideas and influences tied to a context.

Implantable Biomagnet

Nootropics

Implantable transponders

Implantable Biomagnets for lifting

Electronic Biometric Data Gathering

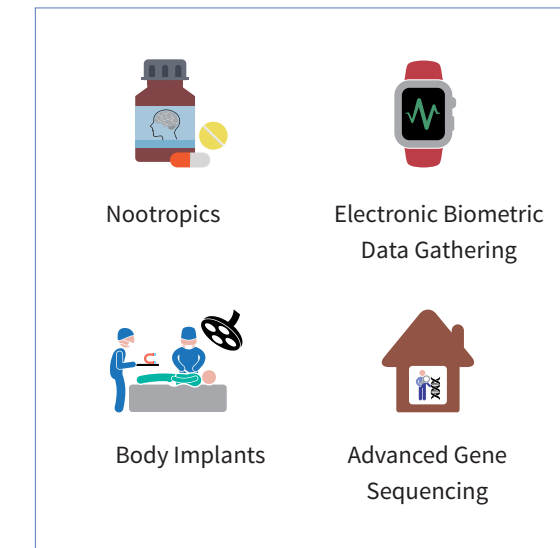
Body Implants

Implantable Long Range Transponders for digital interaction

What is Biohacking and what does it mean?

Biohacking is a way to experimentally tweak biological and genetic material to increase performance.

Using dietary, medical, physical or electronic control to increase cognitive, learning and physical performance, is common practice among biohackers.



Who is currently involved in the practice of biohacking? And How?

Dave Asprey is the founder of Bulletproof Nutrition Inc. which produces Bulletproof Coffee which enhances focus. He uses nootropic smart drugs to reduce ageing and enhance his brain and energy.

His daily dosage consists more than 10 different "health supplement" some of which are :

- Modafinils for focus, motivation.
- Racetams for increased thought quality and confidence.
- L-theanine (a tea extract) to increase reflexes, stress endurance.



Dave Asprey
Founder of Bulletproof Nutrition Inc.



Dave Asprey's stash of smart drugs



Timothy (Tim) Ferriss is an author, entrepreneur and public speaker. He is also listed in Fast Company's "Most innovative business people" list, Forbes magazine "Names you need to know" list and he is the 7th "most powerful" person on Newsweek Digital 100 Power Index of 2012.

He also practices biohacking and takes an organic approach to it.

He consumes :

- Creatine+Ubiquinol for enhancing memory, by promoting mitochondrial regeneration.
- Lions mane extract with coffee and natural extracts, these together increase alertness and focus.
- Yerba Mate a South American drink which has caffeine, theophylline and theobromine, stimulates the mind and increases concentration without the acidity caused by coffee.
- Exogenous Ketones these are to increase oxygenation which leads to deeper breathing and mitochondrial regeneration.

Secondary Research

What are other kinds of stimulants commonly used by young professionals?

Several young entrepreneur and professional enhance their creativity and increase stress endurance, using microdoses of psychedelics. These psychedelics are commonly LSD (lysergic acid diethylamide) or Magic Mushrooms (psilocybin mushrooms).

When taken in full doses these have a trippy mind altering effect.

Microdosing is about consuming one full dose of psychedelics in five or ten smaller doses over a period of time. The people who practice this method of biohacking believe it boosts their creativity and productivity during stressful work hours.

Steve Garcia is blogger who experimented with microdosing on LSD for fourteen days, he has documented his experience. His findings were astounding, he found it better than "Adderall". He also discovered that it can treat depression and migraines.

What are body implants? What are the uses and implication of augmented technology?

Augmented Technology and body implants mean essentially surgically implanting a device to enhance or develop a new means of sensing and interacting with the environment.



Implantable transponders for NFC Communication



Implantable Biomagnets for lifting



Implantable Biomagnet for sensing Electromagnetic Field



Implantable Long Range Transponders for digital interaction



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Secondary Research

Insertables

Hardware, Software,
Wetware

Publications Research

This method requires finding out what is being written and published about aspects of the context. Through this exercise it is easier to build a credible foundation and promoting a shared understanding of the information. Publications research requires sources of authoritative publications such as white papers, scientific books and topics relevant to the topic.

DIY

Synthetic Biology

Citizen Science

Open Science

Publication Research

Date	Title	Author	Category	Publication Type
2017	Head Strong: The Bulletproof Plan to Activate Untapped Brain Energy to Work Smarter and Think Faster-in Just Two Weeks	Dave Asprey	Self-help	Book
2017	Towards insertables: Devices inside the human body	Kayla J. Heffernan, Frank Vetere, Shanton Chang	Open source transhumanism / Grinder	Scientific Journal
2017	Why Does All Biology Happen In Academic Or Industrial Labs? Mac Cowell, CoFounder Of DIYBio, Seeks To Change That	Greg Boustead	Description / Community / Garage biology / Home laboratory	Magazine Article
2016	Hardware, Software, Wetware: Cognitive Science and Biohacking in the Digital Humanities	Matt Hayler		Scientific Journal
2016	Biohacking and Citizen Engagement with Science and Technology	Marko Ahteensuu, Heike Blockus	Description / Community / Concerns	Scientific Journal
2016	Intelligent Subcutaneous Body Area Networks: Anticipating Implantable Devices	P.A. Catherwood, D.D. Finlay, J.A.D. McLaughlin		Scientific Journal
2015	Comparing Network Structures of Commercial and Non-Commercial Biohacking Online-Communities	Sipra Bihani, Michael Hartman, Florian Sobiegalla, Amanda Rosenberg	Description / Community	Scientific Journal
2015	The Bulletproof Diet: Lose up to a Pound a Day, Reclaim Energy and Focus, Upgrade Your Life	Dave Asprey (Bulletproof)	Self-help	Book
2015	Do It Yourself Biology: The Rise of Biohacking	Aakriti Jain	Home laboratory / Garage biology	Scientific Journal
2015	Biohackers gear up for genome editing	Heidi Ledford	Home laboratory / Garage biology	Scientific Journal
2014	European do-it-yourself (DIY) biology: beyond the hope, hype and horror.	Seyfried G, Pei L, Schmidt M	Community / Demographics	Scientific Journal
2014	Biohacking: Do It Yourself!	Anonymous	Home laboratory / Garage biology	Scientific Journal
2013	Biohackers: Politics of Open Science	Alessandro Delfanti		Book
2012	Tweaking genes in your garage: biohacking between activism and entrepreneurship	Alessandro Delfanti	Home laboratory / Garage biology	Scientific Journal
2009	The geneticist in the garage	James Bloom	Home laboratory / Garage biology	Newspaper Article
2008	As Synthetic Biology Becomes Affordable, Amateur Labs Thrive	Carolyn Y. Johnson		Newspaper Article
2005	Splice It Yourself	Rob Carlson	Home laboratory / Garage biology	Magazine Article

Secondary Research

Eras Map

The Eras Map serves as a timeline that allows you to create context as to the order of significant events in regards to the topic. It is useful to map changes over time, creates an overview and organizes information for easy access.

BIOLOGY

BIOTECHNOLOGY

SUPPLEMENTS

GENETICS

MEDICINE

VITAMINS

NUTRITION

IMPLANTS

MOVEMENT

The Eras Map

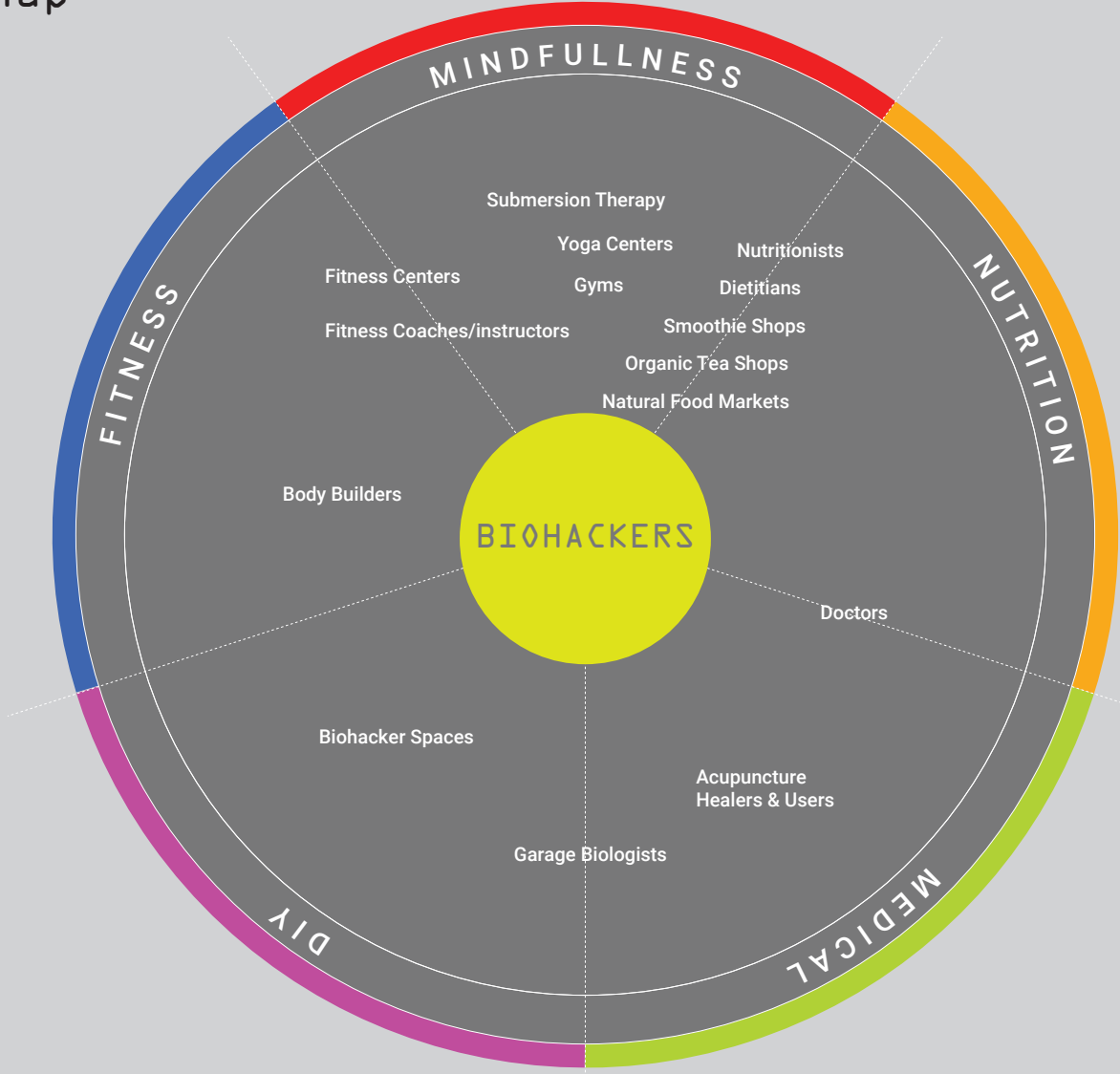
	NUTRITION	VITAMINS/ SUPPLEMENTS	BIOLOGY/ BIOTECHNOLOGY	MEDICINE	IMPLANTS	GENETICS	MOVEMENT
7000BCE-0	Egyptians create wine, Greeks develop plant breeding,	first consumption of coffee beans	fermentation, yeast, soy bean used as antibiotic		Dental implants		
0-1600s			first recording of living cells, discovery of bacteria and protozoa,				
1700s through 1800s			E coli discovered, chromosome discovered	First vaccinations developed	excision arthroplasty		
1900-1920			genes linked with hereditary disorders, bacterial viruses discovered	penicillin discovered			
1920-1940	crop modification (corn)				philosophy of transhumanism		
1940-1960				penicillin mass produced, first synthetic antibiotic	first pacemaker developed	artificial insemination of livestock	
1960-1980		nootropics			first pacemaker implanted in a human, drug delivery systems implanted	Recombinant DNA, and DNA mutation	posture practice, prevent old age mobility issues
1980-1990				insulin developed to treat diabetes (first biotech drug approved by FDA)	defibrillator implanted in body	PCR technique created	
1990-2000	First genetically modified food				first RFID implant for tracking	First gene therapy treatment, first cloning of dolly the sheep,	
2000-2005					cybernetic sensors implanted into arm		
2005-2010			DIYbio association created, first established group				
2010 - Current				Pharma hackers introduce EpiPencil	Rob Spence implants camera in eye		

Secondary Research

Stakeholders Map

The stakeholders map is a visualization tool that allows the ethnography team plan out all the stakeholders involved in the process. Understanding your key stakeholders you will be able to identify where they come from and what they are looking for in relationship to your business.

Biohacking Stakeholders Map



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Secondary Research

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PRIMARY RESEARCH

- Introduction to Primary Research ●
- Observations
- Interviews
- Cultural Probes
- Surveys
- Stakeholders Map

PRIMARY RESEARCH

What is Primary Research?

Primary research is immersing yourself in people's daily lives and listening without including your bias to gather valuable insight into the research topic. During this phase it is important to not create opinions but to just gather the data as objectively as possible. If you get ideas before the primary research is over you may put them in a "parking lot" where it can later be retaken however not during the primary research phase.

Primary Research

Mindset: Observing everything

Observations are a fundamental part of the research to understand people's behavior. In order to do it, people look at environments differently and step into an awareness zone, placing all into question. From it we can get answers such as what? with whom? when? where? but the ethnographer cannot make assumptions and know why just yet. Observations guide to important questions the team like to ask when interviewing to interpret observations.

The team observed several groups of people in participant and non participant observation which helped complete stakeholders map and lead to potential interviewees.

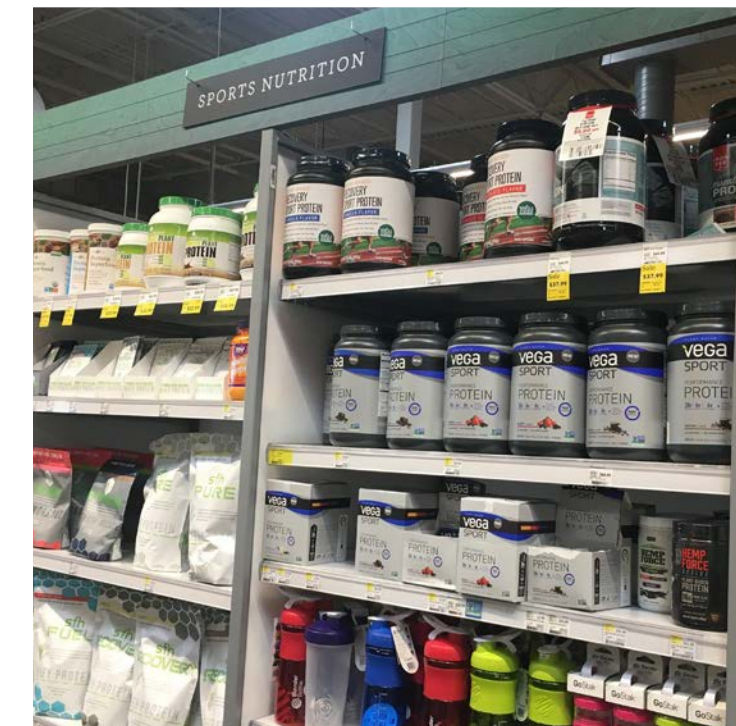
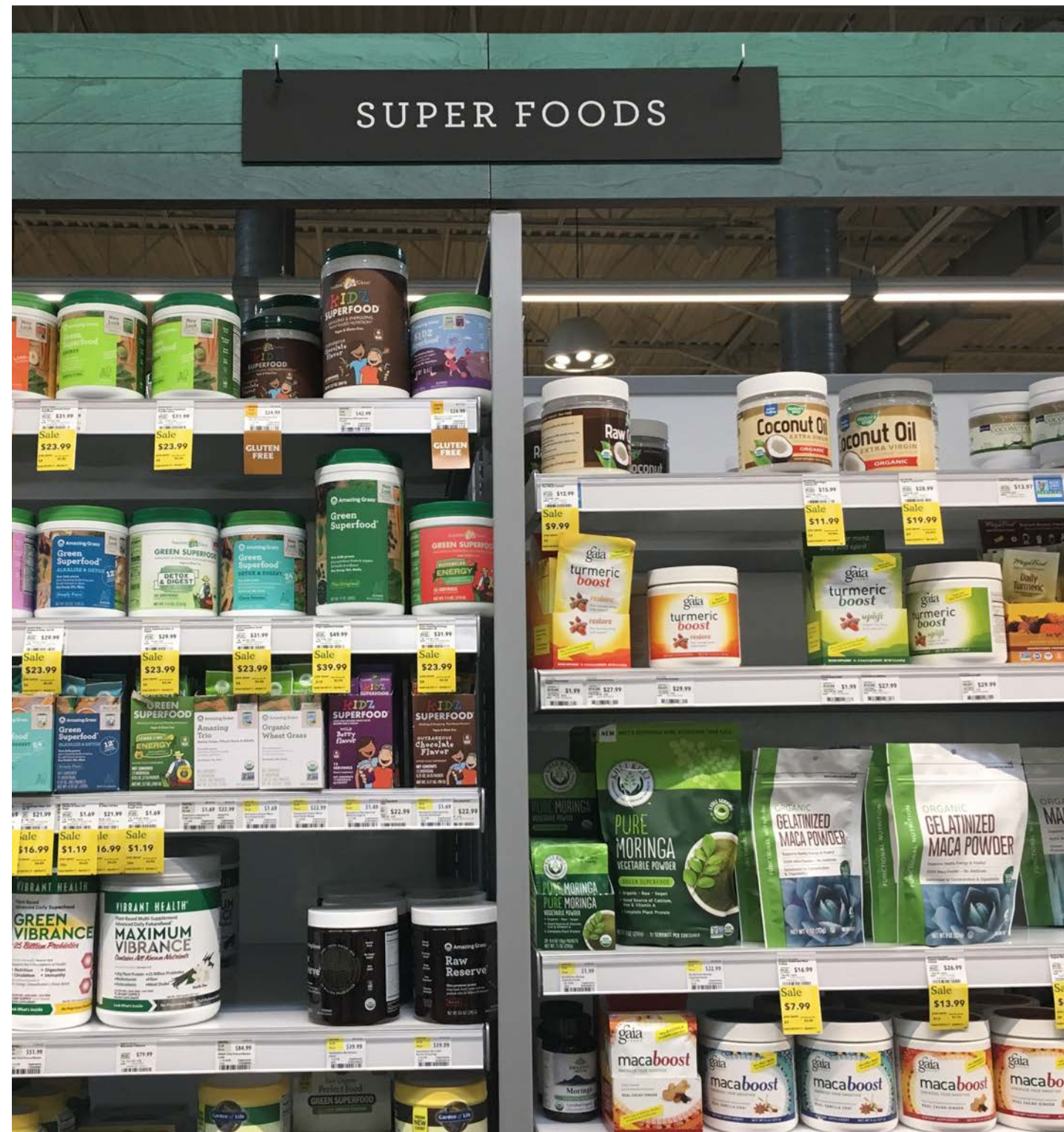
Places of Observation



Primary Research

Wholefoods

The Biohacking team chose Whole Foods because it is a shopping experience that sells the highest quality natural and organic products available. It nourishes its customers and supports team member excellence and happiness. An important factor is that they practice environmental stewardship and promote health of stakeholders through healthy eating education.



