



**SAN FRANCISCO  
BUSINESS TIMES**



# 2020



## **EAST BAY INNOVATION AWARDS**

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## OUR MISSION

The East Bay Economic Development Alliance is the regional voice and networking resource for strengthening the economy, building the workforce and enhancing the quality of life in the East Bay.



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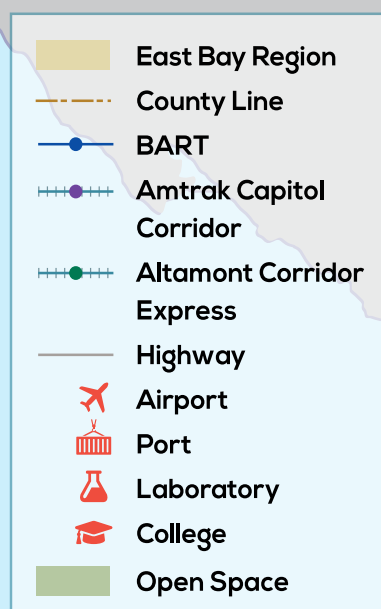
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## OUR REGION





A MESSAGE FROM THE CHAIRMAN

# Innovation in a post-pandemic world



**Keith Carson**  
Chair, East Bay Economic Development Alliance;  
Supervisor, Alameda County District 5, Vice President, Alameda County Board of Supervisors

Thirty years ago, the East Bay Economic Development Alliance, then known as the Economic Development Advisory Board, began out of a need to address regional transportation challenges our businesses were facing. In the years since, we have worked on other regional solutions such as brokering an agreement that solved an intractable harbor dredging problem for the Port of Oakland, dealing with major plant closures, helping small and medium-sized manufacturers compete more effectively by creating Manex, and securing over \$85 million in below prime Industrial Development Bond financing for small and medium-sized manufacturers. Even with all of that work we realized that there was not a strong enough spotlight on the amazing innovative work being done here in the East Bay — and so the Innovation Awards were born.

While it feels obvious in hindsight, the initial decision to postpone the 2020 East Bay Innovation Awards event was a difficult one to make. Less than two months since the initial regionwide shelter-in-place order was instituted across six Bay Area counties, our businesses, communities and entire way of life have been upended in previously unfathomable ways. New terms such as “social distancing” have come to define our current existence as we all try and mount a collective response that meets the moment brought upon by the pandemic. Despite highly lauded efforts here in the region to minimize the spread of COVID-19 and “flatten the curve”, thousands of area residents have been infected with the virus, more than 250 of whom have died. Meanwhile, as our nation and world continue to grapple with the unprecedented impacts of the COVID-19 pandemic, East Bay EDA and its network of regional partners are working hard to respond to new realities gripping the regional economy.

Now, as a result of the most serious pandemic we have ever experienced, we face a new set of major challenges — physical, emotional and economic. At the time of this writing it remains to be seen how much the structure and habits of our daily lives will be affected going forward. What will the recovery environment mean for the travel and leisure industry? Will there be required changes in the way work is done in hospitals, stores, and offices? How much will the market for consumer goods change? As a result of the pandemic, will new venture, angel and private equity investment objectives alter the growth pattern of innovation in the Bay Area? Will the housing market change? And how will that affect our communities? How much will we recover to “business as usual,” and how much will we recover to a “new normal”?

Whatever the post-pandemic reality turns out to be, there are certain to be opportunities for new solutions. With their demonstrated track record, East Bay talents will be engaged in addressing our region’s needs. I am sure that future East Bay Innovation Awards events will continue to celebrate businesses and organizations who exemplify the ingenuity, persistence and hard work that now, more than ever, will be needed to address the challenges that lie ahead.

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**About the East Bay Economic Development Alliance**

The East Bay Economic Development Alliance (East Bay EDA) is a public/private partnership serving Alameda and Contra Costa Counties. We are the regional voice and networking resource for strengthening the economy, building the workforce, and enhancing the quality of life in the East Bay. Engage with us!

[www.EastBayEDA.org](http://www.EastBayEDA.org)

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# “Lean” method revamps manufacturing

## MIZUHO OSI

**mizuhosi.com**

**Innovation:** Lean manufacturing principles minimize waste and maximize productivity

**Location:** Union City

**VP, Operations:** Kevin Thorne

### Regional

**significance:** East Bay manufacturing facility serves global market for specialty surgical tables

**Employees:** 400

### East Bay favorite:

“I love the diversity. ... The East Bay has it in abundance.”

