



Ricardo San Martin: An International Entrepreneur

It's exactly like climate change... If I don't see the water level rising to this level, I don't see the connection. We see the connection between the cow suffering and the meat. The meat companies don't advertise a picture of the animal. The meat has been objectified. Very few people have that sensibility. I have a son, a vegan, and he sees that suffering and that story. But 95% of the people don't see that, and so we keep on eating meat. So, how do we shift people away from eating meat that is mega-cheap? It's a very complex issue and I don't have an answer. I hope the students one day will.

— Ricardo San Martin

The students in Ricardo San Martin's Plant-Based Meat challenge lab class argue about the vast obstacles that stand ahead of them. They are attempting to develop new plant-based meat alternatives that will succeed in a finicky market.

San Martin teaches the Challenge Lab in Berkeley Engineering's Sutardja Center of Entrepreneurship & Technology. The class is a unique intersection of both cutting-edge food-tech and entrepreneurship. Prior to arriving in Berkeley as a Professor, San Martin invented a plant-based extract derivative that makes the foam in root beer and other beverages. The firm he started with his invention is now a multi-million-dollar company with customers such as Coca-Cola and PepsiCo. His PhD might make him an unsuspecting startup founder in the food industry, but his background in research struck a chord with his desire to innovate.

Childhood Values

San Martin was born in 1956, in Santiago, Chile. He grew up between La Serena, a little beach city in the northern Chile, and Santiago, the capital. His father, a Basque descendant, was a very respected lawyer in Chile. He was handpicked by the President of Chile as a notary in Santiago, an important position shared by few lawyers in the country. He defined himself as a "tennis player that was lucky enough to practice law." Whether in tennis or law, San Martin describes his

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father as someone who “always worked harder than any man I’ve seen.” His mother completed two years of a social work degree and was extremely smart and intellectually curious. “She never stopped learning,” San Martin said of his mother, “whether crossword puzzles or her piles of books, she always emphasized the importance of an education.”

One of the most strident lessons San Martin learned from his father was on the value of obligation and responsibility. Even from a young age, San Martin was introduced to the importance of accountability. In particular, his father always told him “Never ever get yourself into debt... being in debt was just about the worst thing you could do.” At the time, he had no idea how important these teachings would become over the course of his career.

Political complications and unrest in Chile forced a difficult decision on San Martin’s father: he could take his family to Spain to guarantee their safety, or he could remain in Chile, where his job would provide a very comfortable lifestyle but daily life was filled with political unrest of the time. He decided that safety was paramount, and he moved the family to Madrid. Although the family was forced to leave behind a lot of money, the decision was never questioned; they understood it had been the right choice: “[The money] was never mentioned in the house. It wasn’t even a thing,” San Martin remembers.

Starting his new life in Madrid, San Martin had to finish his high school education in an American School. The experience was an incredible change. San Martin was able to choose his classes and electives, and carve out a personalized curriculum of subjects that interested him most. Chilean education had been extremely rigid, and this new found freedom sparked a lifelong passion for self-directed learning. Reflecting on his early education, San Martin says:

“My grades were fine before, but after that, I would spend the summers teaching myself trigonometry, reading more and more... That school, in that time of my life, changed my intellectual curiosity. For the first time, I considered engineering or a PhD as a career opportunity, when people around me never did.”

Self-directed learning would prove the key to his future success as both an academic and an entrepreneur. Opportunities arose to develop niche knowledge of both science and business that lent him an edge in later pursuits.

Pursuing Higher Education

San Martin’s curiosity and drive to keep learning about the things that fascinated him lead him back to Chile, where he attended Pontificia Universidad Católica (PUC) and received his Chemical Engineering degree in 1981. He then was awarded a Fulbright Scholarship and attended the University of California, Berkeley, where he earned a Master’s Degree in Chemical Engineering. The difference between the two universities was striking; many of the textbooks he used in Chile were written by the professors he studied with at Berkeley.