Primary Research

Live Well, Be Well Gulfstream Aerospace 5k and Health Fair

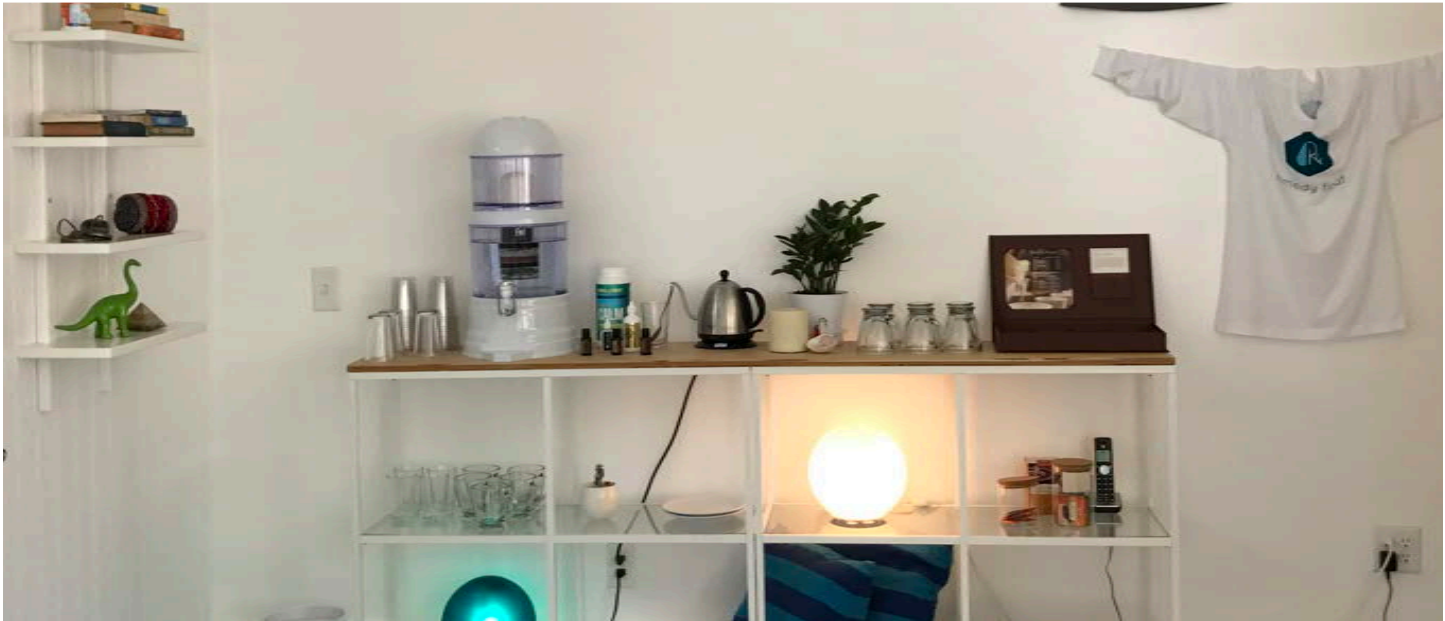
One of the Biohacking team members attended this event and was an active participant. This was a 5k race for awareness of wellness business in the local area of Pooler and Savannah, GA. Some of the booths that participated in the event was GNC, Kickboxing Savannah, available health coaching, Memorial Health Clinic and the YMCA.



Primary Research

Remedy Float

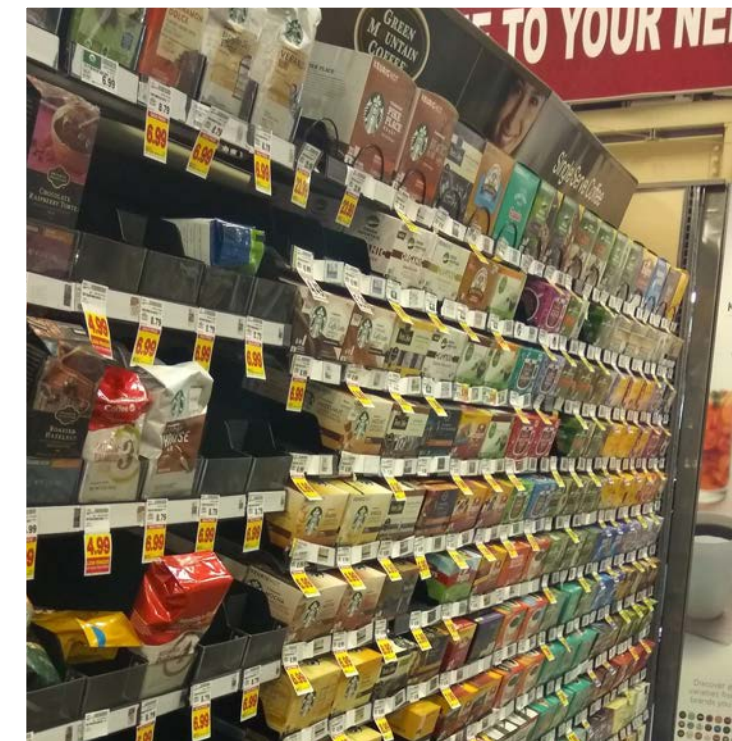
Remedy float is a space that contains isolation tanks called sensory deprivation tanks and is a lightless, soundproof tank containing magnesium sulfate. The magnesium sulfate relieves joint pain, reduces cortisol levels, supports mental health and serves as a meditative space.



Primary Research

Kroger Grocery Store

As part of our primary research we visited Kroger which is a grocery shop with a more traditional approach to shopping. It provides an organic section with a wellness section of shopping as well.



Primary Research

CVS Pharmacy

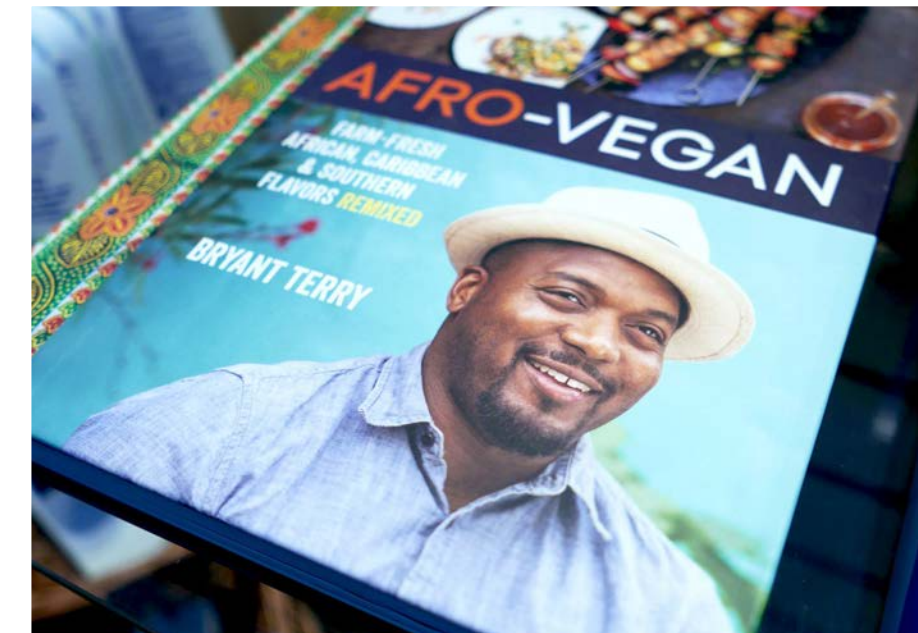
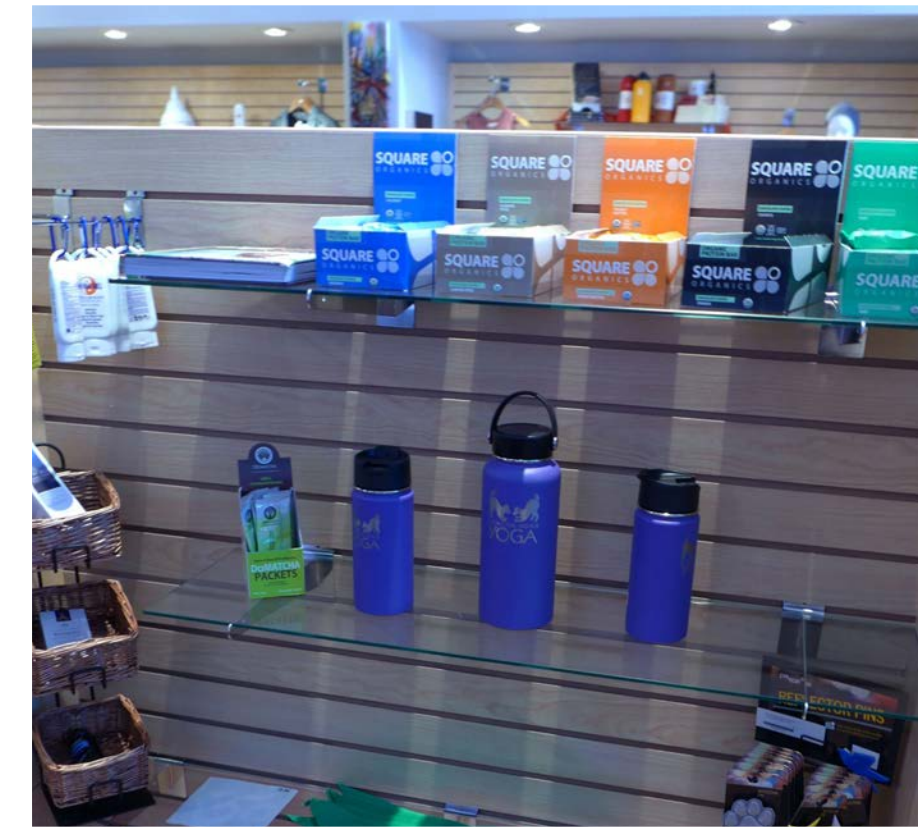
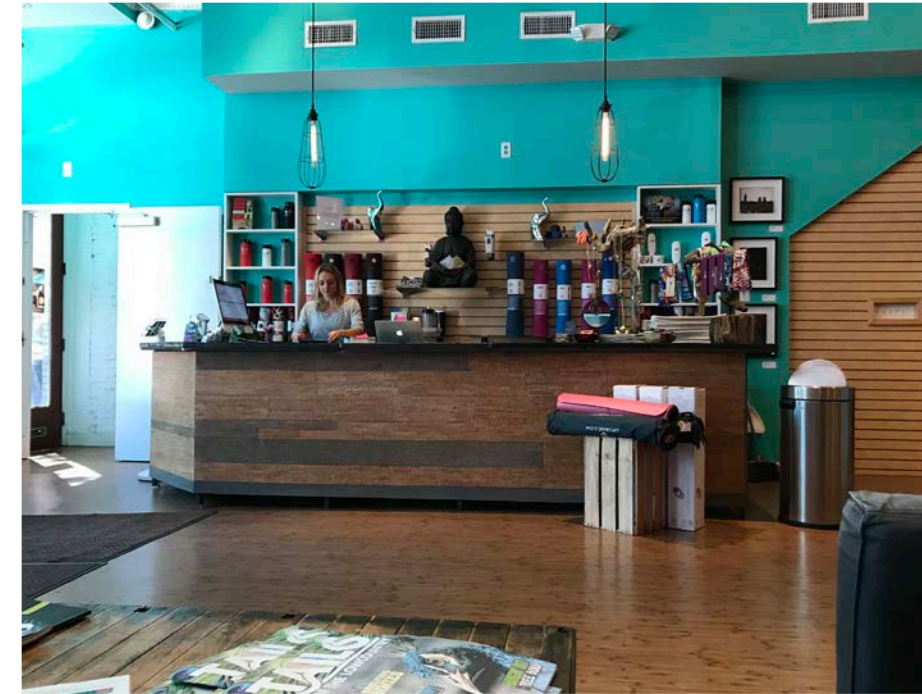
CVS is a pharmacy that provides prescription pharmaceuticals as well as a myriad of over-the-counter medicines and vitamins.



Primary Research

Beetnix/Dancing Dog Yoga

Beetnix superfood juice bar and Dancing Dogs yoga is a place where yoga is practiced and people are able to purchase healthy juices for their nutritional needs as well as organic food choices. It is a business that promotes a health based yoga community based on service, empowerment, outreach and practice.



Primary Research

Family Lab

Beetnix superfood juice bar and Dancing Dogs yoga is a place where yoga is practiced and people are able to purchase healthy juices for their nutritional needs as well as organic food choices. It is a business that promotes a health based yoga community based on service, empowerment, outreach and practice.



Primary Research

Interviews

Primary research is a method of inquiry where you directly gather data through your own empirical observations and interviews. We used primary research to dive further into the field of biohacking and gather qualitative information from experts in various fields, opinions of amateurs, as well as quantitative data on how the local culture in Savannah behaves in regards to their health and what they think biohacking is. We designed our research around accessibility and availability for the citizens of Savannah.



Primary Research

IN-DEPTH, OPEN-ENDED INTERVIEWING

“Exploratory interviewing is intended to expand the researcher’s knowledge of areas about which little is known.” -Schensul

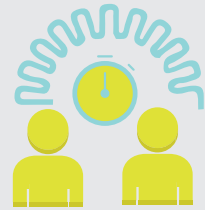
AIM

- › Explore undefined domains
- › Identify new domains
- › Break down domains
- › Obtain orienting information
- › Build understanding and positive relationships

INTERVIEWER’S CONCERNS

- › How does the topic relate to the large questions?
- › Stay on topic and if not, reintroduce the topic.
- › Logical connections the interviewee is making
- › Decide to pursue new ideas or directions.
- › Try to identify new terms.
- › Recognize if the interviewee’s ideas are clearly expressed.

WHO & WHEN TO INTERVIEW



WHO?

Knowledgeable key informants or cultural experts who are well informed.

WHEN?

Anytime a domain or a concept at any other level of abstraction calls for additional clarification.

ALSO

The major factors such as ethnicity, class, age or any other significant should be taken into consideration.

PREPARING FOR THE INTERVIEW



BE SURE TO

- › Revisit the study questions.
- › Make an appointment and identify a location.
- › Have recording supplies ready.

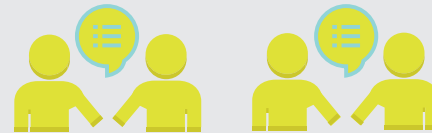
DURING THE INTERVIEW

Encourage additional information by:

- › Acknowledging their statements.
- › Repeating what the person said in a questioning way.
- › Asking for more information and clarification
- › Asking for an opinion
- › Asking for clarification of the meaning of a term

Also reconfirm the interview appointment if possible.

BEGINNING AN UNSTRUCTURED INTERVIEW



STEPS IN BEGINNING AN EXPLORATORY INTERVIEW

- › Introduce yourself.
- › Make sure to ensure their information is confidential.
- › Tell interviewees that their views are very important
- › Ask permission to record interviews.
- › Make them comfortable with appropriate small talk.
- › Be sensitive to their circumstances.

STRUCTURING OPEN-ENDED INTERVIEWS

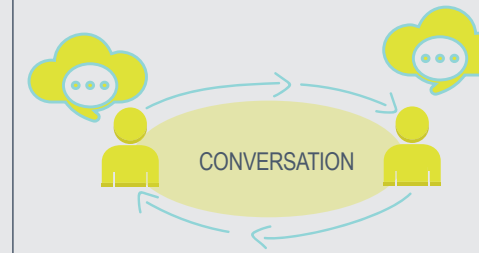


The apparent looseness of the open-ended interview is deceptive; a good ethnographer does extensive preparation for such data collection and has developed a set of general questions to guide the interview prior to beginning.

TIPS

- › Know about the local culture.
- › Keep your interviewee on track.
- › Ask for narratives of experience.
- › Make notes of points and ideas that are unclear.

SELF-MANAGEMENT DURING INTERVIEWS



- › Maintain the flow of the interviewee’s story.
- › Maintain a positive relationship.
- › Avoid interview bias.
- › Avoid prematurely determining the beginnings and endings of stories.

TIPS FOR MAINTAINING A POSITIVE RESEARCHER-RESPONDENT RELATIONSHIP

- › Having general cultural etiquette.
- › Avoid offering opinions.
- › Avoid showing surprise, disgust or other strong emotions.
- › Most people in most cultures offer food or drinks when they are interviewed, and refusing may insult your host.

RECORDING YOUR INTERVIEWS



Interviews can be recorded in three ways: written, taped and videotaped.

Writing brief notes that include reminders of both the questions the researcher has already asked and the answers given is the most typical way of recording an interview.

CREDITS

Schensul Essential Ethnographic Methods by Stephen Schensul, Jean J. Schensul, Margaret LeCompte

Liza Battestin, Furkan Bozgoz, Natalie Budiman, Cristina Morejon, Eugenia Perez, Karan Shah, Peter Sharp

ETHICS AND ETHNOGRAPHY IN DESIGN RESEARCH*

The evolution of design from making tangible things to designing services, processes, interactions and experiences has led to the increase of the awareness of the central role of social context.

QUESTIONS THAT SURROUND THIS ARTICLE ARE:

1. Have ethical concerns diffused along with ethnographic methods in design research?
2. Are ethics integrated into the education and training of designers?
3. What ethical guidelines, if any, are employed by practicing designers in planning and conducting research with human subjects?

7 CORE PRINCIPLES ARE DOCUMENTED IN THE 2012 STATEMENT:

1. Do no harm
2. Be open and honest regarding your work
3. Obtain informed consent and necessary permissions
4. Weigh competing ethical obligations due collaborators and affected parties
5. Make your results accessible
6. Protect and preserve your records
7. Maintain respectful and ethical professional relationships

*Lost in Translation? Ethics and Ethnography in Design Research by Christine Miller

6 Archetypes of Questions

CLOSED One data point, only one answer	OPEN Multiple answers
BRAIN - BASED ("think") Ex: "do" "what"	HEART - based ("feel") Emotive language Ex: "why" "how"
PROBLEM - BASED Past, people experiences, expertise	SOLUTION - BASED Future, what is possible? Vision, imagination

Heart - Based Questions

How might we create awareness about biohacking?

What does biohacking mean to you?

Do you feel biohacking creates benefits for society?

How do you feel about mainstream science and or pharmaceutical companies?

How do you feel biohacking spaces can change the future of science for society?

What drives people to upgrade themselves?

Where does the motivation to improve oneself's body come from?

To what extent are we all biohackers who try to improve ourselves?

Solution - Based Questions

If you could invent anything to improve or alter your health what would it be and why?

In 15 years every city will have their own biohacking space, how do you see the future of science changing?

What bio-technological advancements do you expect to happen in the future?

How do you see the biohacking community in 5/10 years?

Brain - Based Questions

How do you think biohacking is improving your quality of life?

What are the challenges that biohacking spaces face?
What is the role of biohacker spaces?

Why are bio hacker spaces, communities relevant/important?

How do you think having control over your biology could improve your quality of life?

How do you think D.I.Y. biology will change the future of personal health care?

Problem - Based Questions

How did you first hear about biohacking?

How do you improve your performance?

Who or what inspired you to pursue this knowledge?

How have these practices changed your life?

What are your motivations to start working on a lab?

Whose work do you admire the most and why?

What drives you to advocate for alternative methods to health over standard mainstream practices?

“Biohacking allows understanding the way things work, are created, how can be modified to generate other things and its impact.” **“The sense of community brings a lot of safety.”** **“I feel biohacking is a strong word that has a negative association, most of us want it to be for the greater good.”** “Understanding your own genetics helps you understand why none of these diet books work for everyone.” “We want to do things to improve life quality. If you are not doing something for life quality you are not doing biohacking you are doing bioterrorism which is different.” **“Biohacking is nothing else than open science focused in biotechnology.”** “IDEO is talking about this, how biomaterials can be used for designers. How can build systems to replicate the miles of biology.” “Is key to involve the community to experiment to try not only from the viewer point of view.” **“Whatever you might be going through with your health right now you probably have more control over it than you think.”** “Exercise is fundamental otherwise you won’t have an efficient sleep.” **“I feel disconnected from the world.”** “I feel very confident on adderall.”

Cultural Probes

Cultural probes is a technique to gather valuable information about people and their lives. It is immersed in a specific environment where users are able to interact with it. The main objective is to gather as many data points through a wide variety of data sets.