**T**he story of Mizuho OSI’s transformation is at its core an operational story. From its founding in 1978 up until just a few years ago, the Union City-based specialty surgical table manufacturer had been a build-to-stock, workorder based business.

That all changed four years ago, however, when the company began implementing Lean manufacturing principles. Lean manufacturing is a production method that has its origins in the Toyota Way, initially outlined by the Toyota Motor Corporation in 1930 for use in its factories. As its name suggests, Lean methodology is designed to minimize waste while maximizing productivity.

And that’s just what Mizuho OSI found after adopting Lean methodology at their manufacturing facility. The company’s revenue has grown by 44%, while the size of its labor force has remained flat. They’ve shortened their manufacturing cycle time from more than three weeks to just nine hours. And their on-time delivery rate, defined as the percentage of products delivered within 30 days, has reached 100%, with upwards of 90% of those orders being delivered within 5 days.

The result is that hospitals get the equipment they need to effectively treat patients faster — such as the company’s Hana orthopedic table, a state-of-the-art operating



Specialty surgical tables made by Mizuho OSI are found in thousands of hospitals.

**Mizuho OSI shortened its manufacturing cycle time from more than three weeks to just nine hours, with an on-time delivery rate of 100%.**

table that allows the surgeon to replace the hip through just a single incision, an approach that is proven to have better outcomes for patients.

Mizuho OSI’s innovation of its manufacturing processes and operations has helped the company cement its status as a leader in its corner of the surgical devices market. Today, Mizuho OSI’s products can

be found at upwards of 5,000 hospitals in the United States, and the company reports it has a secure 85% market share in the specialty surgical tables industry.

Another key to Mizuho OSI’s success that should not be overlooked is the company’s East Bay workforce. With more than 300 skilled workers required to staff the company’s 160,000 square foot facility in Union City, having access to an abundance and a variety of talent is key, says VP of operations Kevin Thorne.

“The East Bay corridor [is] ideal because it’s close to public transportation, it’s close to logistics distribution centers, ... we can draw [talent] all the way from Morgan Hill out to Tracy,” Thorne says.

# Flexible materials to transform touchscreens

## C3NANO

**c3nano.com**

**Innovation:** Silver nanowire-based transparent conductive films

**Location:** Hayward

**CEO:** Cliff Morris

### Regional

**significance:** Company’s growing domestic manufacturing and R&D facilities reflect C3Nano’s strategic commitment to the East Bay

**Employees:** 50

### East Bay favorite:

“The East Bay has a really good blend of location, workforce and city governments that know what companies need to get things done.”

**F**olding, curving and otherwise flexible smartphones have seemingly been just on the horizon since the release of the original iPhone in 2007. But 2020 may be the year these technologies actually go mainstream, and that’s in large part thanks to innovations in touchscreen technologies from manufacturers like C3Nano.

C3Nano was founded in 2010 as a spin-out of doctoral research performed by co-founder Ajay Virkar under the tutelage of Stanford chemical engineering professor and fellow C3Nano co-founder Zhenan Bao. Early-stage startup veteran Cliff Morris was recruited to serve as the company’s CEO, after which the company quickly closed a \$3.2 million Series A funding round to productize Virkar’s discoveries about how to improve the performance of thin films.

The fruits of that project can be found in C3Nano’s current ActiveGrid line of transparent conducting films, or TCFs. Optically transparent and electrically conductive, TCFs are an integral component in touchscreens, as well as displays and photovoltaics. C3Nano’s films offer superior flexibility over the films currently used in commercial smartphones, an innovation that has made the company the go-to supplier for these materials. Two of the world’s first flexible smartphones rely on C3Nano’s technologies.

The key innovation in C3Nano’s films has been the company’s NanoGlue technology. Unlike typical smartphone films, which make use of a ceramic-like material called indium tin oxide,



C3 Nano’s Hayward location has helped it recruit top talent.

C3Nano’s films are made from silver nanowire, a durable, flexible ink that’s also cheaper to produce than indium tin oxide films. C3Nano reports that its ActiveGrid films can be dynamically flexed over 200,000 times.

Morris attributes C3Nano’s ability to innovate so quickly to the company’s approach to talent acquisition and people management. “We try to hire the best people available, then we immediately make them stakeholders,” Morris says. “We treat them

with respect — we treat everyone the same.”

Moreover, “we have since Day 1 approached our business as being transparent to our employees,” he adds. “[Employees] are privy to most of what we do. This enables people and it makes people part of the process.”