His father tried to convince him to use his Master’s degree to start a lucrative career in industry in the United States. However, San Martin was not finished with academia and wanted more knowledge. He pursued a PhD in Biotechnology at the Imperial College in London, sponsored by the British Council in Chile. While he had thrived in the intense environment of Berkeley and loved being surrounded by such great minds, he had felt that a Master’s degree was too structured; “I knew that if I did this and this, I would receive my degree. In London I was given a problem and had to make the best of it. No one held me accountable for my progress or lack of it. This unstructured education added perfectly to the structured background I came from.”

The freedom and resources afforded San Martin in London allowed him to develop the passion that would later define his Biotechnology career. “I was really interested in plants, trees, and fish, more bio kind of things. It wasn’t about the business, but the topic.” After publishing his thesis and earning his PhD, San Martin decided it was time to go back to Chile. “I always felt a debt towards my country. Even though there was no financial or contractual obligation with them, I felt a strong responsibility for giving back to where I came from.”

Back in Chile, he started his career as a professor, teaching Thermodynamics. He also started analyzing different research topics that could be developed into a business. “My goal was not only to teach chemical engineering, but to develop an applied research laboratory dedicated to plant extracts and biotechnology, that could lead to novel ventures in Chile.”

San Martin’s first big break was a project of interest and luck. While working on a project focusing on botanical extracts, he came across an article in a United Nations magazine about the extracts of a unique Chilean tree, Quillaja saponaria (or quillay) that showed promising applications in experimental AIDS vaccines.

While researching all the possible uses cases for the plant, San Martin developed an alternative application. In the US, the plant was approved for human consumption by the FDA. Companies such as PepsiCo and Coca Cola used it as foaming agents in root-beer and slush-type drinks. However, the entire processing of the tree was done internationally, with Chile was the only source of raw tree production. This had a series of drawbacks, especially in economic and ecological terms.

“When I started my research, Quillaja extracts were not produced in Chile, only the tree. Instead, bark from old Quillaja trees was exported to the US, Europe and Japan to be refined into the extract. The ecological damage was immense and very few old trees remained in the Central part of Chile, where growing conditions are optimal. The economic benefits for Chile were minimal, since a law was in place to promote non-traditional exports, such as Quillaja bark, and 10% of the export value was reintegrated to the exporter.

This exploitation process lacked scalability, since debarking was limited to 4 months. Every year 60,000 wild trees were felled, and this was the maximum allowed by Chilean forestry authorities. Overall supply was of only 250-300 tons per year of concentrated liquid extract. More promising applications, like food emulsifier or biopesticides, were stifled because the bark that Chile exported each year was insufficient.”

San Martin realized that there was a business opportunity for someone with his unique credentials and knowledge. If he could scientifically find a cheaper way to refine the tree in Chile, he could help Chile commercialize the tree more efficiently. Thinking back on the magazine that lead him to this realization, San Martin says, “I was really lucky coming across this magazine. I saw this as a way to make myself a little side income, maybe 1,000 USD per month, by simply doing some research.”

From Academia to Entrepreneurship

San Martin believed he could develop an edible foam derived from quillay that could mimic or enhance the froth of root beer and soda. Quillaja extract-based foaming agents would

significantly extend the shelf life of sodas and enhance the drinking experience, which would prove extremely valuable to big-name soda brands.

San Martin began his quest to find an alternative and sustainable method to produce these extracts. His goal was to increase yield of extract from each tree, while also making the extract flexible enough to be used for different applications. He could be found on the fields of Chile examining rotting quillay trees that were debarked from exploitation. He found that by harvesting the total biomass of the tree, not just the bark which was traditionally done, he could significantly increase harvest rates. His new method reduced the number of trees exploited each year from 60,000 to 10,000.

It took two years of intense research to produce commercial extracts from the quillay trees that were comparable to the ones derived from bark. In a breakthrough, San Martin was able to harvest these extracts and store them as liquid concentrates or spray-dried powders. This contributed immensely to commercialization. As San Martin notes about his process, “[The new process] opened immense opportunities, since the raw material could be sourced year-round from whole trees or from the pruning of existing bush-type trees that regenerate after the exploitation of bark¹.” The new methods developed by San Martin also increased the exposure of the plants to the research community, increasing substantially the number of products based on its extracts².