Some important aspects to consider when designing and implementing a culture probe are:

Drawing people in

Maximize authentic data sets

Clarity of instructions and context

Relevant core questions

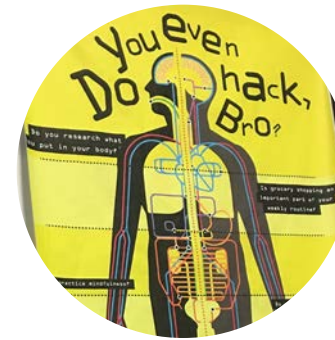
Interactivity and ergonomics

Provide a reward and thank you

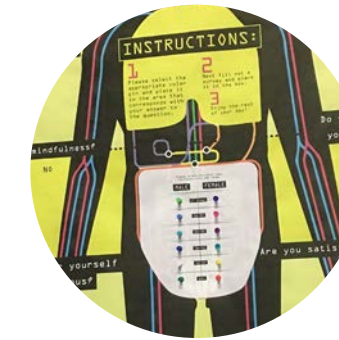
Contact and follow up

Maintenance and pride in design

Culture Probe Iterations and Prototypes



Prototype 1



Prototype 2



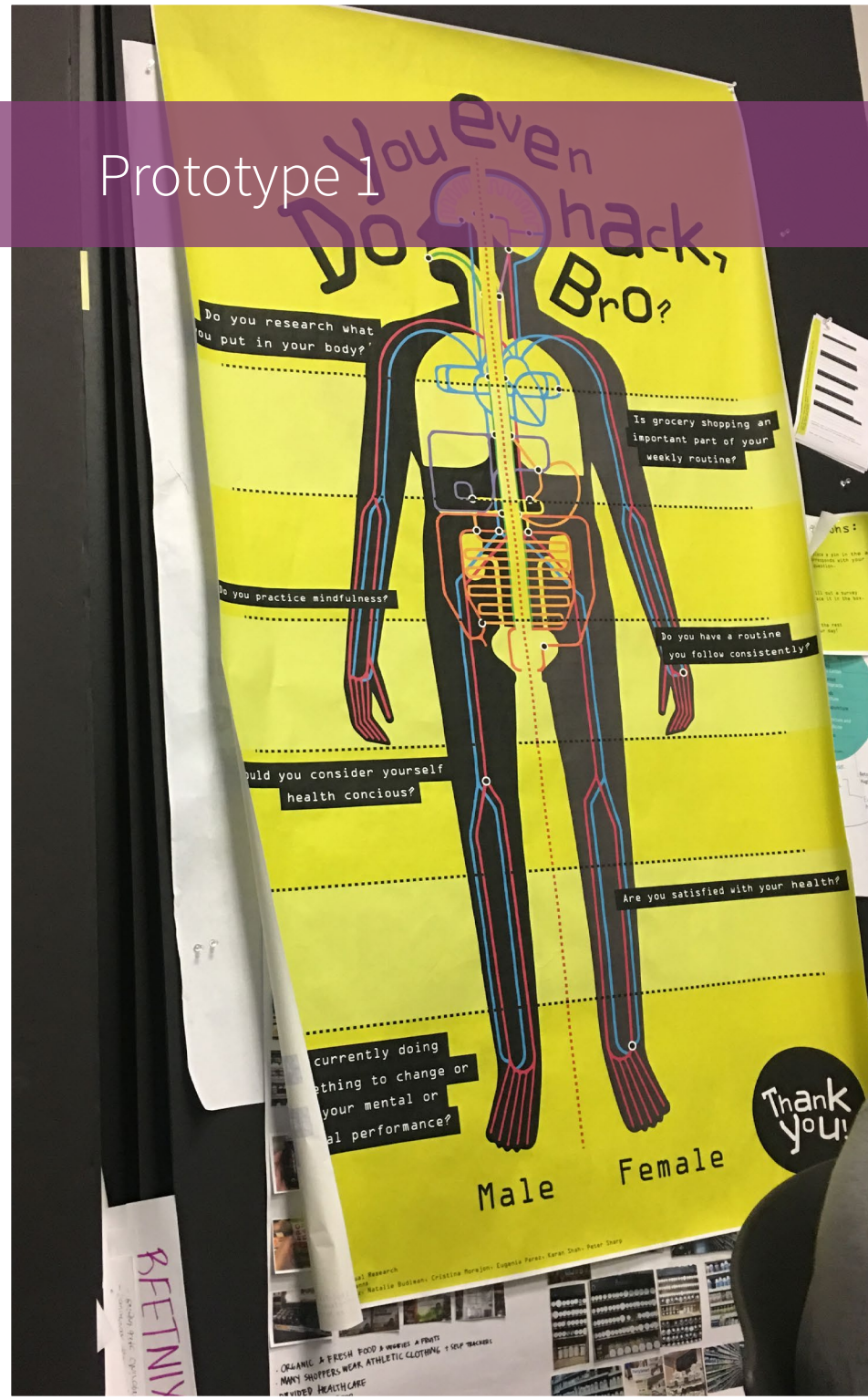
Prototype 3



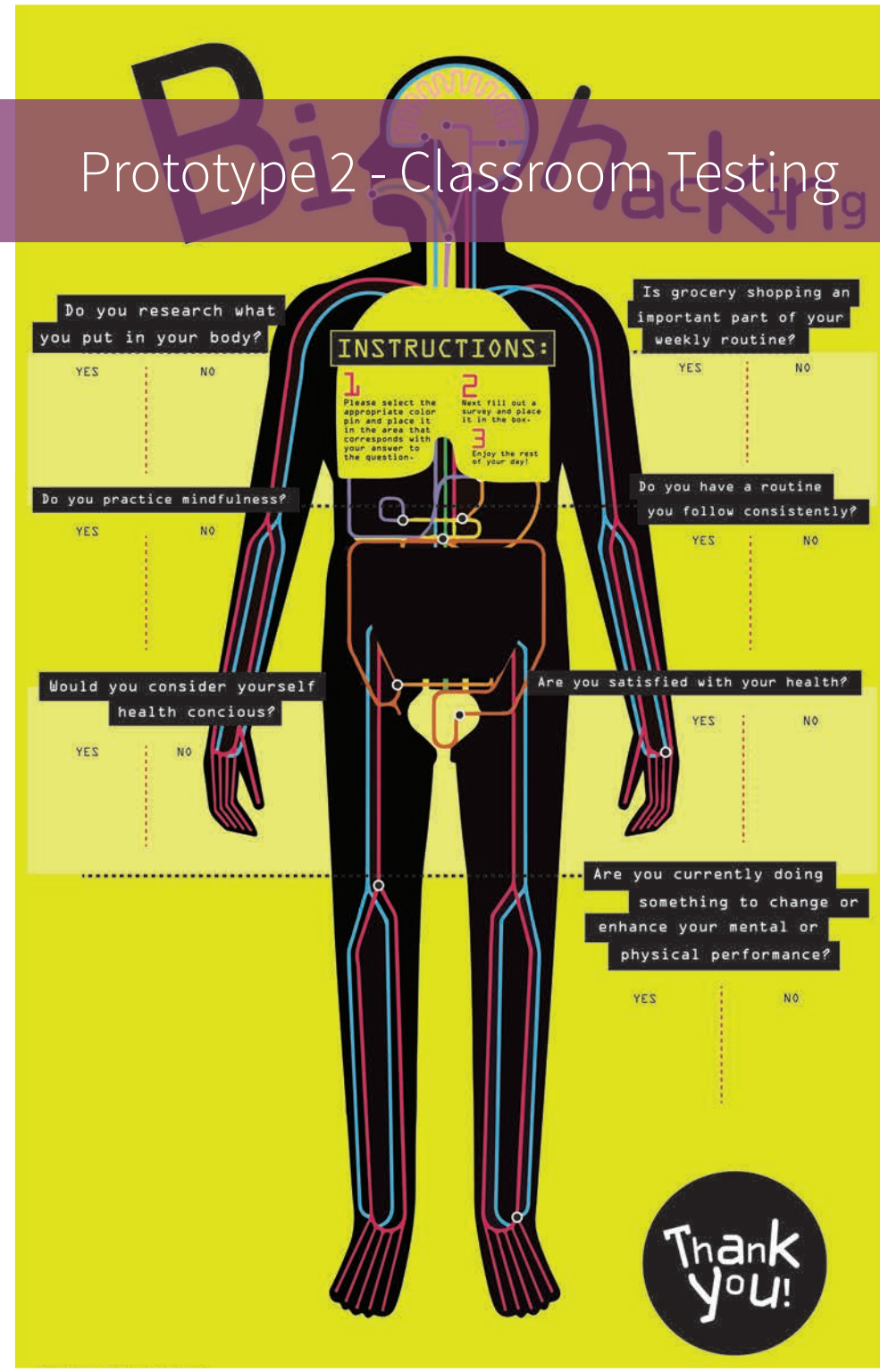
Prototype 4

As a team we created four iterations of the cultural probe before we arrived to our final solution. We found that several of our versions were not providing relevant answers to our topic or that it was difficult to interact with. The difference between the four prototypes seen above and the final prototype was the integration of several components that provided a clear journey for answering questions and for the team to gather hundreds of data points from several data sets.

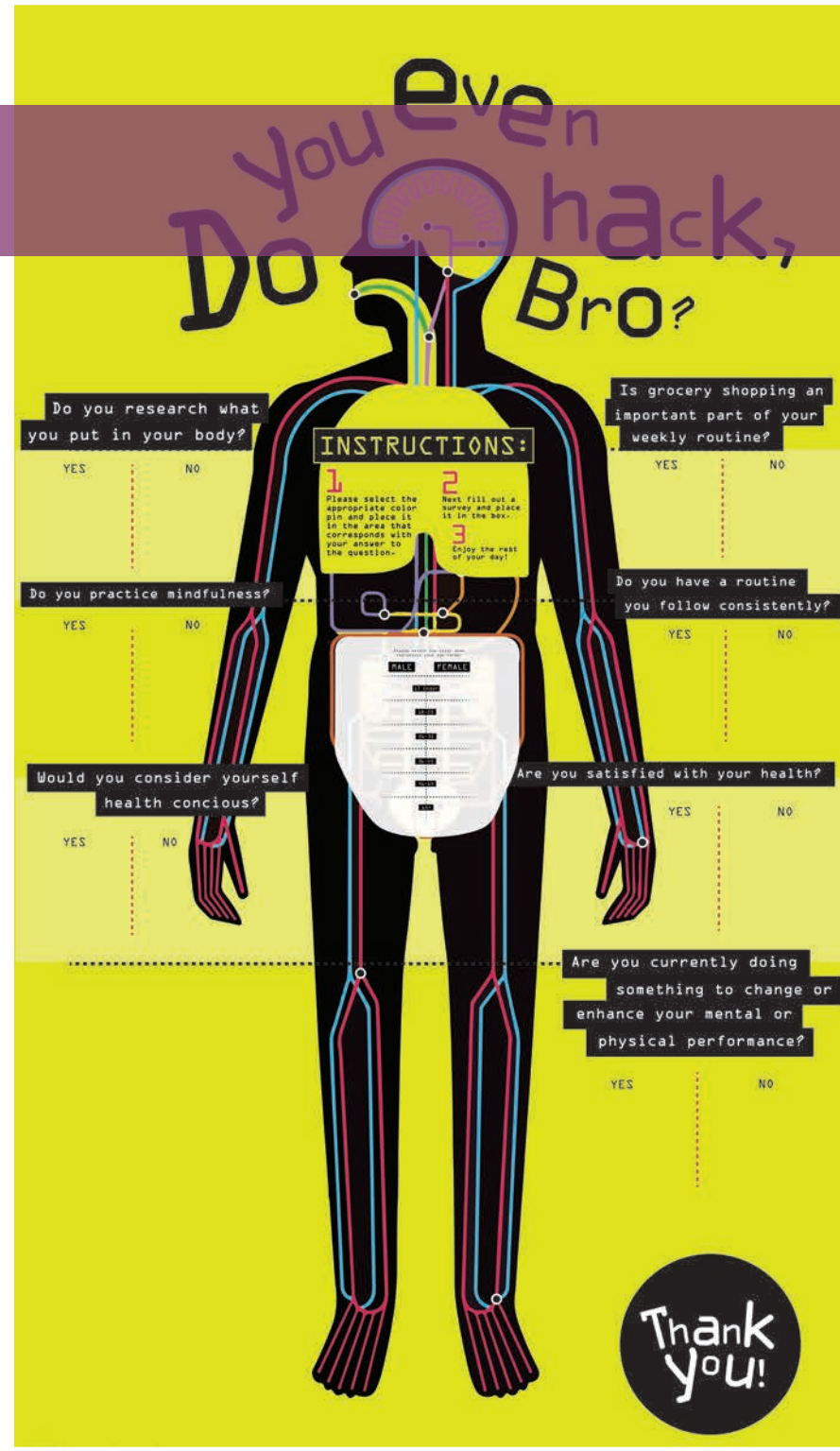
Prototype 1



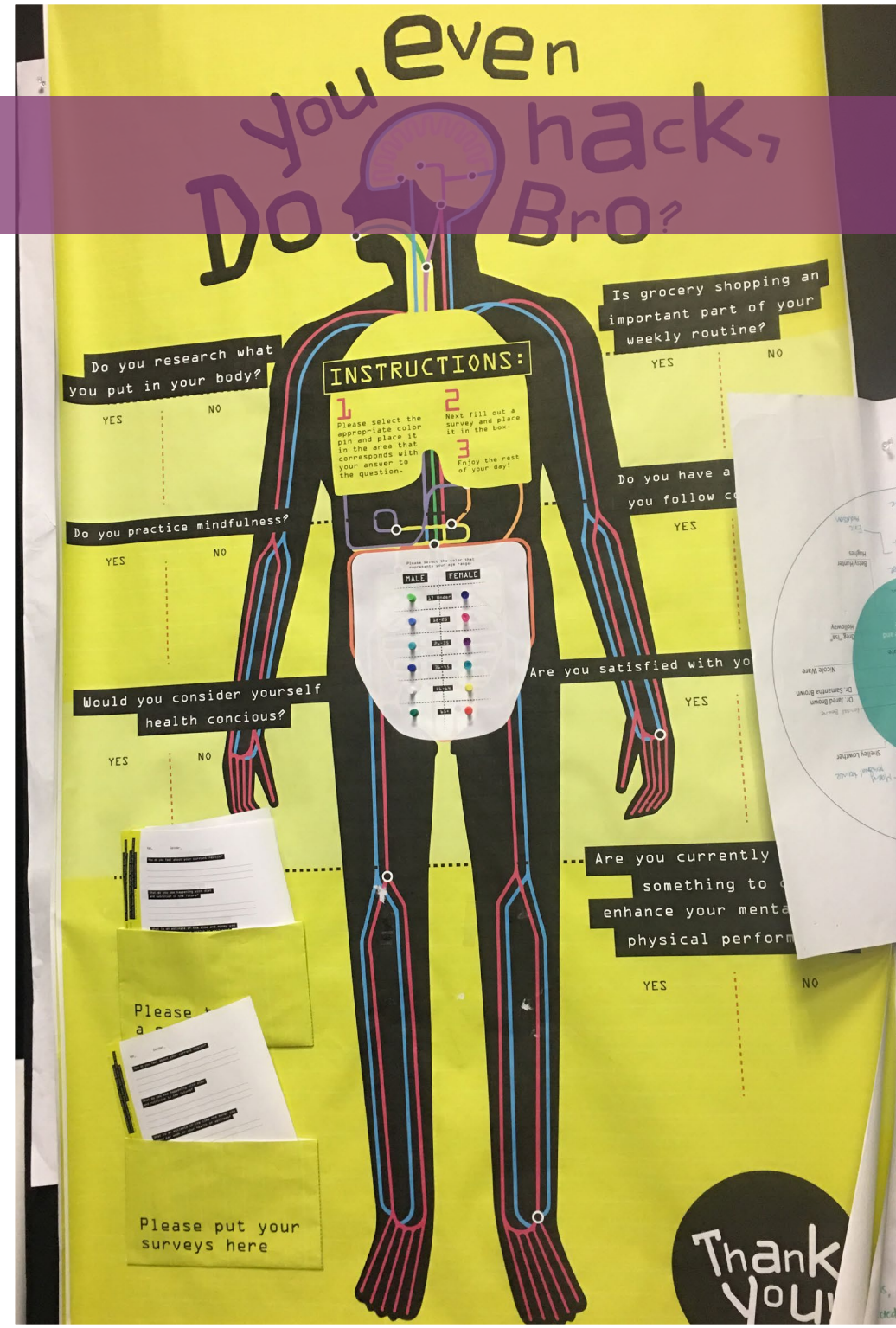
Prototype 2 - Classroom Testing



Do you even hack, Bro?

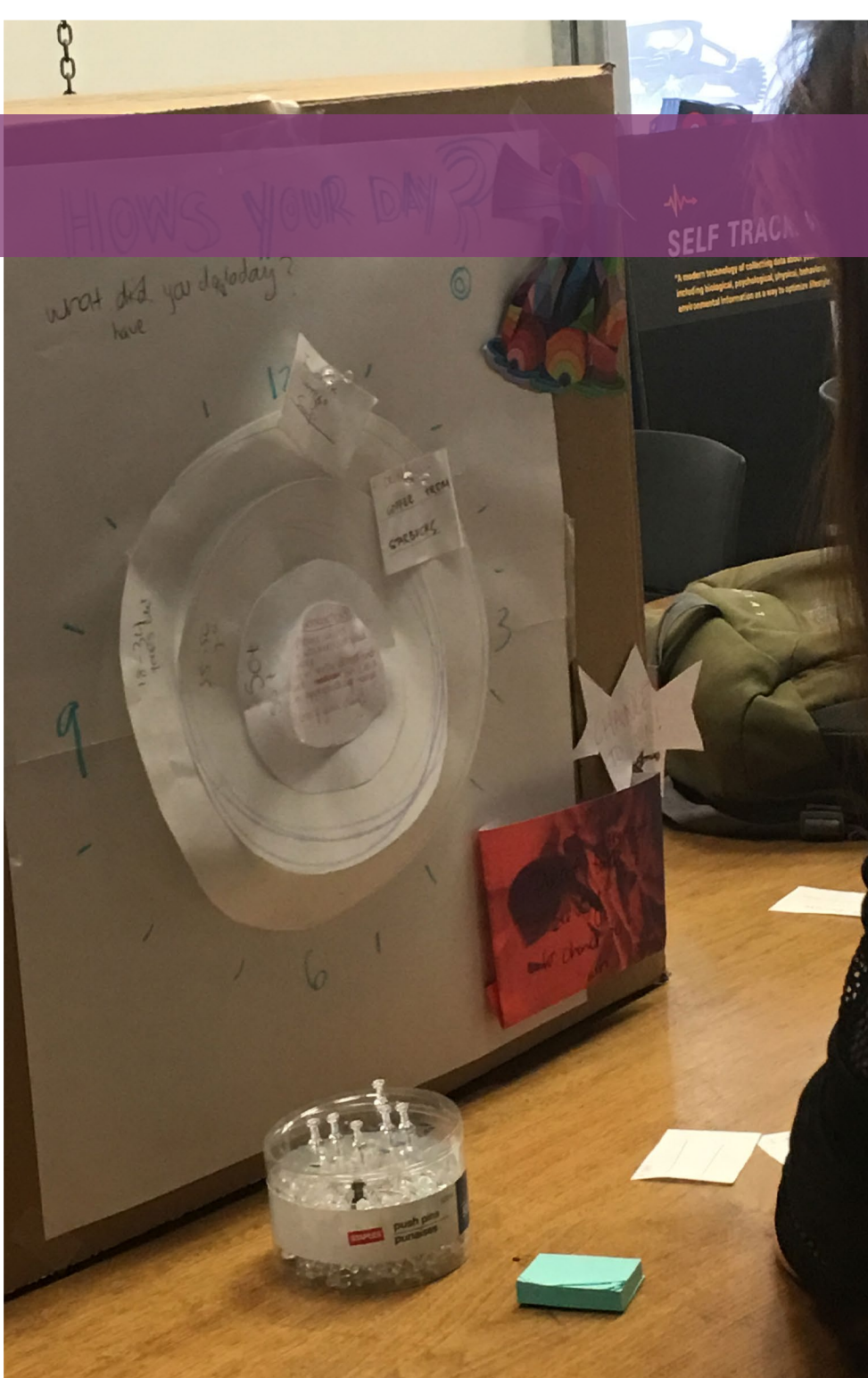


Do you even hack, Bro?