Finding the right talent to staff its advanced nanomaterial manufacturing facilities was thus a top consideration for C3Nano when deciding where to locate. Morris says that while C3Nano considered other spaces in the Peninsula and South Bay, they inevitably found themselves returning to Hayward.

“It’s a good location because we’re somewhat midway between Berkeley and Stanford, so there’s lots of scientific talent to draw from,” Morris says. “Plus, also just from our local area, Hayward has lots of good talent. So we’re quite happy, and we feel we’re in a good location from that perspective alone.”



# Everyone's Port

## PORT OF OAKLAND SEAPORT AND AIRPORT ARE ESSENTIAL

BY MARILYN SANDIFUR

PORT OF OAKLAND SPOKESPERSON

**O**ur way of life has changed. Shelter-in-place in the wake of COVID-19 has saved lives while putting millions of Americans on unemployment and companies, big and small, at risk. We do not know what business in Northern California, across the nation, and around the world will look like in the next few months or the next few years. However, the Port of Oakland is doing what it can to be ready for change.

### The Port of Oakland is open for business

The Port of Oakland supplies essential infrastructure and operations. Although significantly fewer in numbers, ships and flights are arriving and departing from the Oakland Seaport and Oakland International Airport (OAK).

"During this extraordinary time, I extend my sincere thanks to the thousands of men and

women who keep the seaport and airport operating and cargo and people moving," said the Port of Oakland's executive director Danny Wan. "At the same time, we are vigilant about social distancing, washing hands, and wearing masks to protect our loved ones and community."

Every day heroes are among us: At the

Oakland Seaport there are dockworkers, truckers, marine terminal operators, ship crews, federal officers, warehouse workers, port staff and railroad crews; and at Oakland International Airport we have custodians, maintenance workers, concessions employees, air traffic controllers, law enforcement, firefighters, port staff, and airline personnel.

### Health directives

The Port of Oakland is supporting and promoting the new health directives aimed at protecting workers and the public by making personal protective equipment available to port staff at both the airport and seaport and through consistent communications about best practices for staying healthy during the pandemic.

Marine terminal operators are deep-cleaning work areas and equipment at the Oakland Seaport terminals nightly. Port staff repeatedly clean and sanitize Oakland International Airport.

As a humanitarian effort, in March, the Port of Oakland supported a federal and state operation to screen and process over 2,000 Grand Princess cruise ship passengers after several tested positive for COVID-19 while at sea. All passengers began a 14-day quarantine after taken by bus to Travis Air Force Base or to chartered planes launched from OAK to domestic and international destinations.

The ship left Oakland March 16 from berth 22. Thorough sanitizing of the 11-acre area was completed March 26. Federal officials said the area could be safely reoccupied for commercial purposes.



PHOTOS: PORT OF OAKLAND

Port of Oakland seaport (above) and airport (below) are rising to the challenges of the times.



**"Our workforce is innovative and dedicated to serving our customers, our communities and each other, while keeping ourselves as safe as possible."**

**Danny Wan**, Executive Director, Port of Oakland

### Seeking financial relief

Despite a drop of more than 90% of our Aviation passenger business, OAK remains open. Shipping lines have scrubbed 20 May and June voyages at Oakland. The result could be a 5-15% drop in containerized cargo volume heading into summer.

The Federal Aviation Administration announced \$10 billion in CARES Act aid for U.S. Airports. OAK is to receive about \$44 million. Although appreciative of this support, airports including OAK expect that the grant funds will fall far short of revenue loss.

The Port of Oakland does not receive local tax revenues. It relies on the revenues it generates to fund operations. The port will be looking for state and federal relief to help weather this economic storm.

### Legacy of strength, innovation, and commitment

The Port of Oakland's 93-year presence shows its ability to get through tough times. It has implemented many creative programs and technology in its history to overcome obstacles, and improve its operational efficiency, sustainability and customer service. Although no one can predict how long the impacts from this pandemic will be, port staff are already adapting and planning for change.

"Our workforce is innovative and dedicated to serving our customers, our communities and each other, while keeping ourselves as safe as possible," said Mr. Wan.

"We'll get through this together."







# Advancing creative and economic growth

## BERKELEY REPERTORY THEATRE

**berkeleyrep.org**

**Innovation:** Giving more than 700 artists the opportunity to participate in new play development activity since 2011

**Location:** Berkeley

**Managing Director:**  
Susan Medak

**Regional significance:**  
Helping to build a critical-minded, engaged and empathetic citizenry

**Employees:** 150 full- and part-time

**East Bay favorite:** “The constantly contradictory nature of being here: you have urban and rural, mountains and ocean. ... We are progressive but we are intensely committed to the past.”