The dean of The Pontificia Universidad Católica, having observed San Martin’s work, saw the potential for significant return on investment for the university. Even though San Martin’s father had offered to fund his son’s work out of his own pocket, the dean intervened and offered San Martin lab space free-of-charge as part of a “partnership” with the university. With nothing more than an informal handshake, San Martin began his work.

After a few months of work, San Martin started getting results greater than his original expectations. While he had just developed the first prototype of his quillay foam, the university grew restless for a return on their investment and decided to turn his no-strings attached grant into a loan with a fast approaching maturity date.

San Martin’s worry-free professorship now was hanging in the balance, and he felt that he was being painted as a villainous professor callously ignoring his debt obligation to the university. His father’s words warning against the perils of debt were also ringing in his head. As an academic with no other sources of income, San Martin’s stress levels shot up. With his back against the wall, he felt he had to monetize his project. He decided to transition his university research project into the uncertain world of start-ups.

The speed of his project accelerated immensely, innovation driven by the fear of debt and his cash burn rate. “This wasn’t research, this was real stuff now,” San Martin recalls about his company, “There was a new sense of urgency. I only had about 2-3 months of cash to sustain myself.”

San Martin was brilliant at solving technical problems. However, his obsession with research and problem-solving blinded him to the importance of sales, distribution channels, and marketing. “I thought once I had the product, people would run to buy it. I was wrong. No one knew I existed.” With his professorship on the line and debt growing, he was in desperate need of a solution to his customer acquisition problem.

¹ See Exhibit 1

² See Exhibit 2 for number of scientific publications on Quillaja saponins since 1998.

Natural Response: Initial Roots

The first instinct San Martin had was to find a co-founder. He needed to find someone to run marketing, supply chain, and finance while he focused on research and product development. Using his university contacts, friends, and family, he narrowed down his search to 50 potential candidates. San Martin sent “cold faxes” to each candidate and received exactly one response. One of the last candidates, Paul Hiley, turned out to be exactly what San Martin needed. Hiley was based in San Diego. He had connections with Coca Cola, Pepsi, and other brand name consumer beverage companies. Hiley already had a company, Desert King, working with similar extracts. He also had the distribution channels San Martin needed. Paul signed on to help.

Hiley and San Martin had met via fax from thousands of miles away, but their exchanges warmed as they found commonalities. “Entrepreneurs will tell you that their success came from their good decisions, but that is not really how it is. It’s a lot about luck. Engineers don’t like to talk about luck, because it can’t be controlled. But ask anyone to be honest, and it’s all about luck. It was luck that Paul decided to respond to my fax, and it was luck that his wife was from Mexico, and so we shared a cultural understanding.” They found organizational synergies too: complementing skillsets with San Martin’s research background, and Paul’s operational background. After extensive pilot plant testing, in 1995, together with PUC, San Martin and Paul founded their company in Chile, Natural Response, to produce quillay extracts³.

Sprouting the Company

By 1996, Natural Response was beginning to gain traction and grow. San Martin had been finalizing his product, and Paul established a partnership with Desert King International. Desert King produced a similar product and had the distribution channels to sell Natural Response’s products.

It wasn’t long before Hiley approached San Martin with a client order: one container of the product – a massive amount compared to what San Martin was used to producing. San Martin recounts about the order, “At this time, the most I had made was 1 liter... but they wanted a container? What was a container? Was it this high”, as he gestured towards his knee-level, “or this big?”, spreading his arms out.

Without the funds to produce more, San Martin told Hiley that they would not be able to fulfill the order without some type of investment. So Hiley personally invested. “I had no credit... There was a lot of trust, but my degree from Berkeley helped. [It showed] that someone had approved me”, remembers San Martin. “There was really a theme of co-dependency on each other. We could not have succeeded without the other.”

When San Martin expressed his doubt about being able to produce and sell so much product, Hiley reassured him, “Give it six months, and I will arrange the rest.” San Martin trusted his partner. He knew that Hiley had been faced with operational, strategic nightmares in the past and had mustered through them. Now, it was San Martin’s responsibility to deliver on his part.