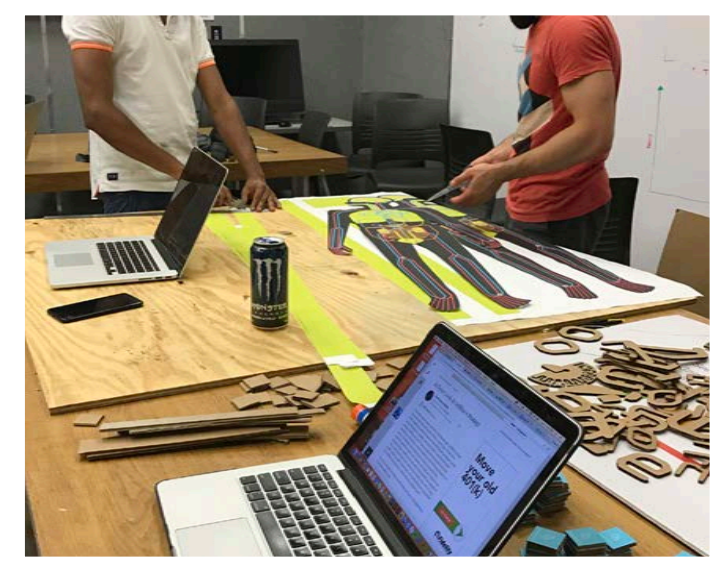
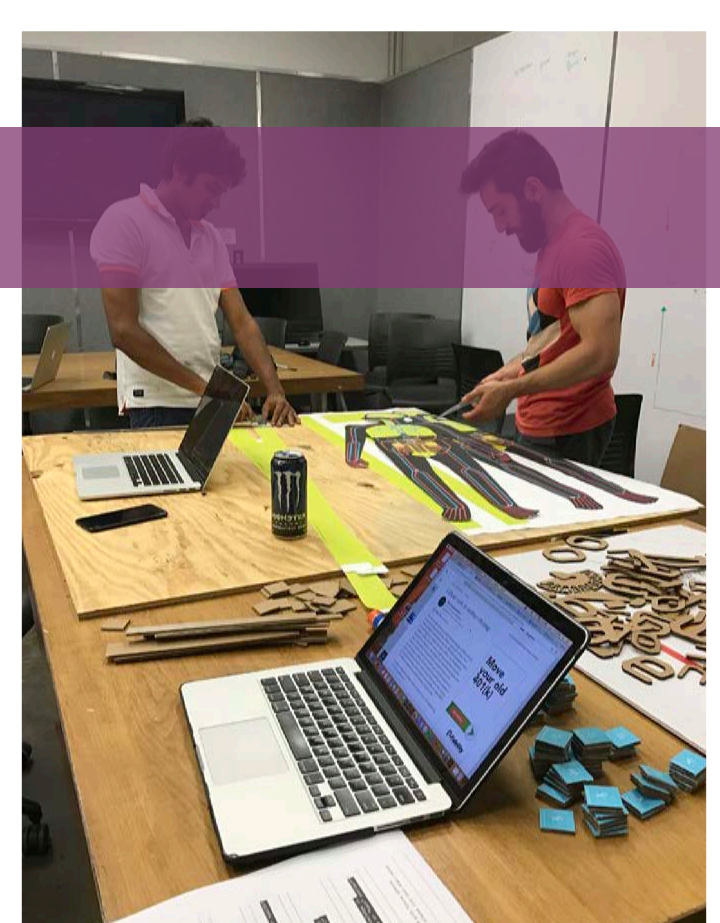


HEY YOU!
FUTURE SELF TRACKERS,
MAKE YOUR VOTE!

Prototype 3 - Classroom Tested

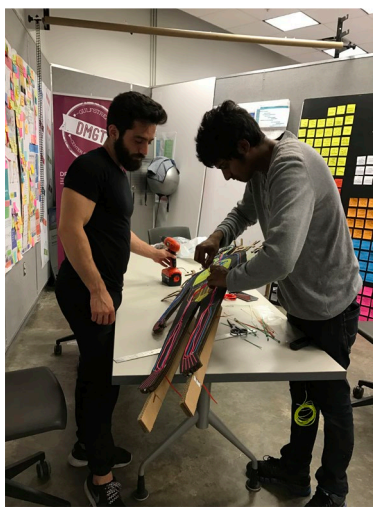
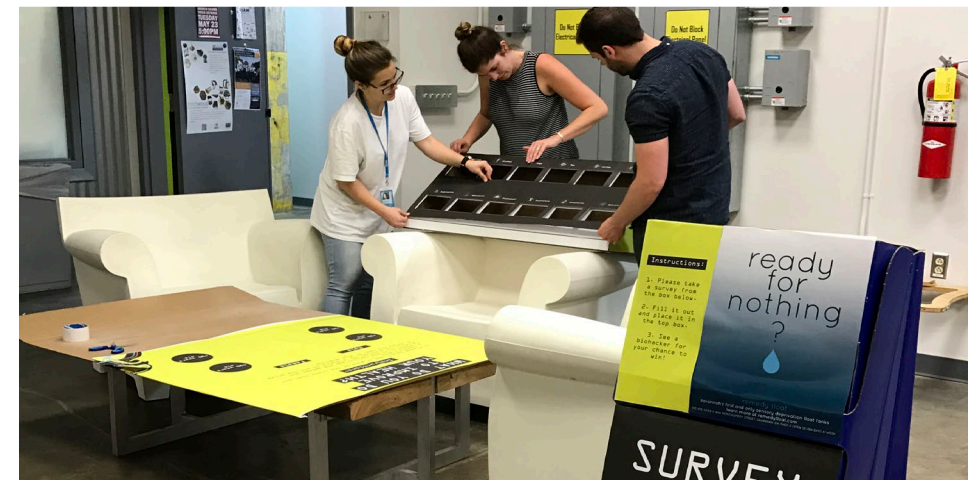
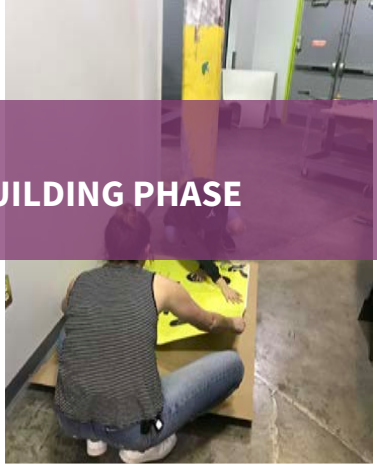
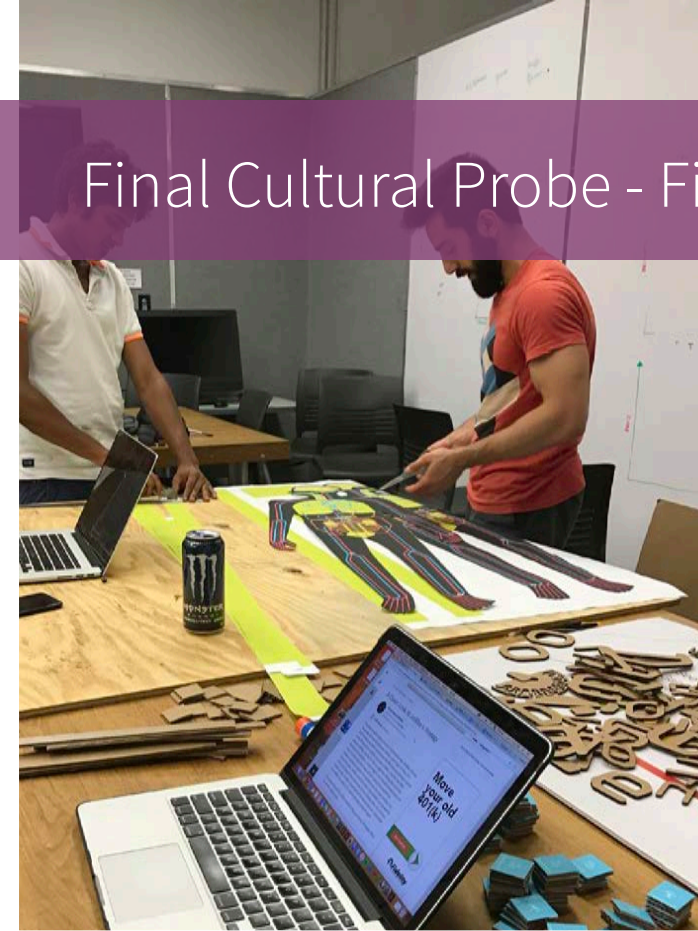
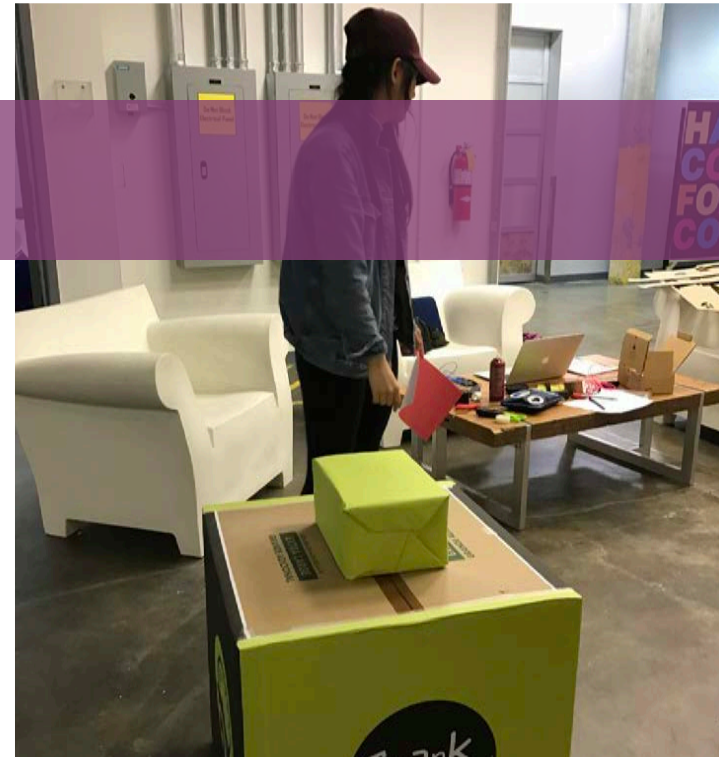
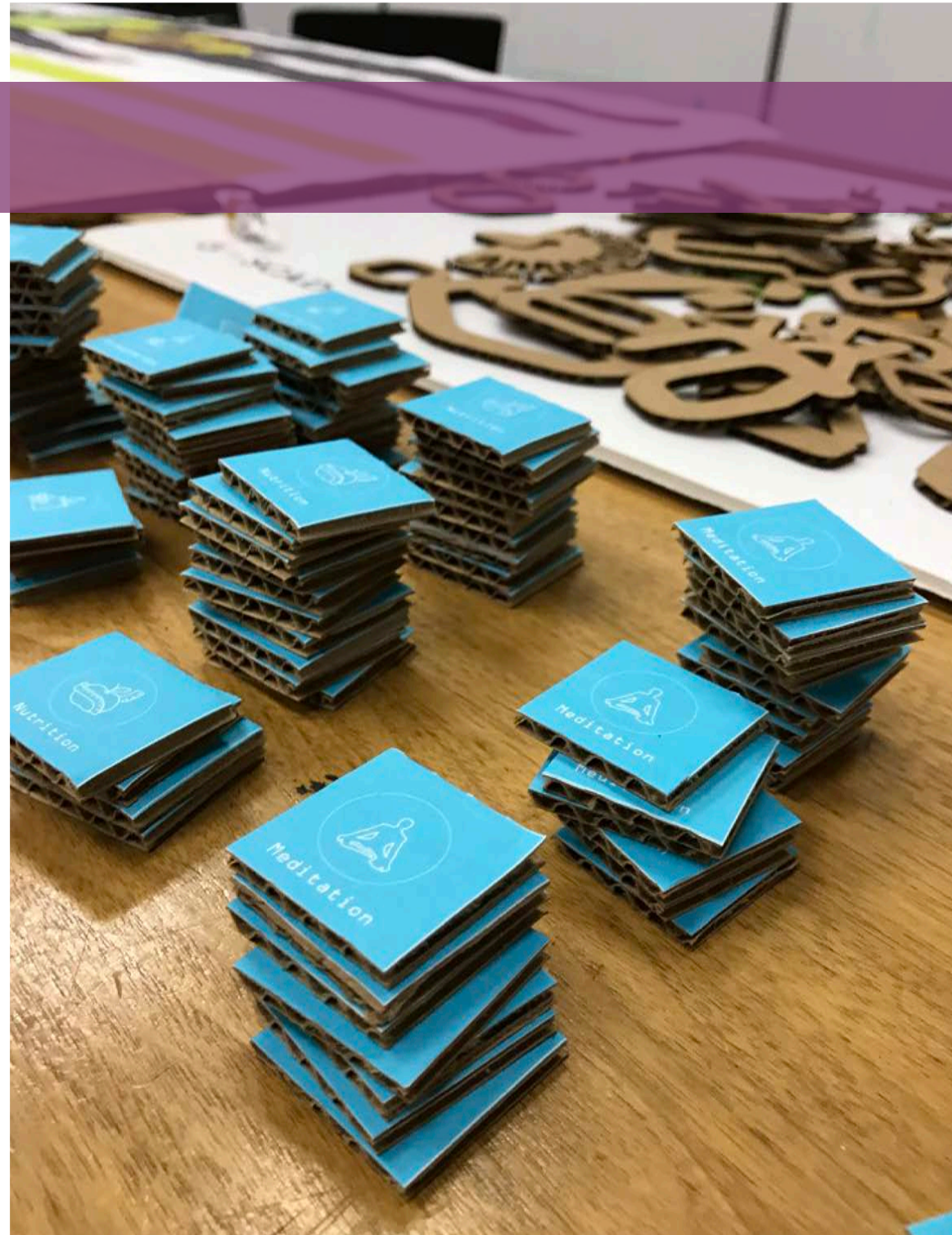


Prototype 4 - City Market Tested



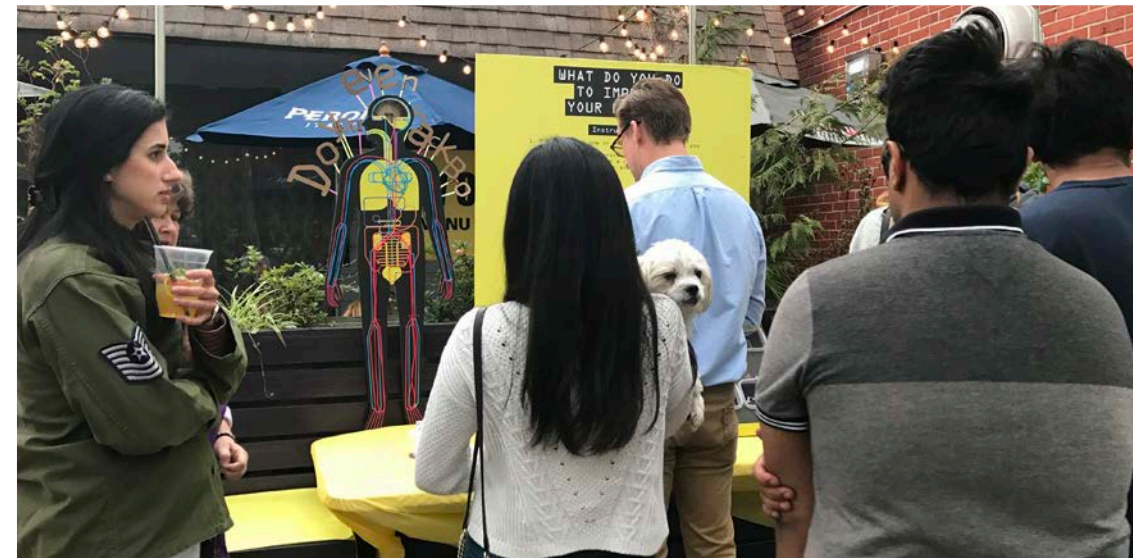
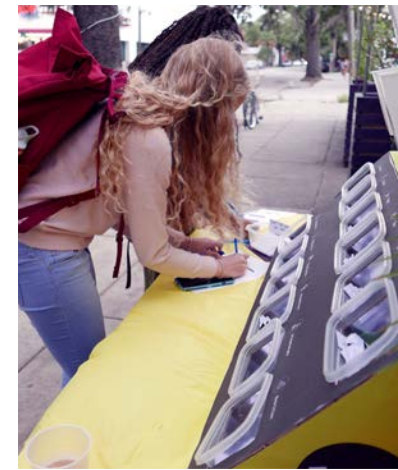
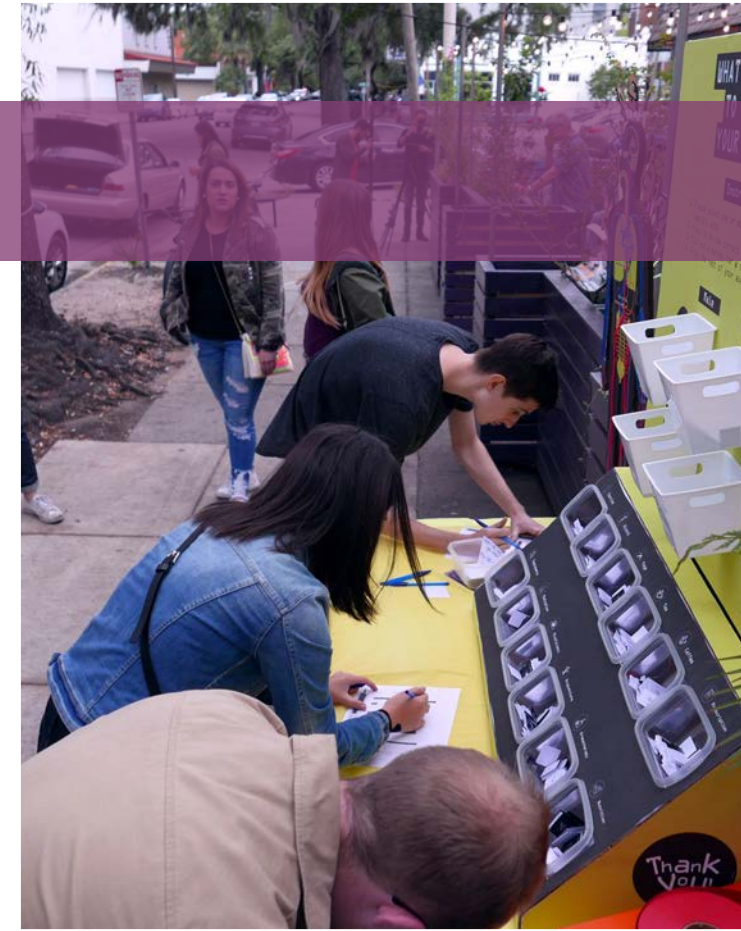
Final Cultural Probe - First Friday Art March May 2017

BUILDING PHASE



Final Cultural Probe - First Friday Art March May 2017

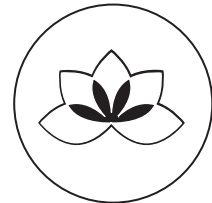
IMPLEMENTING PHASE



What do you do to improve your health?