Only long-time East Bay residents will remember that what we today call the Berkeley Arts District was once an ailing row of auto repair shops. It was the Berkeley Repertory Theatre’s decision 30 years ago to locate their theater there that kickstarted the area’s transformation into the thriving arts district we know it as today.

Arts-focused groups and venues that have grown up around Berkeley Rep’s home on Addison Street in the last 30 years include the Aurora Theatre Company, the Freight and Salvage Coffeehouse, the Berkeley Jazz Conservatory, and the UC Theatre. Berkeley Rep’s operations have expanded significantly too, with the organization’s 400-seat Peet’s Theatre, 600-seat Roda Theatre, and the Nevo Education Center all located on that same block of Addison Street. (The organization also operates a spacious 62,000 square foot campus in West Berkeley.) Meanwhile, a plan to build 45 apartment units for visiting artists and two new School of Theatre classrooms could further revitalize Downtown Berkeley.

Throughout its history, the nonprofit has served not only as a cultural landmark, but also as an engine of economic activity, hosting over 5 million people across some 500 shows — 12 of which it has sent to Broadway since its inception. One analysis of Berkeley Rep indicated that the nonprofit was responsible for approx-



Berkeley Rep invests in the long-term development of new plays.

imately \$27 million of annual economic activity locally.

In addition to producing plays and managing its venues, the organization also operates a School of Theatre that every year serves over 20,000 children, teens and adults. They’ve also made a name for themselves by investing in the long-term development of new plays.

“We realized a number of years ago that it was very difficult for early-career writers to be able to find a place to develop their work, to find companies that were willing to invest in that work early on,” says Susan Medak.

So in 2011, the organization launched The Ground Floor, which serves as Berkeley Rep’s center for creation and development of all new work. Since 2011, more than 700 artists have participated in Ground Floor programming, Berkeley Rep reports.

In keeping with Berkeley Rep’s tradition of innovation, The Ground Floor takes on projects that other theater companies might reject. “And it’s not just writers,” she adds. “We work with composers, writers, directors, even video game designers, [anybody] who want to make a story.”

# Empowering artists as entrepreneurs

## ZOO LABS

**zoolabs.org**

**Innovation:** Music entrepreneurship accelerator treats artists like startup entrepreneurs

**Location:** Oakland

**Founder:** Vinitha Watson

**Regional significance:**  
Musical and professional resources strengthen East Bay arts community and help curb displacement of artists

**Employees:** 5

**East Bay favorite:**  
“How innovative the food here is.”

What would happen if you treated artists like startup entrepreneurs, and taught them how to think about their business, how to access resources around them, and how to deploy their art to shape culture in positive ways?

That’s the question that inspired Vinitha Watson to create Zoo Labs, a West Oakland-based nonprofit and artist accelerator.

A veteran of the technology industry, Watson founded Zoo Labs in 2013 after witnessing first-hand how artists were being left behind and not benefitting from the “new Gold Rush” of the Bay Area’s tech industry. Having obtained an MBA from California College of the Arts, Watson was trained to think about the arts through strategic and entrepreneurial lenses. Finding that many artists who had achieved moderate or even high degrees of success were nonetheless still struggling, she concluded that artists are too often operating on very narrow business strategies, and that the industry lacks viable business frameworks and venture support.

That’s where Zoo Labs comes in. “Zoo Labs is really changing the narrative because we’re acknowledge artists as entre-



At Zoo Labs, entrepreneurship and musical innovation share top billing.

preneurs, they’re working as entrepreneurial engines,” Watson explains. “That’s not only innovative, it’s revolutionary.”

Those accepted into Zoo Labs’ four-month music entrepreneurship accelerator are provided with a steady diet of professional development workshops, studio time, office space, and access to networks,

mentorship and capital. To date, Zoo Labs has to date gifted some \$1.5 million dollars in resources to artists worldwide, with 60% of those resources being given to artists in the Bay Area, primarily in the East Bay.

At Zoo Labs, entrepreneurship and musical innovation share top billing, Watson emphasizes. “We really encourage our artists to take big risks with their art, while being surrounded with resources and kind of a safety net. We also drive our artists to really find their audiences, and really figure out, how does their art fit into people’s lives? Why do people need it? All while staying true to the artist’s vision.”