³ See Exhibit 3

To keep up with production needs, a small production facility was built near the Chilean city of Valparaiso. Within six months, Natural Response was exporting the extracts to Coca-Cola and Pepsi. The beverage companies immediately adopted the extracts due to environmental benefits. In Chile, the exploitation of bark dropped dramatically, and today it is 10% of what it was 20 years ago.

By September, 1996, Natural Response had built a plant in Valparaíso, Chile, capable of producing 5 tons of product per month.

Company Turmoil

Personal turmoil in San Martin's life soon leaked into his involvement in the company. San Martin went through a divorce from his wife. When San Martin first filled out the paperwork for Natural Response, Universidad Católica required that San Martin have someone co-sign on all of the papers to share liability. Since he hadn't even begun a search for a business partner at the time, San Martin decided to sign with his wife. He placed her on the board of the company and split the ownership with her 50/50. Until their divorce, "she had never had any interest in the company or its decisions, whether it went one way or another. But after we divorced, she thought her 50% was worth some money, and so she suddenly had an interest in its decisions, even though she knew little to nothing about it," according to San Martin.

San Martin's ex-wife's involvement on the board led to conflict and fights about the status of the company, which began to affect their relationship with their children and take a toll on San Martin's mental health. "At one point, I got fed up and said, 'this is not the company I want to run.'" San Martin approached Hiley for help. "I was tired, being a professor 100% of the time, with this company and family problems on top of that. So, I asked him, why don't you buy me out? He didn't want to, but he did..."

San Martin left Natural Response after working with Paul for 10 years, building sales to over \$6 million, and more than quadrupling total Chilean quillay exports. After San Martin's departure, the company continued to grow, increasing more than 400%. The five product lines that San Martin helped develop continue to sell millions of dollars per year. San Martin recognizes that, in leaving his own creation, he "left a lot of money on the table... but I don't regret a thing." The most important thing to him was that the burden of debt had been lifted. Although he'd lost out on significant gains, he finally had the freedom to do whatever he wanted, without the obligations of debt or research.

"From the very beginning, I have always said I was not after money. What drove me was that I wanted to create something meaningful and fun for me to do. It was not so that I could make it, sell it, have an exit, and be rich." That attitude had served San Martin as a vice and a virtue. "Because of that," he recounts, "I undervalued to my partners what I brought to the table to be the same as others who did not bring much".

When asked why he didn't regret pulling out early of the company he created, San Martin elaborates, "That was the information I had at that moment in time, that was the life I was facing--I never looked back. These decisions were not a rational process at all... it is really like surfing... You cannot explain why you are doing the things you are doing... You don't have an algorithm to make such a decision..."

After exiting Natural Response, San Martin decided to take his lessons and start another company with Hiley. This time, San martin did not want to be involved at all in the production

process. He gravitated towards what he loved the most about starting a company--researching and inventing. Hiley and San Martin ended up starting yet another successful company. The company was again plant-based and had strong growth. With two successful companies under his belt, San Martin set his sights at the Silicon Valley. He decided to take a sabbatical year at Stanford University, where he began getting exposure to Silicon Valley culture.

From the Chilean Mountains to the Silicon Valley

San Martin absorbed the contrasting life of Silicon Valley with joy. He loved his peers' willingness to take risk, make products to help the world, and innovate. It was also a good environment for his family and children. San Martin's scholarship only lasted a year before his visa expired. The time came for he and his family to decide on whether to apply for an extension or move back to Chile. He decided to stay, despite having financial stability in Chile. The risk of going into bankruptcy after staying for 2-3 years, or even not getting a visa extension, haunted him. But the lure of Silicon Valley's entrepreneurial landscape and schooling made him determined to stay. In the same way his father had made a difficult choice several years ago, San Martin knew it was time to do the same.

San Martin visited Chile to resign from his position as a professor at PUC so he could stay in the Silicon Valley. However, the Dean of the Engineering School saw potential in the connection that San Martin had created with the Silicon Valley. He saw San Martin's travel as an opportunity to expose students to a unique ecosystem. The Dean asked him to spearhead a new bridge program, an exchange between PUC and Silicon Valley, which San Martin agreed to.