YOGA



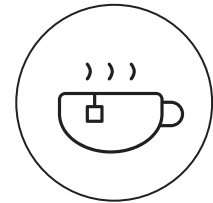
MINDFULNESS



MEDITATION



COFFEE



TEA



OTHER



EXERCISE



PRESCRIPTION



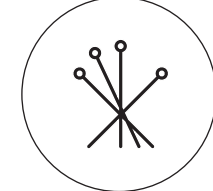
NUTRITION



ALCOHOL

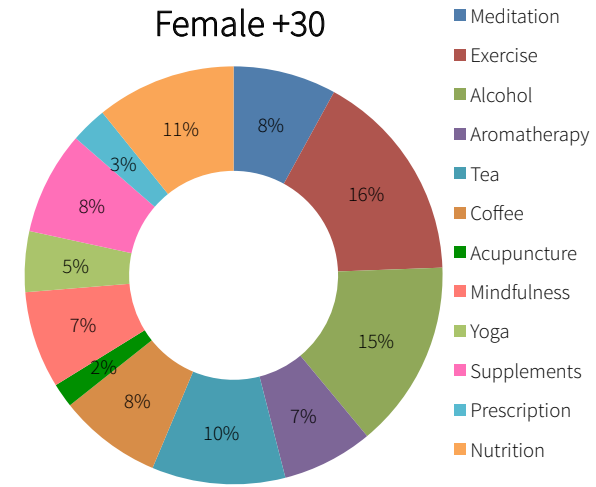


AROMATHERAPY

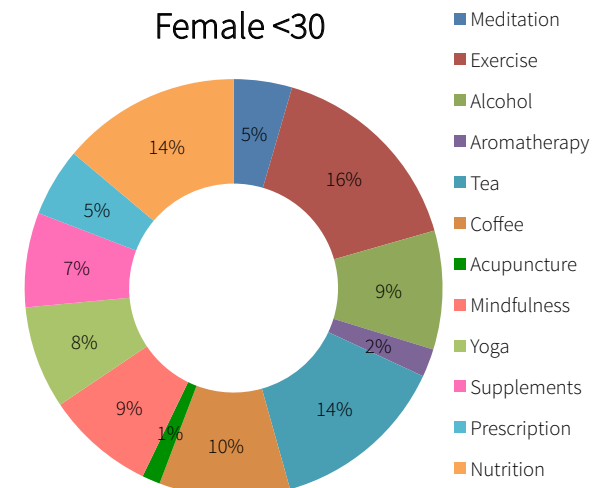


ACUPUNCTURE

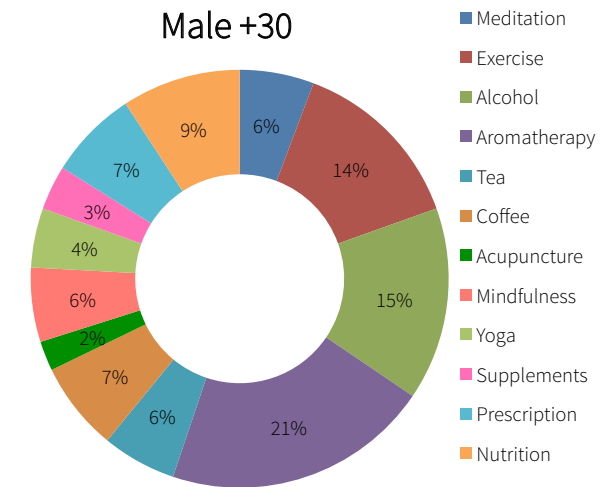
Female +30



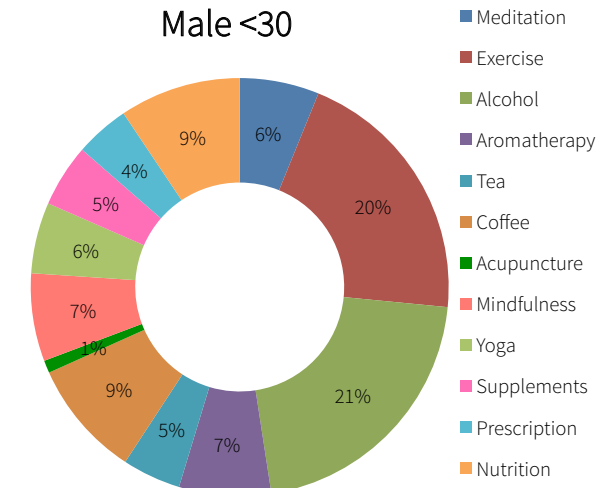
Female <30



Male +30

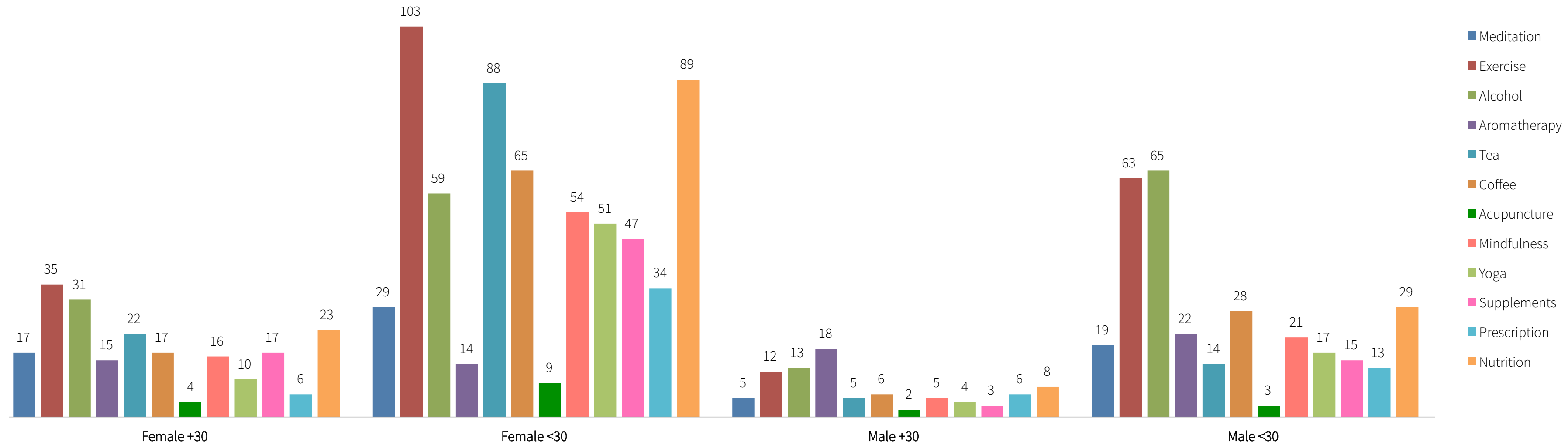


Male <30



OTHER

- Avocado toast
- Bible and prayer
- Bodybuilding
- Breaking my bones
- Hanging out with dogs
- Insulin
- Interaction with others
- Massage therapy
- Pet
- Pot brownies
- Reading / videogames
- Sex
- Sex with positive person
- Sleep
- Viagra
- Water
- Weed
- Weightlifting



OVERALL RESULTS

FEMALE +30

- Exercise
- Yoga

FEMALE <30

- Exercise, Prescription
- Nutrition

MALE +30

- Aromatherapy
- Alcohol

MALE <30

- Alcohol
- Exercise

Surveys

Savannah College of Art and Design
IPUS-711, Methods of Contextual Research
Professor Kweila Sabine Hermanns

ERS:

Liza Battestini, Furkan Bozoz, Natalia
Cristina Morejon, Eugenia Perez, Karla
You can contact us at biohacking@scad.edu

Age 24 Gender F

How do you feel about your current health?

HEALTHY AS A COW!

What do you see happening with diet and nutrition in the future?

ORGANIC FOOD!

What is an estimate of the time and money you spend per week on your health or wellness?

AROUND 30 (FOR GROCERIES)

What role should ethics play in the future of scientific advancement?

CENTER OF EVERYTHING

How do you feel about the idea of manipulating the way your brain works?

COOL BUT NO WAY ~
I DON'T WANT MY BRAIN TO
BE CONTROLLED

Thank you fellow biohacker! If you would like to be contacted with future updates regarding this topic, please list your email below:

yachen30@student.s

Age 24 Gender M

How do you feel about your current health?

Good. Need to work on sufficient sleep.

What do you see happening with diet and nutrition in the future?

All turning into supplements or tablets

What is an estimate of the time and money you spend per week on your health or wellness?

10 hours + around 50\$ groceries

What role should ethics play in the future of scientific advancement?

PRIVACY IS A CONCERN

How do you feel about the idea of manipulating the way your brain works?

SCARY!

Thank you fellow biohacker! If you would like to be contacted with future updates regarding this topic, please list your email below:

STUDENT RESEARCHERS:
Liza Battestini, Furkan Bozoz, Natalia
Cristina Morejon, Eugenia Perez, Karla
You can contact us at biohacking@scad.edu

Do you research why? YES

Why?

~~Sometimes~~ I don't do that unless I go to medical examination. Maybe because so if there are any problems the doctor

If you had to write an online review of your current health what would it say?

I always need to stay up very late because of my major study. But I often try to keep a healthy diet and do some exercise.

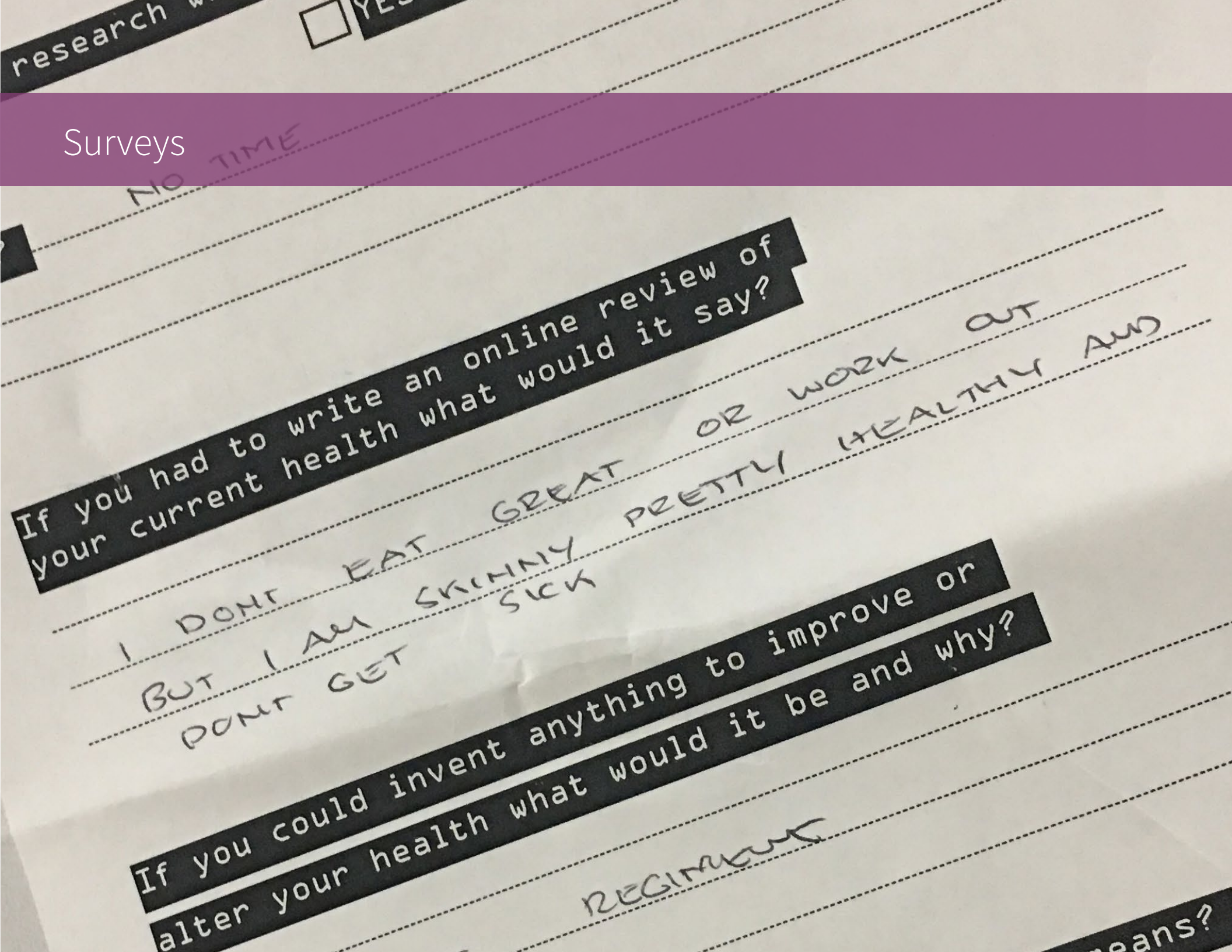
If you could invent anything to improve or alter your health what would it be and why?

A machine which can detect potential disease of one's body.

What do you think the word "biohacking" means?
like a more effective way to do hacking with the body situation constantly

Thank you fellow biohacker! If you would like to be contacted with future updates regarding this topic, please list your email below:

Surveys



Survey Question:
Do you do research on what you put
in your body?

“I prefer natural organic food/supplement because I perceive them to be healthy.” **“My doctor tells me what to take.”** **“Many processed food companies also own healthy brands as well and can manipulate consumer to think they are being healthy just by packaging.”** “Too much crap in commercial products.” “Knowledge and awareness.” **“It is important to know if things are safe or not.”** “I don’t want chemicals in my body, i want to attempt to be healthy.” **“Ain’t got time for that.”** “i don’t really have the time.” **“Yes makes me feel better.”** “No we are all dying anyways.” “Yes, have to know the relation between input and output.” “Yes, so i can make sure if it has any side effects.”

Affinitization

Introduction to Affinitization

Yellow Post-Its

Blue Post-Its

Pink Post-Its

Green Post-Its

Affinitization

What is Affinitization?

The team continued with an affinitization process to make sense the secondary and primary data. Affinitization, as a bridge to analysis allows the team to create likeness in the data, converting key findings into insights.

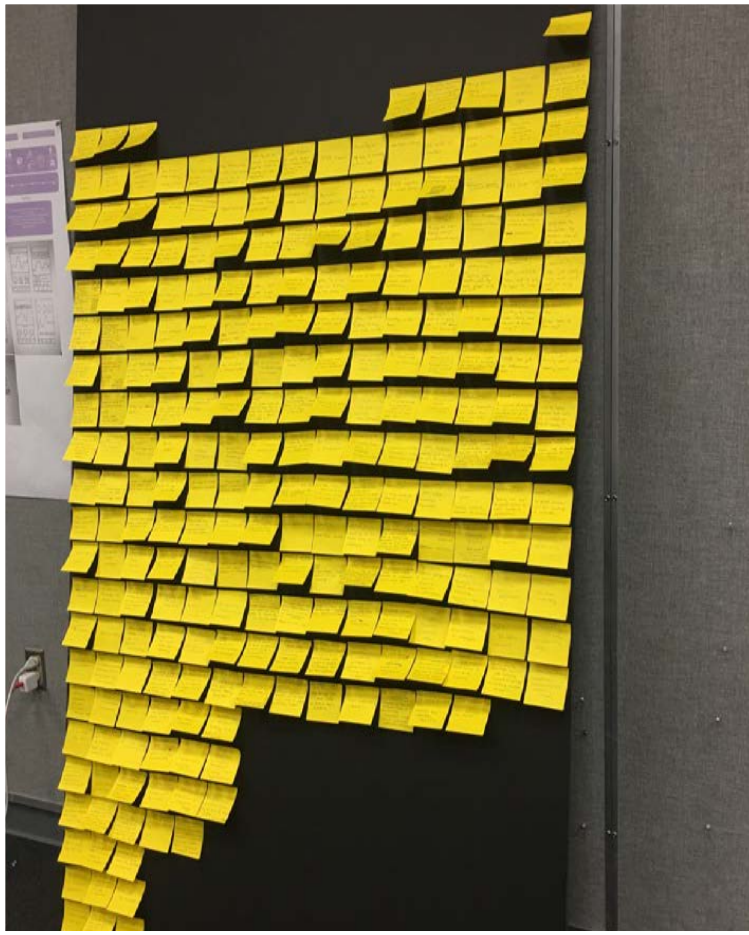
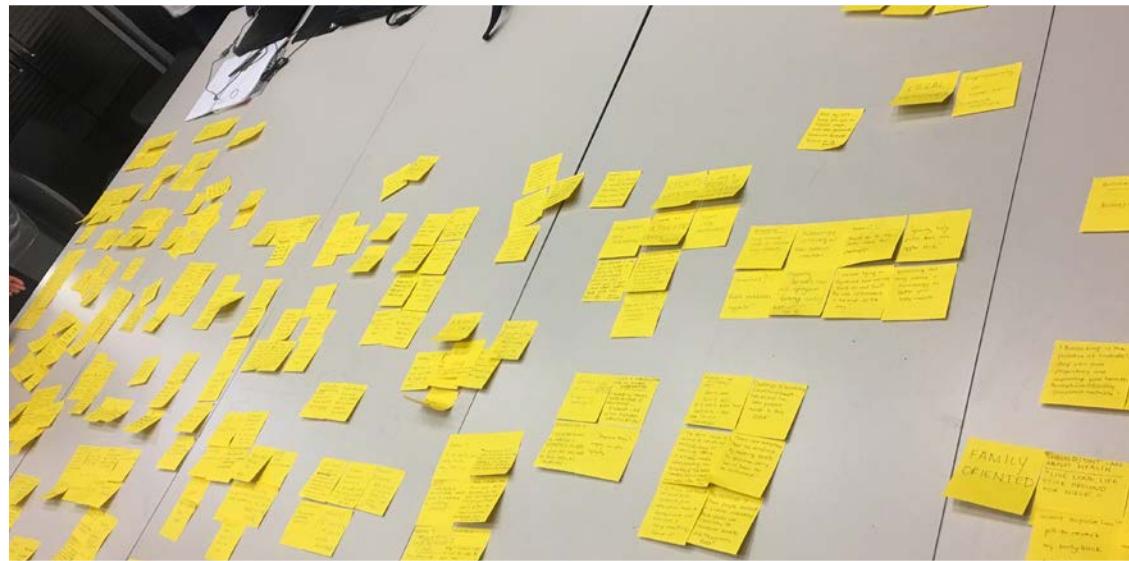
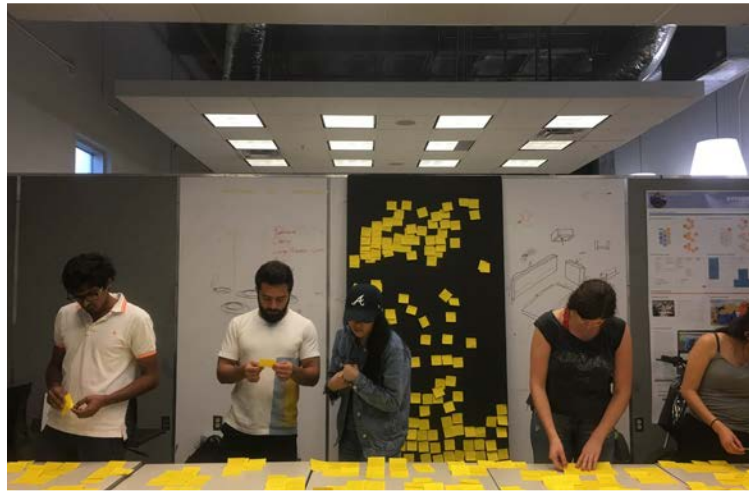
Affinitization

Yellow Post-Its Phase

Each key findings from secondary research and primary research was placed into a yellow post it.

+550 yellow post its



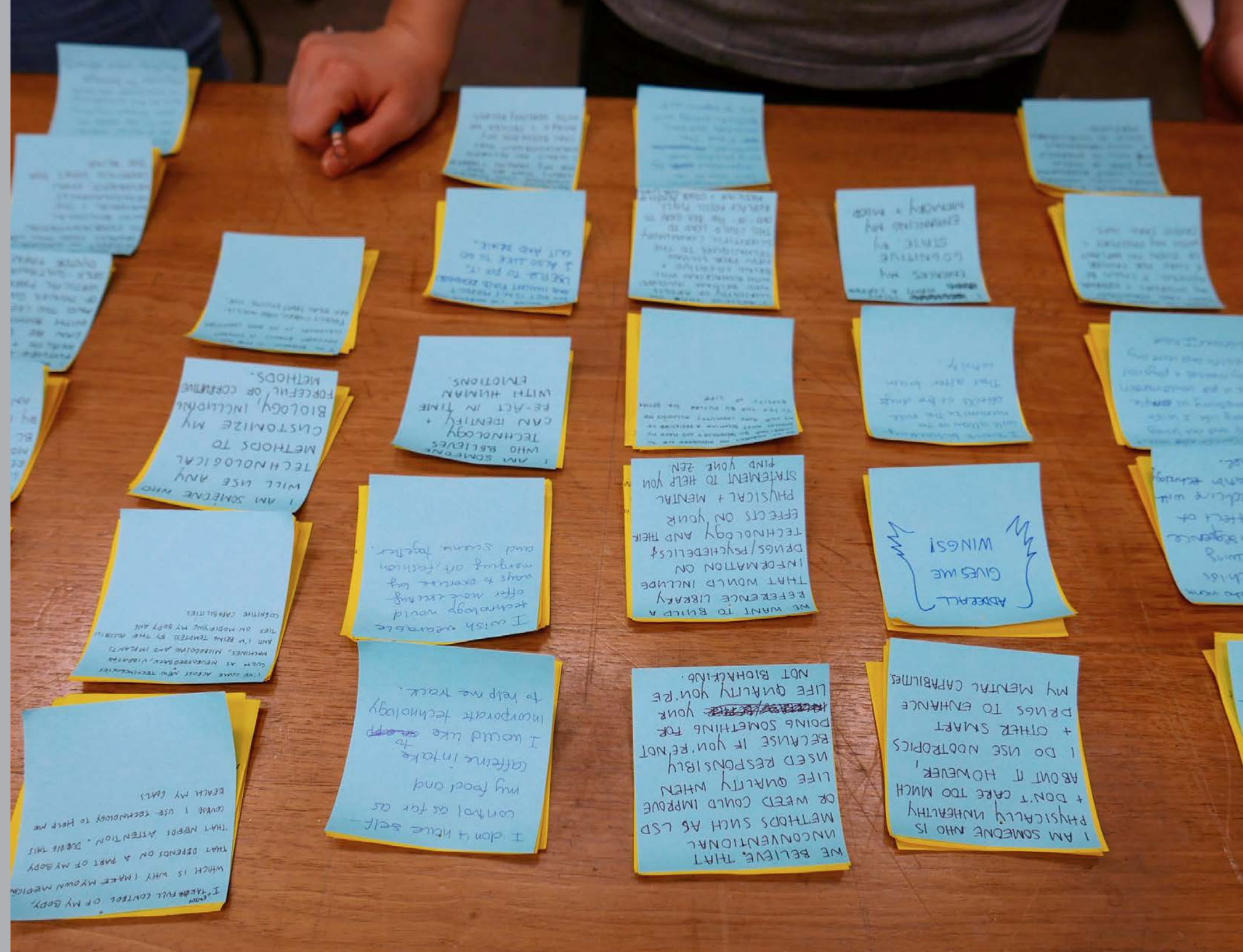


Affinitization

Blue Post-Its Phase

Blue labels collect a coherent set of notes that represent a theme or a direction. These need to be written in the voice of the user. The first person voice is integral to this process.

+80 blue post its



I TAKE FULL CONTROL OF MY BODY,
WHICH IS WHY I MAKE MY OWN MEDICINE
THAT DEPENDS ON A PART OF MY BODY
THAT NEEDS ATTENTION. DUE TO THIS
I USE TECHNOLOGY TO HELP ME
CONTROL MY GENE.

I don't have self-
control as far as
my food and
caffeine intake
I would like ~~an app~~
to help me track.
I would like to
incorporate technology
to help me track.

I wish wearable
technology would
offer more interesting
ways to exercise by
marking off fashion
and swims together.

I AM SOMEONE WHO
WILL USE ANY
TECHNOLOGICAL
METHODS TO
CUSTOMIZE MY
BIOLOGY, INCLUDING
FORCEFUL OR COERCIVE
METHODS.

I AM SOMEONE
WHO BELIEVES
TECHNOLOGY +
FE-ACT IN TIME
WITH HUMAN
EMOTIONS.

I ALSO LIKE TO GO
OUT AND SEW.

WE BELIEVE THAT
UNCONVENTIONAL
METHODS SUCH AS LSD
OR WEED COULD IMPROVE
LIFE QUALITY WHEN
USED RESPONSIBLY
BECAUSE IF YOU'RE NOT
DOING SOMETHING FOR
~~YOURSELF~~ YOUR
LIFE QUALITY YOU'RE
NOT BIOTECHING.

WE WANT TO BUILD A
REFERENCE LIBRARY
THAT WOULD INCLUDE
INFORMATION ON
DRUGS/PSYCHEDELIC
TECHNOLOGY AND THEIR
EFFECTS ON YOUR
PHYSICAL + MENTAL
STATEMENT TO HELP YOU
FIND YOUR ZEN

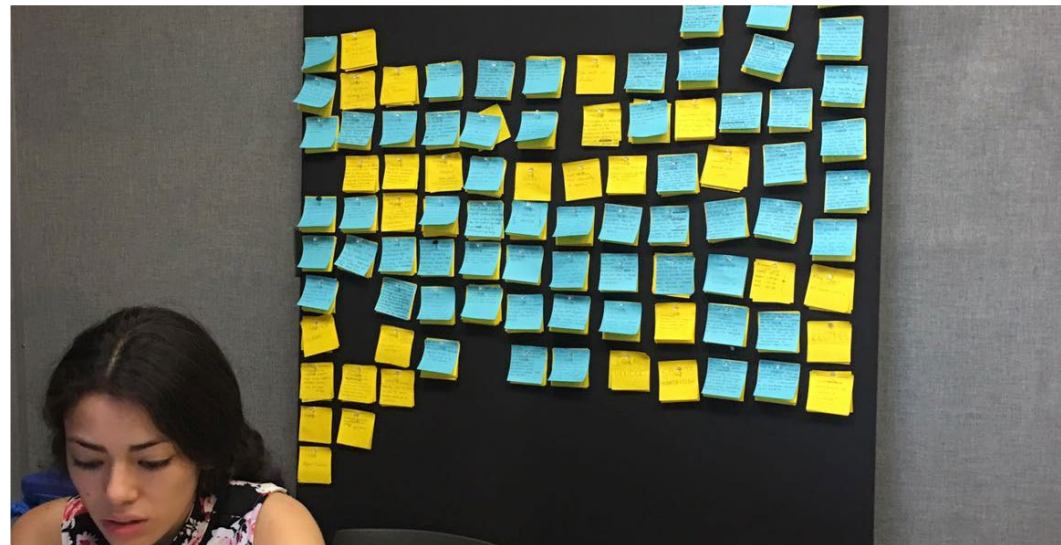
I wish wearable
technology would
offer more interesting
ways to exercise by
marking off fashion
and swims together.

I AM SOMEONE WHO IS
PHYSICALLY UNHEALTHY
+ DON'T CARE TOO MUCH
ABOUT IT HOWEVER,
I DO USE Nootropics
+ OTHER SMART
DRUGS TO ENHANCE
MY MENTAL CAPABILITIES

ADRENAL
GIVES ME
WINGS!

COGNITIVE
STATE MY
MIND + BODY

THESE ARE THE
MINDS OF THE FUTURE
THEY WILL BE THE
LEADERS OF THE WORLD
THEY WILL BE THE
DRIVERS OF THE FUTURE
THEY WILL BE THE
LEADERS OF THE FUTURE
THEY WILL BE THE
DRIVERS OF THE FUTURE
THEY WILL BE THE
LEADERS OF THE FUTURE
THEY WILL BE THE
DRIVERS OF THE FUTURE



Affinitization

Pink Post-Its Phase

The next level of the affinitization phase are the pink labels. These labels collect the blue labels and place them under one common theme. The language of the pink labels is also in first person.

+30 pink post its



AM I TO BE
UPDATED ABOUT
UNCONVENTIONAL
SUBSTANCES &
TECHNOLOGIES
AND THE WAYS TO
USE THEM SAFELY
TO ENHANCE MY LIFE
STYLE

I THINK THERE ARE ALTERNATIVE
ACTIVITIES IS AN EASY WAY TO
MAINTAIN A HEALTHY LIFESTYLE.

I SEE THE FUTURE
AS A PLACE WHERE
YOU CAN
~~SEE~~ EXPERIMENT
& GROW ALMOST

I have to evaluate
my cognitive ability
with great things
my feeling that
the effects

I like to understand
my health but not
stress over it. I think
including such as
and understand more
concrete in the long
run.

put on my
and what side effects
it may have as well
as nursing my
body according to
gender needs.

collaboration
engagement
local artists
+ corporations
create
better
No.

more attention
funding from
businesses so that
more innovative
of innovative projects

I am very busy
and have no time to
research or learn
about biohacking. I
want an easy and

I have the free
time and the
motivation to
include aerobic
exercise in my life
as a hobbyist.

I am to be
updated about
unconventional
substances &
technologies
and the ways to
use them safely
to enhance my life
style.

Several feel
that technology
can help me
achieve my best
mental & physical
health.

Shifting your
mindset can
be a whole other
world of possibility.

Even a tiny
change in your
diet or exercise
can have a big
impact on your
health.

Use an
interdisciplinary
approach to
optimize my
health.

It is important
to understand
the science of
health and how
it relates to
my body.

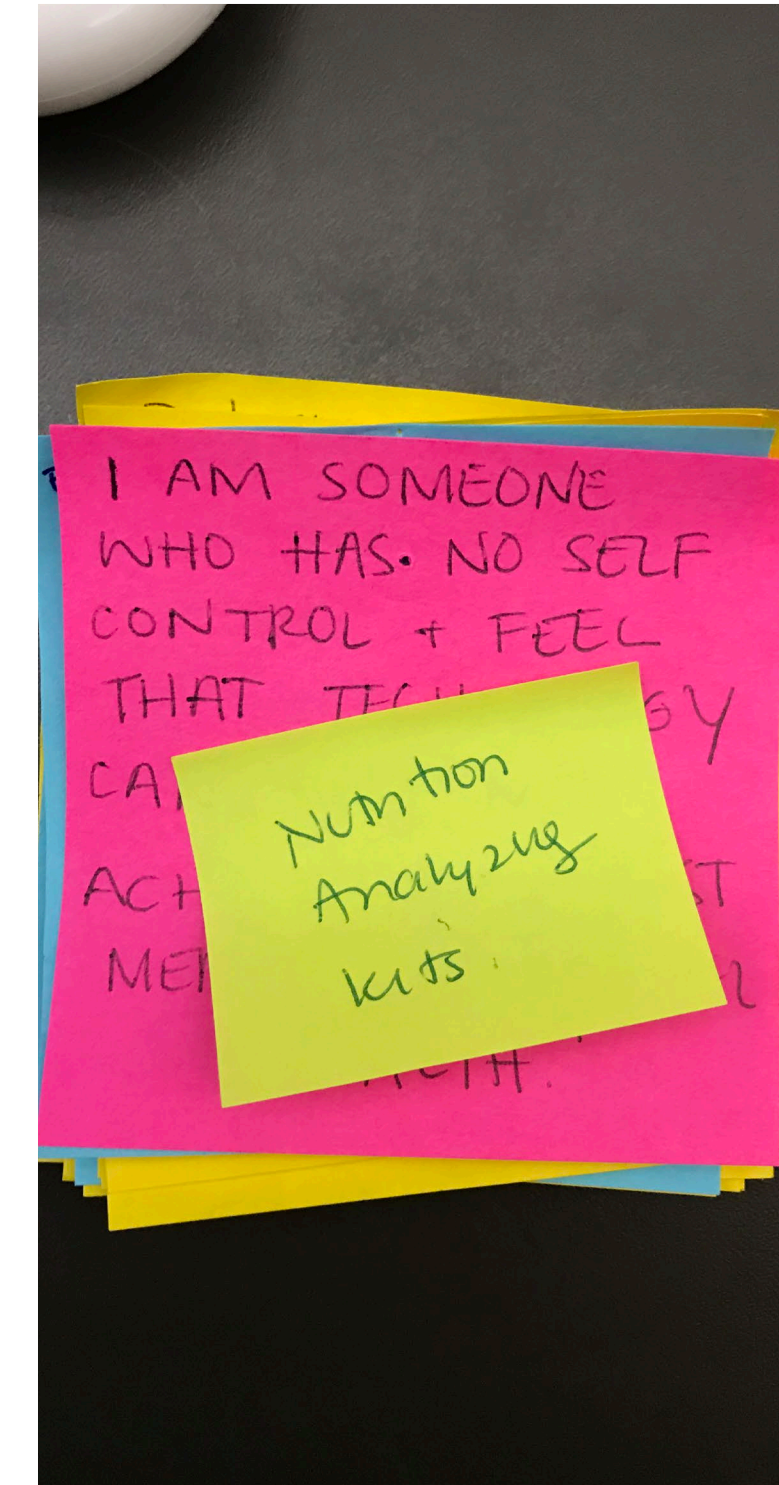
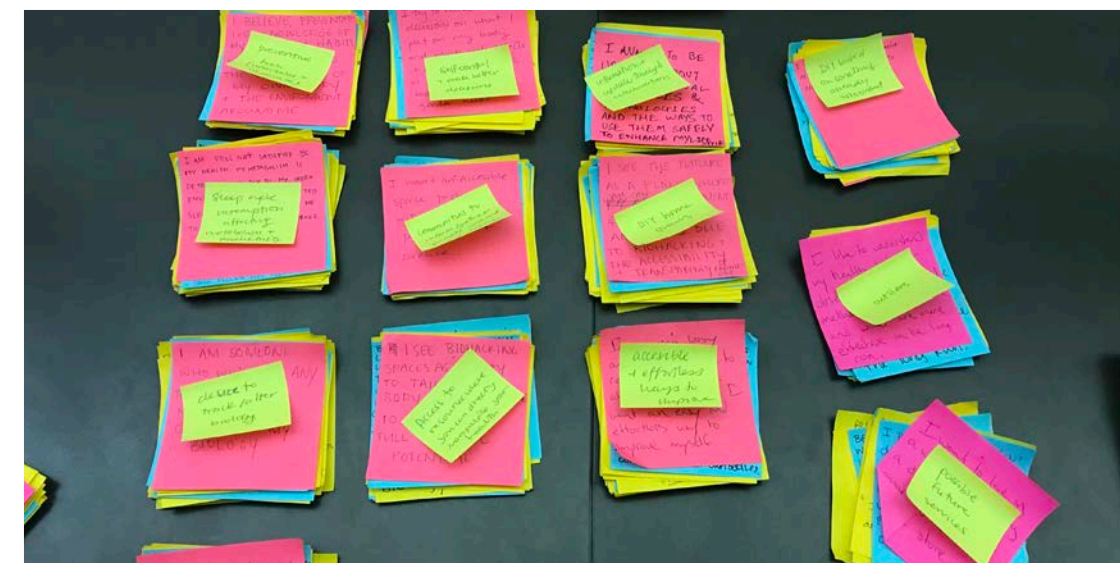
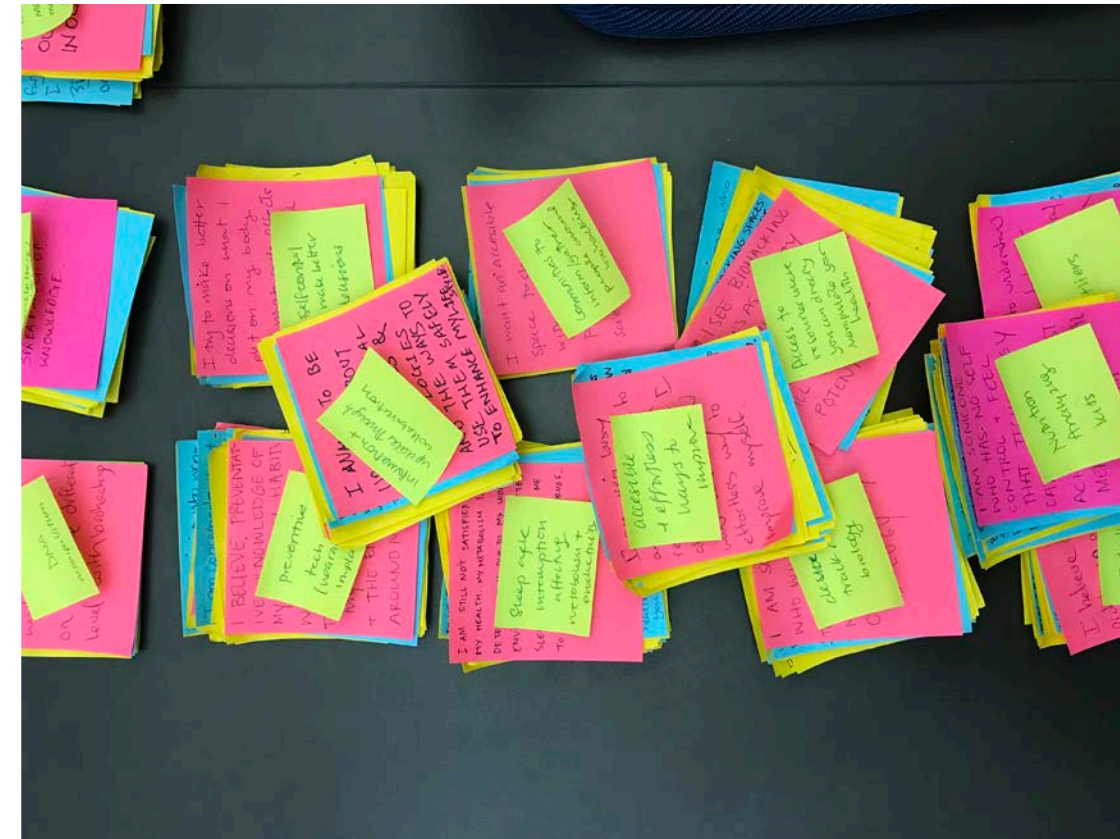
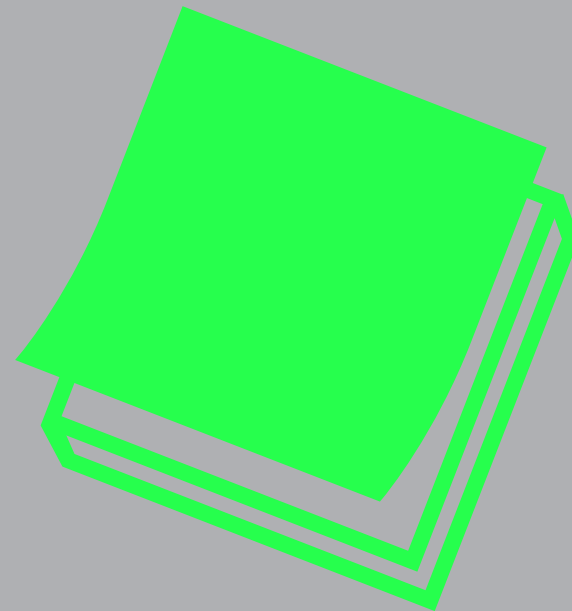
Although I am taking
care of myself
on the physical level,
I could use a more
in-depth guidance
to accompany my
experiments.

Affinitization

Green Post-Its Phase

The highest level of the affinity process summarizes the pink labels underneath. These green labels may or may not be written in the voice of the first person and usually denote a bigger piece of the user story.

+20 green post its



Concept Exploration

Ideation

Concept Sorting

Morphological Synthesis

Concept Evaluation

Solution Evaluation

Concept Exploration

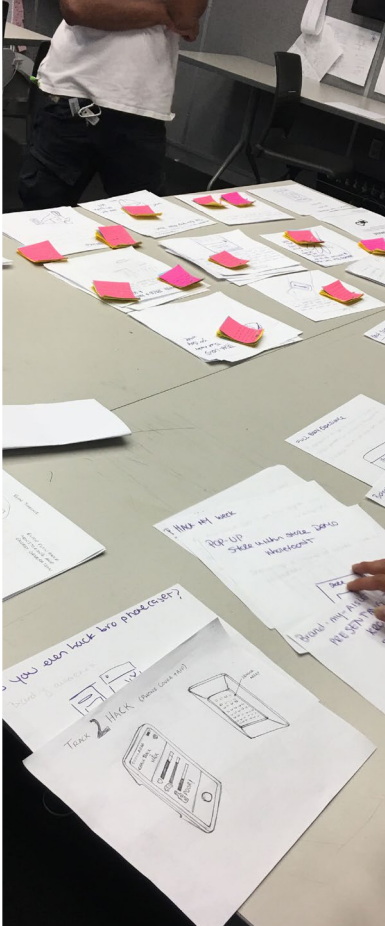
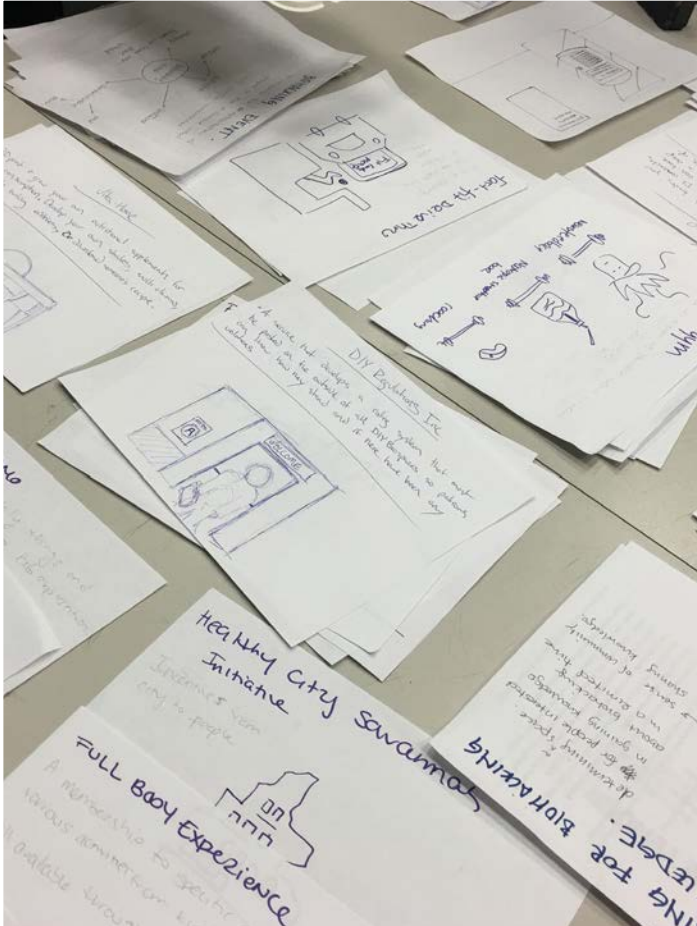
What is Concept Exploration?