San Martin visited Berkeley as a visiting scholar and caught the eye of Ikhtlaq Sidhu and Ken Singer, who run Berkeley Engineering's Sutardja Center for Entrepreneurship and Technology (SCET). San Martin's character as a learner and innovator impressed Singer; recounting his first meetings with San Martin, he says:

"I knew he had been charged by his Dean at the time to explore new relationships and new kinds of educational models that he might be able to take back [to PUC], and he met with us and we hit it off... and even though he was based in Stanford he kept coming back to meet with us to talk more about what we were doing. Over that time, we invited him to come over and do more work with us and spend more time with our students and projects and programs, and he decided to jump ship."

Soon after, Singer would invite San Martin to teach his own Challenge Lam class at Berkeley. When inviting San Martin to Berkeley, Singer knew the remarkable asset he was bringing to the students of SCET. "The kind of relationships he develops with his colleagues and his students is rare. His authenticity and the charisma he has with his students is really what makes him such an asset to any university. I think the students here are quite lucky." In particular, Singer saw in San Martin a familiar characteristic; that of the natural entrepreneur. As a serial entrepreneur himself, Singer recognized that San Martin thrived on the chaos and freedom of creating things from scratch, creating companies and industries from whole cloth. As Singer commented:

"My background is to teach entrepreneurship and I've been an entrepreneur myself for many cycles... and with that kind of experience, you get to see some patterns. One of the patterns is you see the types of people that are in entrepreneurship, starting their own companies in the innovation space, and Ricardo is of that group of—and I hate to use this term—a natural."

Singer continued to describe qualities that he immediately noticed about San Martin, such as his comfort with the uncertainty in entrepreneurship. “Ricardo is drawn to the chaos and uncertainty of creating a company. Regardless of the educational or family background, he is drawn to it, while other people run from that level of chaos.”

Perhaps one of the most notable aspects that Singer mentioned was San Martin’s success in entrepreneurship, despite his accomplished background in academia. He noted many researchers are discouraged from commercializing their research, but San Martin had the ability to leverage and harness his research into something of value.” Continuing, Singer states:

“Another characteristic of Ricardo, which is something that you do see as a common thread in every entrepreneur that I know that has been successful, is his level of curiosity. He’s incredibly curious about everything. He acts on that curiosity. It’s not just asking the right questions and saying, ‘Hmm this is an area that needs to be explored or there’s an open question here’, but he takes it to the next level and tries to answer those questions, and those questions can range: it’s not just ‘hey is there an answer to this weird technical problem, or weird anomaly that we’ve seen in our research’...Rather, it’s ‘can I leverage this into something that can be commercialized and harness it into something of value’. And all effective entrepreneurs seem to do that naturally.”

The staff at SCET regularly monitor the startup environment for interesting and innovative emerging technologies, and “meatless meat” was a rapidly evolving new opportunity. Professor Ikhlaz Sidhu suggested the teaching topic to San Martin for a Challenge Lab, as it seemed to be right up his alley of biotechnology and repurposing natural resources. Although San Martin had no prior experience in the field, San Martin accepted the role and the topic. The field was so new, San Martin saw an opportunity to become one of the world’s leading experts in the subject. This risk would soon pay dividends as new opportunities emerged from the fertile ground of the Challenge Lab.

Challenge Lab: Plant Based Meat

San Martin’s plant-based meat class was met with great enthusiasm from students⁴. San Martin attributes the popularity due to changing perceptions of meat consumption and veganism in the Bay Area. San Martin says:

“4-5% of people are vegan, and that hasn’t changed in the past 50 years. But these days, there is more hype about vegetarian options, especially in developed areas like the Silicon Valley. The main challenge is customer perception--I hope the idea can expand to other areas of the world. With plant-based meats, would come sustainability and affordability that not relying on meats bring. Overall, the theme is complex because food has meaning and it has a cultural heritage. It is not like building an iPhone.”