Concept exploration begins with the individuals of the team exploring about 30 concepts each. Since the team was of 7 people there were about 250 concepts in total. Then the group gathered together and discussed all of the concepts and grouped them. These groupings created categories for exploration and developing concepts from those.

Concept Exploration

Ideation

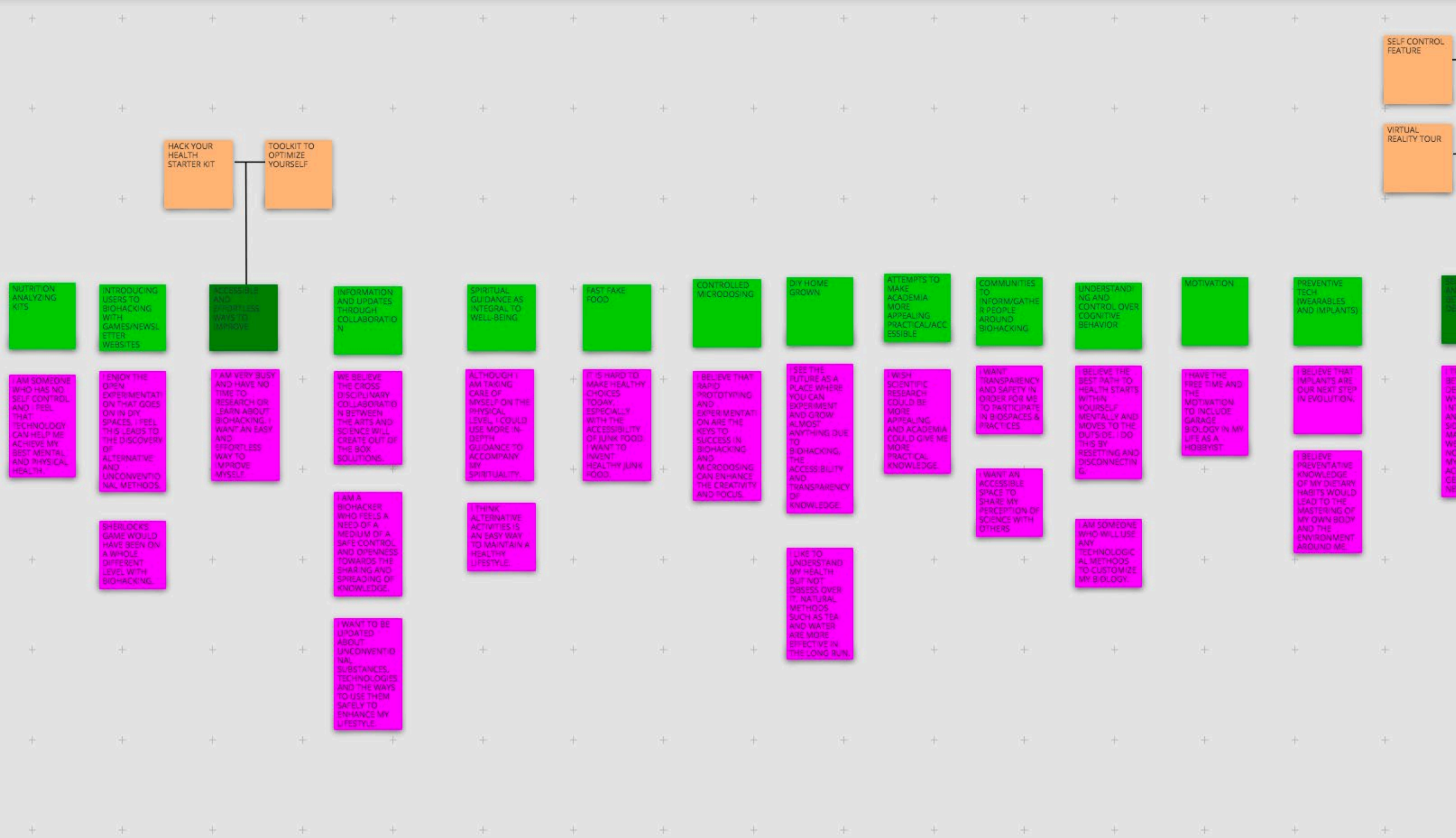
In this stage of the process we look at the insights obtained from the affinitization process and come up with innovative ideas. We ideate individually as well as collectively and came up with + 200 concepts.



Concept Exploration

Concept Sorting

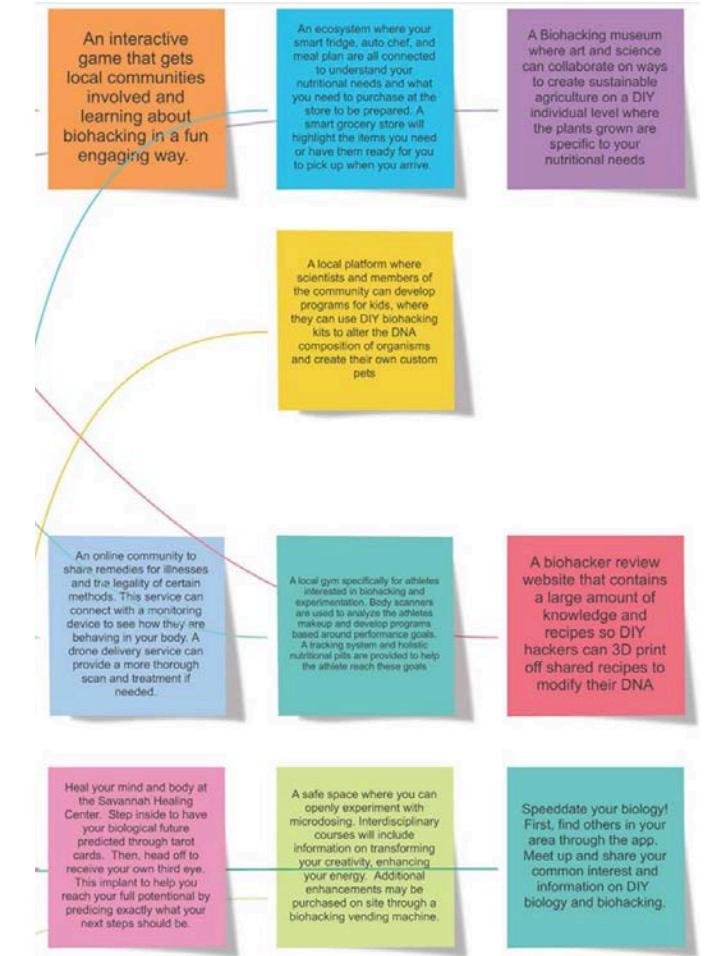
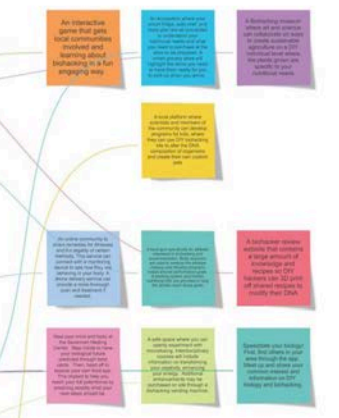
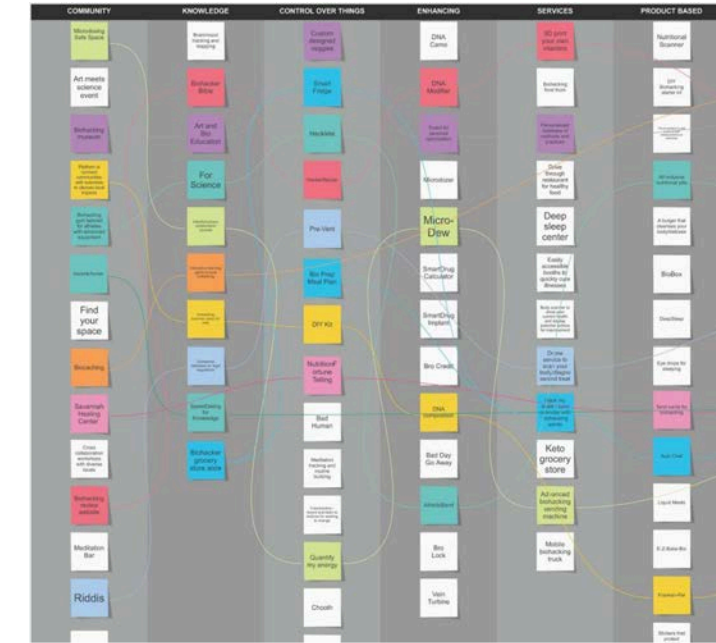
During the Exploring Concepts phase, the team used concept sorting to go over the collections of concepts, organize them and categorizing them into groups. The ideal mindset during this stage attempts to stay creative and be open to new and innovative ideas. The outcome of this practice are multiple clusters with the organized concepts.



Concept Exploration

Morphological Synthesis

After gathering our concepts we continued to the Frame Solutions stage. Here we connect the clustered concepts to make system-level solutions. The mindset revolves around creating new concepts independent from each other and making judgments about the concepts and its combinations. The Morphological Synthesis tool helps visualize the organized concepts under user-centered categories and combine them to form solutions.



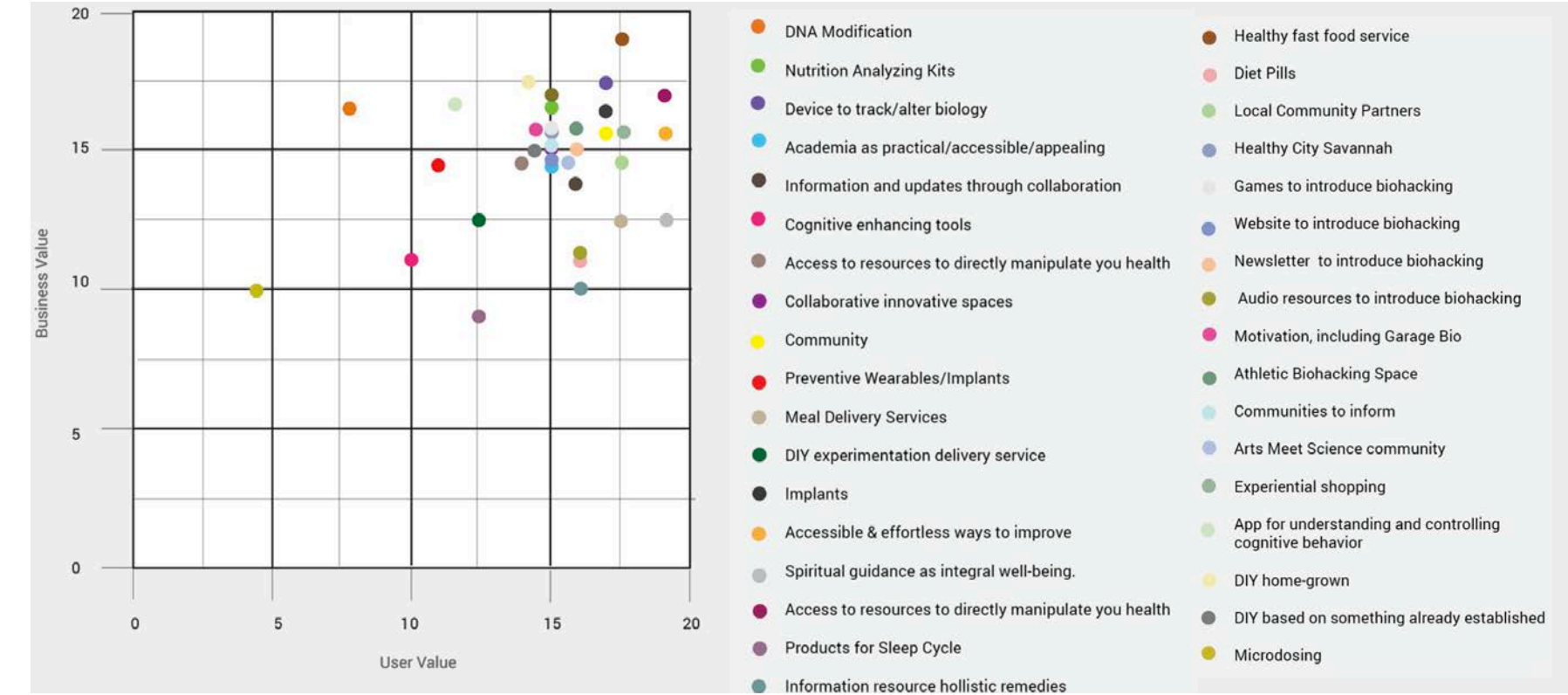
Possible Solutions

- Interactive educational biocaching game for local communities.
- Network of connected devices (fridge, tracker, calendar, meal plan, grocery store) to predict and order what items you'll need to buy.
- Biohacking museum to merge art and science for the purposes of DIY agricultural development.
- Collaborative development around programs aimed at kids, specifically to get them more involved in biohacking.

Concept Exploration

Concept Evaluation

This method compares the concepts by rating them in a scale of 1-5 based on the values of the user and the stakeholders. It is useful to analyze the concepts relevancy and make decisions about which one to develop. Ideally, the team would like to place emphasis on the concepts located in the upper right corner of the graph.



Top Categories

- Healthy fast food services
- Resources Directly Manipulate your Health
- Accessible and Effortless Ways to Improve
- Implants
- Community

- Vending machine that provides based on what you want to enhance.

Possible Solutions

- Food that seems, or its packaging represents fast food but it's healthy or cleanses your body.
- Device or scanner that cures illness or optimizes your health.

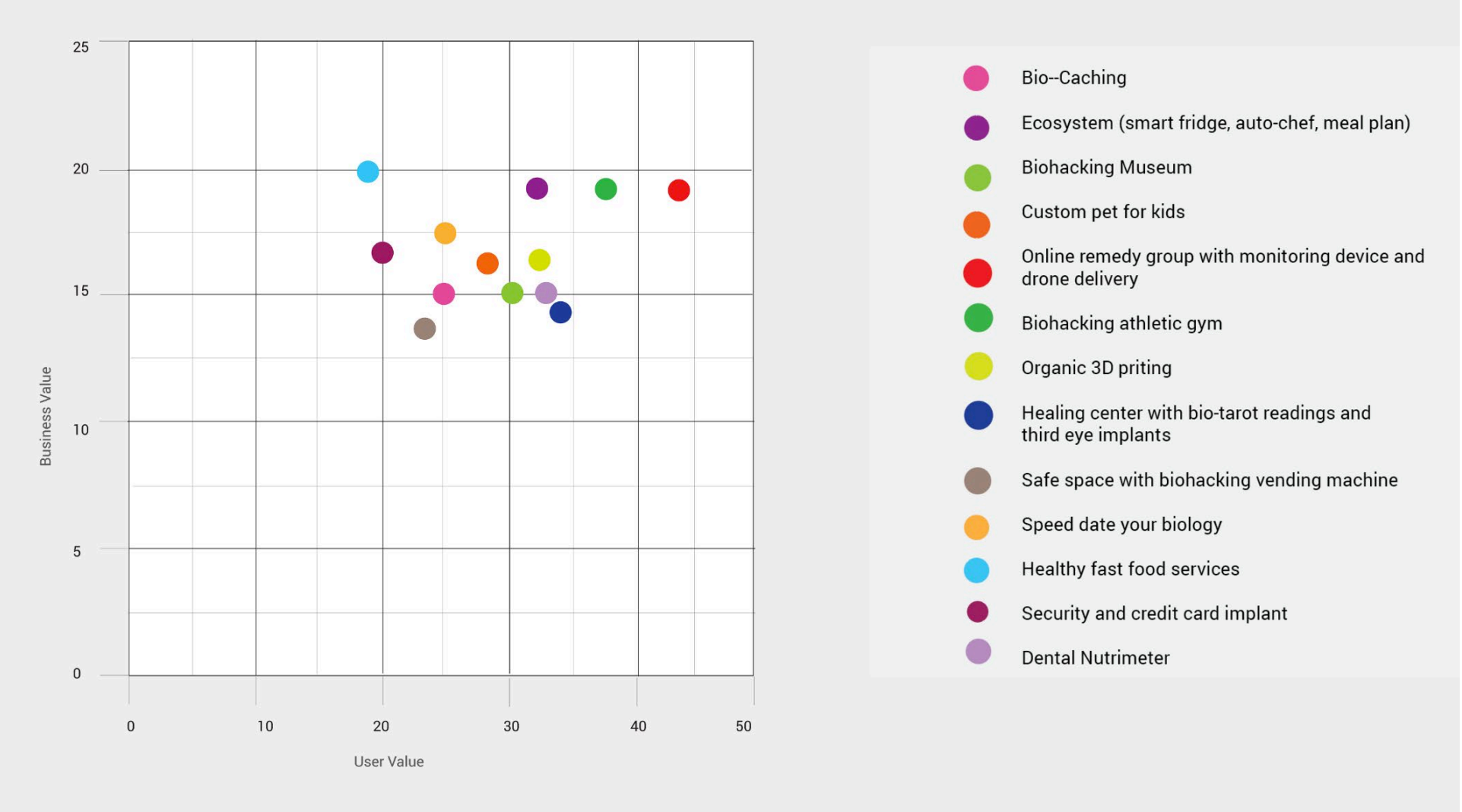
- Implant that recognizes and manages password protection or credit card information.