Meat is an unusually difficult product to innovate, much more so than other technological products. Meat, and food in general, is intensely personal. People have very acute sense of taste

⁴ See Exhibit 4.

and texture. Gathering data and feedback can be very difficult. While a market exists in the Bay Area, as demonstrated by early successes of products like the Impossible Burger, more conservative areas such as Ohio and Michigan are much slower on the uptake. There is less of an early-adopter culture, especially for something as traditional as meat.

The Challenge Lab aims to create new plant-based meat products and bring them to market. As a student from the course says, “[Ricardo] does focus not only on the research part, but on the entrepreneurial aspect of this challenge as well. It’s not only about developing or designing a product based on plants, but also finding a good market fit for this product.” Within the class, San Martin tries to create an environment of high growth and learning.

The key question for meatless meat is a familiar one: How do you design for beyond Silicon Valley? There is not a well-defined answer, but it’s attracted students, professors, and onlookers alike. Says Teibel Education Consulting on a feature about San Martin’s class⁵:

“Professor San Martin’s own transformation comes at the forefront of the science he teaches. The cutting-edge chemistry, biology, business, and manufacturing that goes on in the course serves to put student and teacher alike in the role of explorer, and it’s changed the way San Martin approaches the classroom.”

The Future

Just as he did in his early university days, San Martin is balancing his professorship with building a company. Currently, he is researching ways to harvest the quillay trees with greater efficiency. When San Martin first made a breakthrough in the 1990s after finding the quillay plant could be used as a foam agent in sodas, he helped create an industry for the Chilean economy. However, since then, he has been saddened by the mass exploitation of the crop and has dedicated his time to finding out how to harvest more extract from the same amount of plant. With a steadfast wonder in his eyes, San Martin explained his progress:

“When I first started, it took 6 quillay trees to make one unit of the extract. Through my research over the years, I got that ratio to 1 quillay tree to 1 unit of extract. Locking myself in a room these past months over the weekends, I’ve been able to get that number down to 0.6. I think I’m getting close to reaching 0.5 plants per unit of extract, the lower bound.”

After years in research and entrepreneurship, San Martin also hopes to spend more time giving back. He hopes to expand the Bridge program at PUC that once brought him to the Silicon Valley. He would also like to help bring more companies from Chile to Silicon Valley and expose them to new technologies and alliances that foster innovation. His course in Coursera, Decoding Silicon Valley, is often referred as one of the top resources for understanding Silicon Valley’s culture⁶.

San Martin recognizes research as an integral part of his life, but reflecting back, he recognizes how it both complemented and went against his pursuits in entrepreneurship. In both capacities, he was motivated by the results of being able to build something and make the world a better place. However, entrepreneurship also has some stark contrasts with research. San Martin mentions that in entrepreneurship there is no formulaic plan you can follow.

⁵ See Exhibit 5.

⁶ See Exhibit 6.

“Success is weird. What would have happened, if for example, Paul never answered my fax? Or I hadn’t met Ikhtlaq Sidhu?”, San Martin says, “Sometime, a story just comes down to dumb luck.”

Exhibit 1 San Martín's Paper on Uses of Quillaja

INDUSTRIAL USES AND SUSTAINABLE SUPPLY OF *QUILLAJA SAPONARIA* (ROSACEAE) SAPONINS¹

RICARDO SAN MARTÍN AND REINALDO BRIONES

San Martín, R., and R. Briones. (Department of Chemical and Bioprocess Engineering, Catholic University, Av. Vicuña Mackenna 4860, Santiago—Chile). INDUSTRIAL USES AND SUSTAINABLE SUPPLY OF *QUILLAJA SAPONARIA* (ROSACEAE) SAPONINS. *Economic Botany* 53(3):302–311, 1999. The bark of the tree *Quillaja saponaria*, indigenous to Chile, is one of the major sources of industrially used triterpenoid saponins. For decades quillaja extracts have been used as foaming agents in beverages, emulsifiers in foods, wetting agent in photography, etc. Overexploitation of the bark has caused important ecological damage and a shortage of this resource. However, this can still be remedied by using whole quillaja wood (and not just the bark), for the production of saponins. This raw material can be obtained in large quantities from pruning operations, reducing the need to fell trees. This review covers ecological aspects of quillaja exploitation, as well as a discussion of its novel industrial applications.

USOS INDUSTRIALES Y ABASTECIMIENTO SUSTENABLE DE SAPONINA DE *QUILLAJA SAPONARIA*. La corteza del árbol *Quillaja saponaria*, originario de Chile, es una de las principales fuentes industriales de saponinas triterpénicas. Durante décadas los extractos de quillay han sido usados como espumante en bebidas, emulsificante en alimentos, agente humectante en fotografía, etc. La sobre explotación de la corteza ha causado un importante daño ecológico y escasez de este recurso. Esto aún puede ser remediado usando en forma integral toda la biomasa del árbol y no sólo la corteza. Esta materia prima es abundante, y se obtiene del raleo de los bosques existentes, sin necesidad de cortar árboles. Este trabajo cubre aspectos ecológicos de la explotación del quillay, y novedosos usos industriales de sus saponinas.

Key Words: *Quillaja saponaria*; saponins; sustainable production.

Exhibit 2 Increase in Scientific Publications on Quillaja Saponins

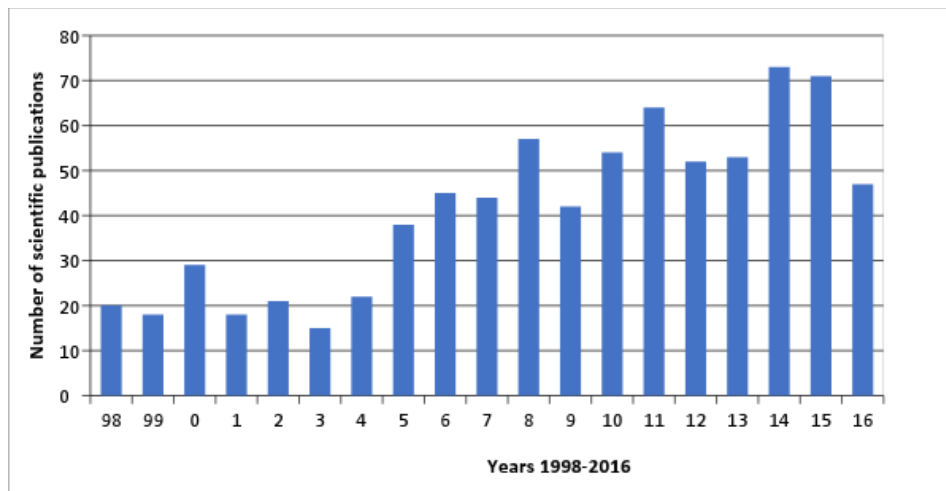
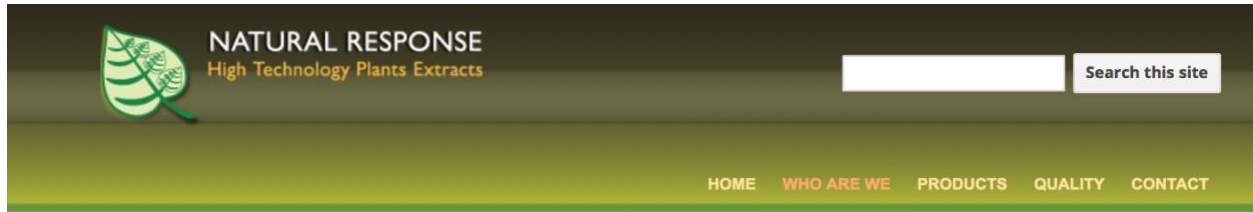


Exhibit 3 Natural Response, San Martín's first company



VISION AND MISSION

Quality, Food Safety, Occupational Health and Safety Politics.

- To ensure the continuous improvement of our management, quality, food safety, occupational health and safety system efficiency. Also, to ensure the compliance with the clients requirements, legal and intern.
- To ensure every worker to incorporate the concepts of quality, food safety, safety, occupational health and safety, continuous improvement and efficiency in the performance of their tasks, so quality and safe products may be delivered which compliance the national and international standards, satisfying the needs and expectatives of our clients.
- To promote long time relationships with our providers and to support the commercial tasks of Desert King Chile in keeping long time relationships with the final clients, keeping an intern and extern effective communication before any change that may affect the quality and food safety characteristics of our products.
- To do our productive activities with utmost respect for the environment and existing legal regulations in Chile, with an special concern in natural resources exploitation sustentability used as raw materials.
- Through Research and Development, to keep leadership in quality and innovation of our processes, products and their applications.
-

Vladimir Aránguiz

Gerente de Planta

Natural Response S.A.