- Implant to detect nutritional habits
- Space for guidance, support and learning and participation of stakeholders

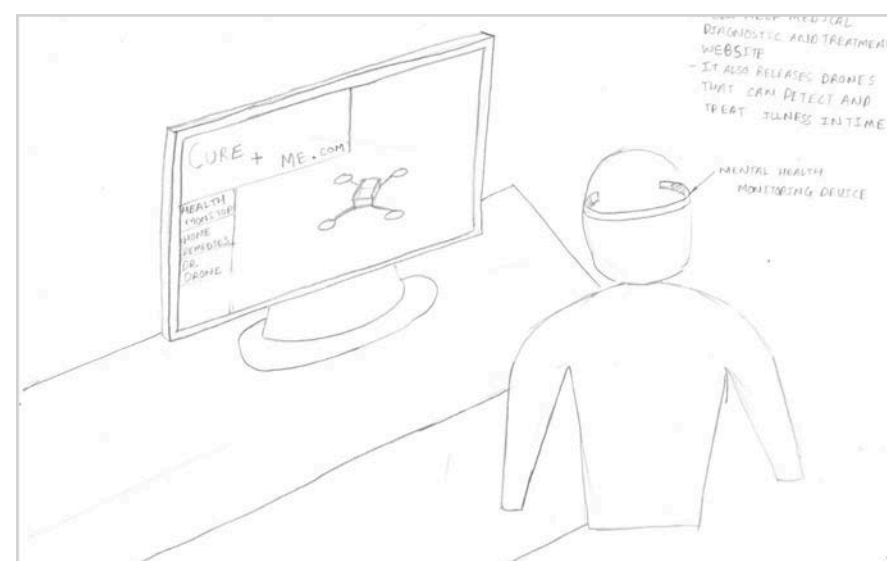
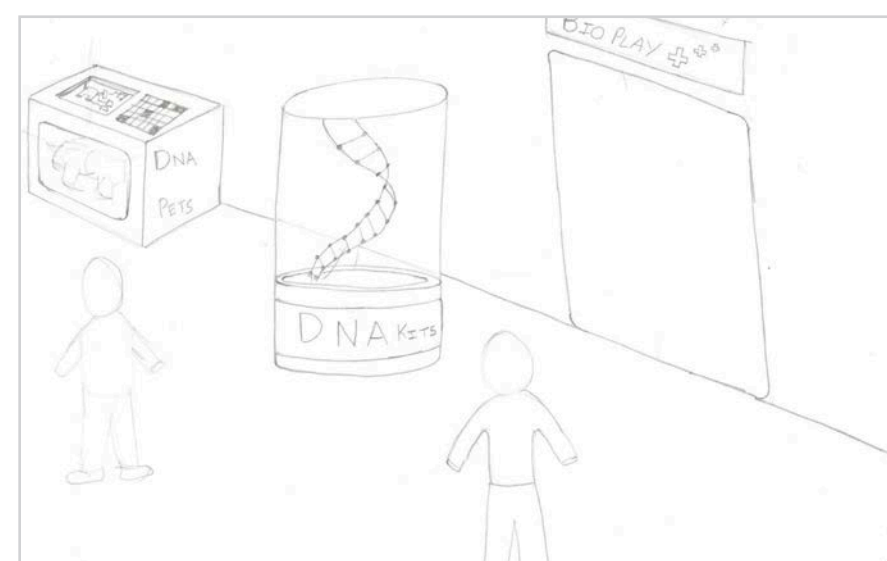
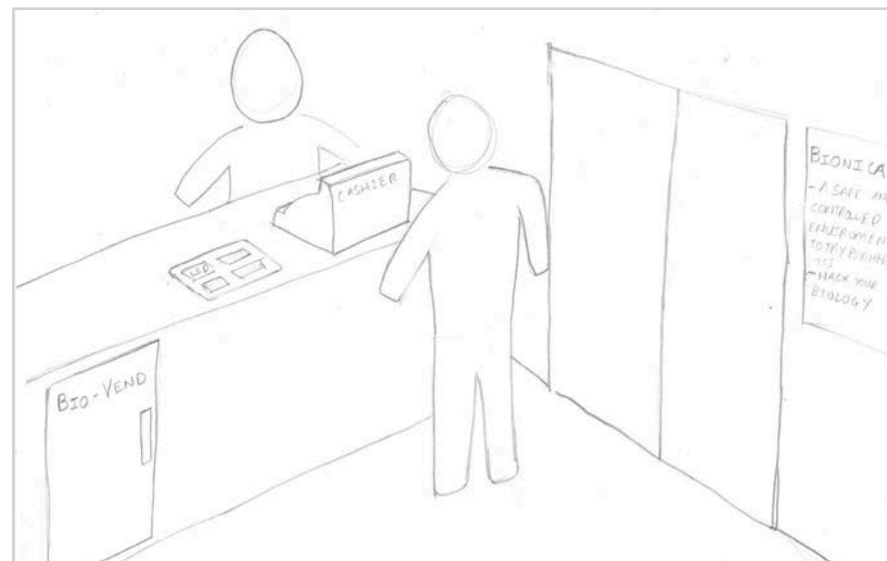
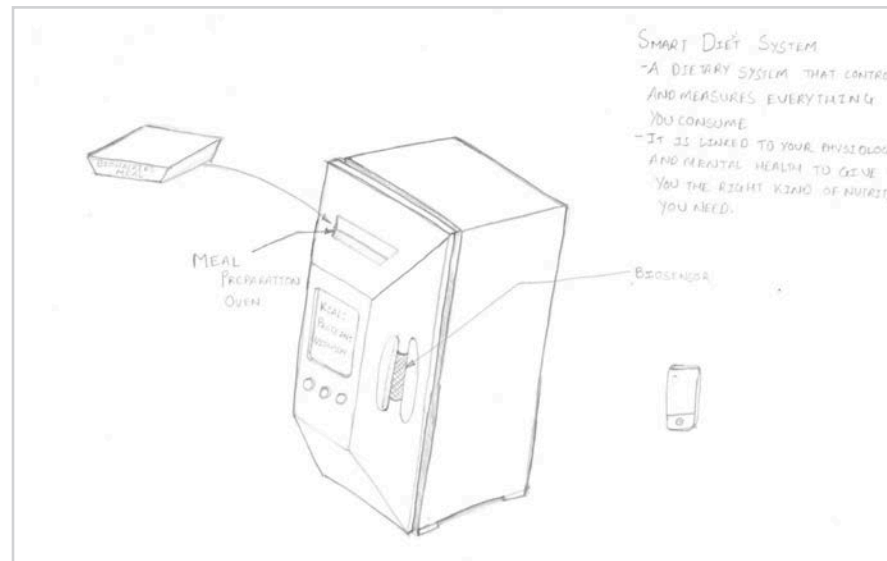
Concept Exploration

Solution Evaluation

After transforming concepts into solutions, an evaluation can be done to decide which one can be pursued. In order to do it, values are established for the user and the stakeholders. After that, a solution matrix is created to give a score to each solution and plot the results onto a map. The analysis will allow us to compare the solutions and make the correct solution for the purpose.



Initial Solutions



An ecosystem where your smart fridge, auto chef, and meal plan are all connected to understand your nutritional needs and what you need to purchase at the store to be prepared. A smart grocery store will highlight the items you need or have them ready for you to pick up when you arrive.

- I am very busy and have no time to research or learn about biohacking. I want an easy and effortless way to improve myself.
- I believe preventative knowledge of my dietary habits would lead to the mastering of my own body and the environment around me.
- I am someone who will use any technological methods to customize my biology.
- I try to make better decisions on what I put into my body and what side effects it may have as well as nourishing my body according to my gender needs.
- I don't know what is best for me but I don't care because I pay professionals to do it for me.
- I have always been mostly healthy but recently I started doing research around special areas I want to change.
- I am someone who has no self-control and I feel that technology can help me achieve my best mental and physical health.
- It is hard to make healthy choices today especially with the accessibility of junk food. I want to invent healthy junk food.

A safe space where you can openly experiment with microdosing. Interdisciplinary courses will include information on transforming your creativity, enhancing your energy. Additional enhancements may be purchased on site through a biohacking vending machine.

- We believe the cross disciplinary collaboration between the arts and science will create out of the box solutions.
- I wish scientific research could be more appealing and academia could give me more practical knowledge.
- I believe the best path to health starts within yourself mentally and moves to the outside. I do this by resting and disconnecting.
- I love to enhance my cognitive ability with smart drugs. My hope is that biohacking can reduce side effects.
- I want transparency and safety in order for me to participate in biospaces and practices.
- I enjoy the open experimentation that goes on in DIY spaces. I feel this leads to the discovery of alternative and unconventional methods.
- Although I am taking care of myself on the physical level, I could use more in-depth guidance to reexamine my spirituality.

A local platform where scientists and members of the community can develop programs for kids, where they can use DIY biohacking kits to alter the DNA composition of organisms and create their own custom pets.

- I have the free time and the motivation to include garage biology in my life as a hobbyist.
- I want transparency and safety in order for me to participate in biospaces and practices.
- I want an accessible space to share my perception of science with others.
- I wish scientific research could be more appealing and academia could give me more practical knowledge.
- Sherlock's game would have been on a whole different level with biohacking.
- I enjoy the open experimentation that goes on in DIY spaces. I feel this leads to the discovery of alternative and unconventional methods.
- I see biohacking as a scary concept even though with a little bit of research and awareness, I can be as simple as going to a natural food store or as complex as trying alternative methods to benefit the community.
- I think alternative activities is an easy way to maintain a healthy lifestyle.

An online community to share remedies for illnesses and the legality of certain methods. This service can connect with a monitoring device to see how they are behaving in your body. A drone delivery service can provide a more thorough scan and treatment if needed.

- I am a biohacker who feels a need of a medium of self-control and openness towards the sharing and spreading of knowledge.
- I want to be updated about unconventional substances, technologies and the ways to use them to safely enhance my lifestyle.
- I wish scientific research could be more appealing and academia could give me more practical knowledge.
- I want to live in a world where curing a disease is as easy as walking into a store.
- I am someone who has no self-control and I feel that technology can help me achieve my best mental and physical health.
- I enjoy the open experimentation that goes on in DIY spaces. I feel this leads to the discovery of alternative and unconventional methods.
- I am very busy and have no time to research or learn about biohacking. I want an easy and effortless way to improve myself.
- I want an accessible space to share my perception of science with others.

Final Solution

Concept
Prototypes

Arriving to the Final Solution

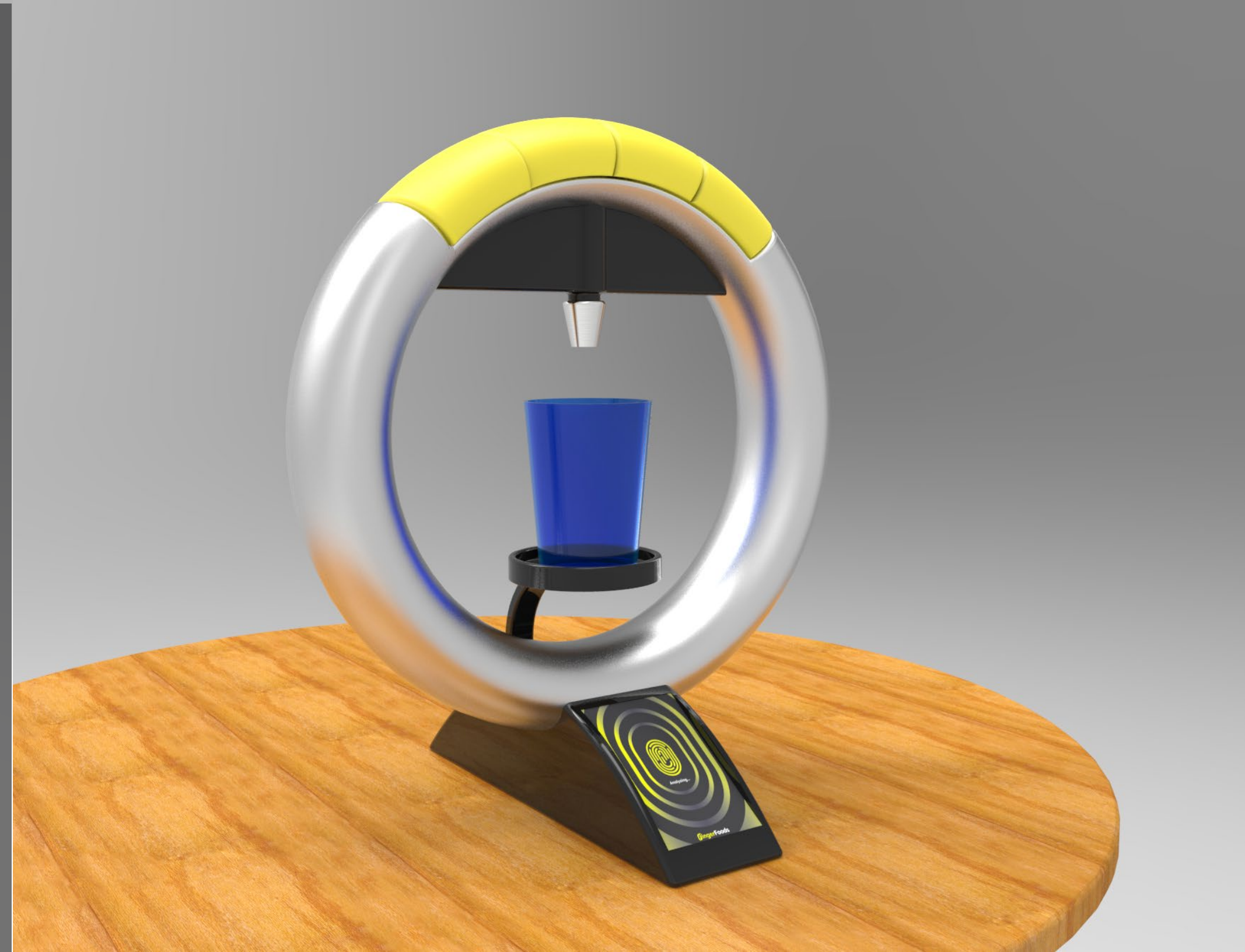
INSIGHTS

“I still view biohacking as a scary concept, even though with a little bit of research and awareness, it can be as simple as going to a natural food store or as complex as trying alternative methods to benefit the community.” **“I don’t know what’s best for me, but I don’t care because I pay professionals to do it for me.”** **“I see biohacking spaces as a way to tailor my body architecture to reach my full athletic potential.”** “I’ve always been mostly healthy but recently I started doing research around special areas I want to change.” “I am someone who will use any technological methods to customize my biology.” **“It is hard to make healthy choices today, especially with the accessibility of junk food.”** “I believe preventative knowledge of my dietary habits would lead to the mastering of my own body and the environment around me.” “I am very busy and have no time to research or learn about biohacking. I want an easy and effortless way to improve myself.”

Concept

Biohacking Concept

Finger Foods is a personal nutrition system that consists of an implantable device and a meal delivery system. Monitor your health and track your progress towards development goals with the implant. When you interact with the dispenser it reads all of the information from the implant and creates a custom meal you can drink that has all essential nutrients you need to stay on track for your goals.



Showcase



Timeline of History
Visual Journey
Finger Foods Product

WETWARE

HACKERSPACE

UPGRADE

NOOTROPICS

PURSUIT

INTERNAL

NUTRITION

EXPLORATION

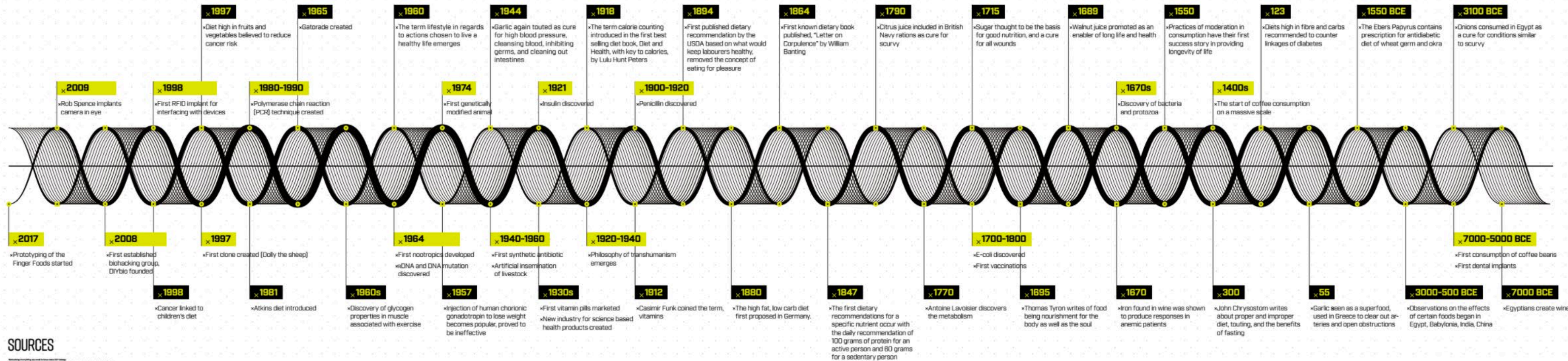
EXERCISE



Timeline of History

Timeline of History

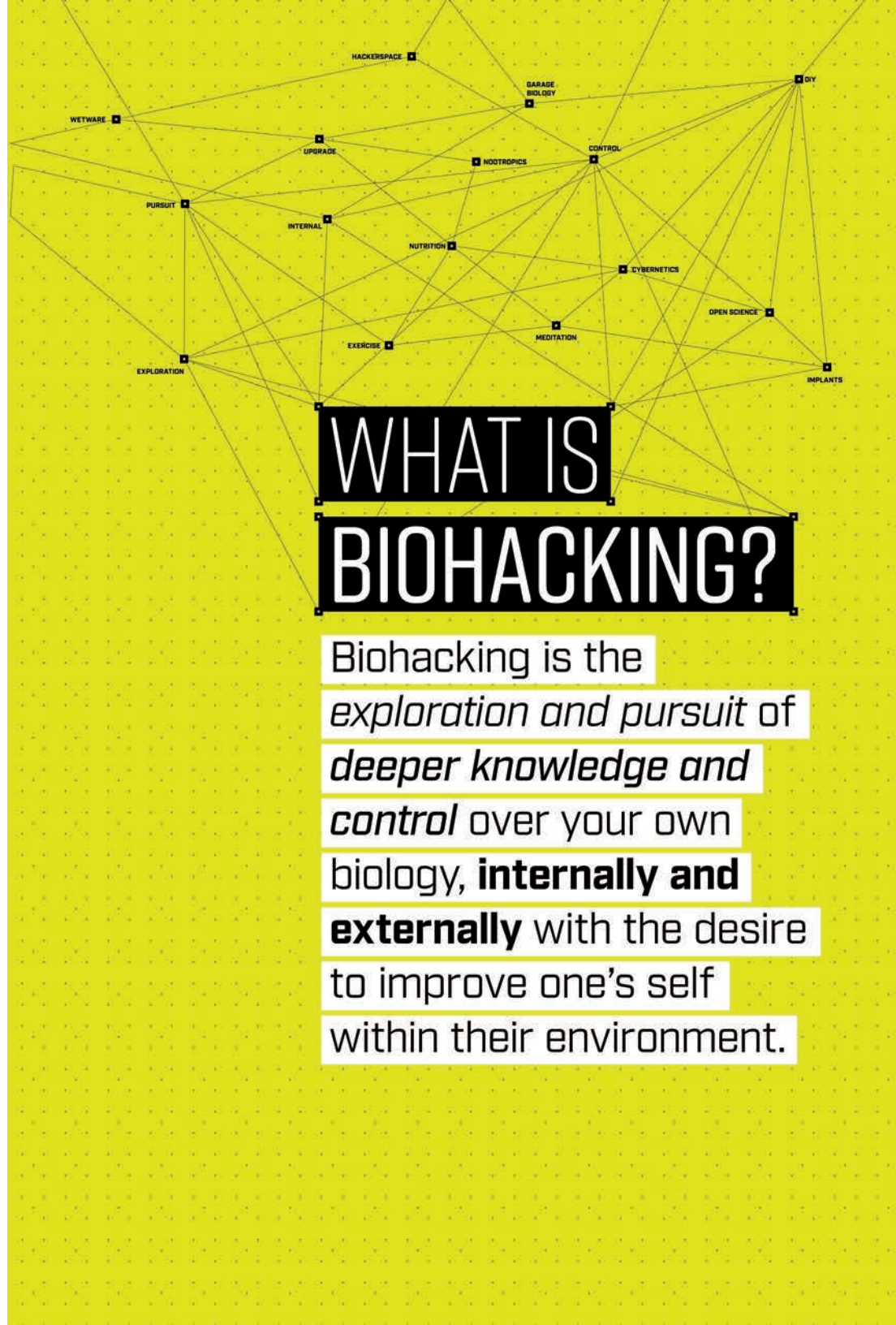
HIGHLIGHTS FROM THE HISTORY



SOURCES

World History Encyclopedia
The History Channel
National Geographic
BBC
The Guardian
The New York Times
The Washington Post
The Wall Street Journal
The Economist
The Financial Times
The Independent
The Telegraph
The Daily Mail
The Daily Mirror
The Daily Express
The Daily Star
The Daily News
The Daily Telegraph
The Daily Express
The Daily Mirror
The Daily Express
The Daily Star
The Daily News
The Daily Telegraph

Visual Journey



Visual Journey

YOU ARE NOT ALONE!

We've asked the locals of Savannah to do a self-assessment of their current health:

- I go to the gym but I still crave carbs.
- I eat too much sugar and fast food.
- I drink too much alcohol and I need to exercise more.
- Not super bra, but I'm gettin ok.
- There is too much crap in commercial products.
- I don't want chemicals in my body, I want to attempt to be healthy.
- I'm on a weight loss journey and I focus on my internal health.
- I'm healthy with a bit of extra body fat.
- I'm slightly over weight/out of shape.
- I'm stressed and burnt out but still killing it.
- I am healthy and working towards staying that way.
- I have a knowledge of eating healthy but I fail with dessert.
- I perceive natural organic food to be healthier.
- My doctor tells me what to take.
- I ain't got time for researching what I put in my body.

Visual Journey

YOU TALKED, WE LISTENED!

Then we put ourselves
in your shoes to come
up with a solution at
your fingertips.

I still view biohacking as a scary concept, even though with a little bit of research and awareness, it can be as simple as going to a natural food store or as complex as trying alternative methods to benefit the community.

I believe preventative knowledge of my dietary habits would lead to the mastering of my own body and the environment around me.

I've always been mostly healthy but recently I started doing research around special areas I want to change.

I am someone who will use any technological methods to customize my biology.

I don't know what's best for me and I don't care, because I pay professionals to do it for me.

It is hard to make healthy choices today, especially with the accessibility of junk food. I want to invent healthy junk food.

I am very busy and have no time to research or learn about biohacking. I want an easy and effortless way to improve myself.

Visual Journey

FingerFoods

Finger Foods is *a personal nutrition system that consists of an implantable device and a meal delivery system.*



It monitors your health and track your progress towards development goals with the implant. When you interact with the dispenser it reads all of the information from the implant and creates a custom meal you can drink that has all essential nutrients you need to stay on track for your goals.