Vision

To develop products, productive processes and supply chains of natural extracts, rich in saponins, to design from them and in association with Desert King Chile S.A, innovative solutions of applications for our clients, guarding the quality, food safety, occupational health and safety and managing for a continuous improvement in the field of the applications.

Mission

- To develop products from natural extracts with abundant active principles.
- To establish a supply chain for them.
- To understand the needs of our clients and to satisfy them with innovative solutions.
- To monitor and continuously improve the solutions we give to our clients, using defined objectives and measures.
- To develop cutting-edge knowledge to differentiate us and expand our products and services.



Who We Are



[Our Company](#)

[Our Team](#)

[Vision and Mission](#)

[The Quillaja](#)

Exhibit 4 Plant Based Meat Challenge Lab

The screenshot shows the website for the Sutardja Center for Entrepreneurship & Technology at Berkeley Engineering. The navigation menu includes Home, About, Courses, Programs, Labs, News, Explore, and Contact. The main heading is "Alternative Meat Lab". Below the heading is an illustration of a burger and a leaf of lettuce. The text reads: "There are many reasons to consider replacing some of the meat in our diets with plant-based alternatives: animal welfare, climate change or health. Surprisingly, this urgent task is now addressed by a few companies, and there is a lack of fundamental research to allow rapid progress. The industry is still based on more art than science. At the SCET we want to change this by building an open and collaborative space, where aspiring entrepreneurs will develop novel solutions based on a deep scientific understanding of 'what makes meat taste, smell, and cook like meat', as well as circumventing the complex cultural hooks we have around eating meat."

Source: <http://scet.berkeley.edu/alternative-meat-lab/>

Exhibit 5 Interview with TEIBEL

The screenshot shows the website for TEIBEL Education Consulting. The navigation menu includes HOME, SERVICES, TESTIMONIALS, PODCAST, EVENTS, PARTNERS, and CONTACT. The main heading is "TEIBEL Education Consulting". Below the heading is a search bar and a "Subscribe via Email" button. There are also buttons for "Apple Podcasts", "Google Play Music", "Pocket Casts", and "Overcast". The main content area features a testimonial from Professor Ricardo San Martin of UC Berkeley, dated August 8, 2017, under the category "Academics, Culture & Innovation". The testimonial text reads: "179: The Teacher as Learner – Finding the Future of Teaching in Meat with Berkeley Prof. Ricardo San Martin" and "This is the best class I ever learned." Below the text is a photo of Professor Ricardo San Martin. There is also a button for "UPCOMING EVENTS".

Source: <https://teibelinc.com/podcast/179>

Exhibit 6 San Martin's Course about Silicon Valley: Decodificando Silicon Valley (Decoding Silicon Valley)

The screenshot shows the Coursera course page for "Decodificando Silicon Valley: cultura, innovación y emprendimiento". The page features a navigation menu on the left with options: Overview, Syllabus, FAQs, Creators, and Ratings and Reviews. Below the menu is a blue "Enroll" button with the text "Starts Dec 04". The main content area includes a breadcrumb trail "Home > Business > Entrepreneurship", the course title, and a description: "About this course: Este curso esta diseñado para emprendedores tecnológicos que tengan la ambición de ser globales. Para lograr esto debes saber qué es y cómo interactuar con Silicon Valley, donde hoy ocurre la conversación global en tecnología. A lo largo del curso vas a darte cuenta que tu estrategia correcta es construir tu empresa desde el inicio con SV, y no venir aquí solo cuando necesites capital para escalar." Below the description is a "More" link and the text "Created by: Pontificia Universidad Católica de Chile" with the university's logo.

source: <https://www.coursera.org/learn/decodificando-silicon-valley>

References

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