A trained singer herself and performer of Carnatic (a type of southern Indian classical music), Watson feels a strong sense of connection to the East Bay’s arts community. “The East Bay has such a rich, diverse arts community,” she says “Specifically here in Oakland, the density that you find here makes the city come alive.”

To see that community threatened “gives us the urgency of providing our work,” she adds. “We feel like the East Bay is the perfect place to do what we do because we’re building on the legacy of all the artists that came before us.”





# Architecture to address roots of injustice

## DESIGNING JUSTICE + DESIGNING SPACES

**designingjustice.org**

**Innovation:** Building physical infrastructure to enable the growth of restorative justice

**Location:** Oakland

**Executive Director:** Deanna Van Buren

**Regional significance:** Promoting strong communities throughout Oakland and across the country

**Employees:** 10

**East Bay favorite:** "The natural world."

**A**round the country, jails and prisons are closing as communities increasingly recognize the role they play in mass incarceration. But what will replace prisons? How will justice be conducted? And what will happen to the spaces themselves?

One Oakland-based architecture and real estate nonprofit, Designing Justice + Designing Space, thinks it might have the answers to some of those questions. The organization's mission is to end mass incarceration by building infrastructure that addresses its root causes, including poverty, racism, unequal access to resources, and the justice system itself.

To that end, Designing Justice follows an interdisciplinary approach, working to re-purpose defunct criminal justice infrastructure, build new re-entry facilities for offenders, and make restorative reinvestments in communities.

Founded in 2015, the organization has already built prototypes for spaces that serve as peacemaking centers, mobile villages and workforce development hubs. The City of Oakland also recently select-



**A mobile classroom by Designing Justice + Designing Space is a restorative investment in community.**

Davis speak about restorative justice as sort of an old way of doing justice, as a sort of an indigenous reigniting of that way of doing things, I'd never heard of it before," says Van Buren. But after learning more about it, she decided that "as an architect, I wanted to support that system, I wanted to commit myself to a larger social shift from punitive models to restorative models," she says.

Unlike our current system of justice, which focuses on punishing offenders on the grounds that they've committed a wrong against society, restorative justice is a nonviolent and noncoercive system of justice in which victim and offender engage in mediation to address wrongs. The emphasis isn't just on restoring to the victim what was lost and the offender taking responsibility, but also on empowering the community in which they both live.

Ultimately, Van Buren wants to see "a world where this is the normal way of doing justice," she says.

# Containers see new use as social spaces

## URBANBLOC

**urbanbloc.net**

**Innovation:** Upcycling used shipping containers to create attractive, sustainable, cost-effective social gathering spaces

**Location:** San Leandro

**CEO:** Martha Trela

**Regional significance:** UrbanBloc shipping containers are swiftly transforming vacant properties throughout California into dynamic retail and social spaces

**Employees:** 8

**East Bay favorite:** "The East Bay is so creative. Everything here is driven by a mindset of creativity."

**E**ver had espresso from Oakland's Red Bay Coffee? Grabbed food from inside a shipping container at Urban Remedy? Had ice cream at Humphry Slocombe in Uptown?

If so, then you've interacted with one of UrbanBloc's innovative retail designs. The firm's projects have quickly made a splash against the urban landscapes of the East Bay with its restaurants, cafes and other designs carved out of reused shipping containers.

The idea for UrbanBloc grew out of founder Matha Trela's fascination with the possibilities shipping containers presented for creating pop-ups and other temporary transitional developments. Finding that there was sufficient demand for buildings that disconnect the land and the real estate from the construction phase of development, Trela and her business partner, architect Jerry Jameson, founded Urban Bloc in San Leandro in 2014.

"We both felt like it was of value not only from a building perspective, but also from a societal perspective to create these very unique, intimate gathering spots for people to 'chill' after a hard day of work ... [to] get out of our lonely environment behind our computer desks," Trela says. "The business model, the social innovation of these small gathering spaces that could be embedded really quickly into cities was compelling."

UrbanBloc's approach to design is a form of what's called "upcycling." Also



**UrbanBloc upcycles shipping containers to create inviting gathering places with low building costs.**

**"The East Bay has been wonderful for us on numerous levels."**

**Martha Trela,** co-founder, Urban Bloc

known as "creative reuse," upcycling is a form of recycling that transforms what would otherwise be industrial or commercial waste into a more useful, sustainable product.

The company is also a leader in the growing modular movement in design and construction. With construction costs ballooning and labor shortages rising, the demand for modular, factory-built construction is growing quickly. To that end, UrbanBloc's products enable easy "plug-and-play" site installation (and de-installation). The company says it's currently

the only California state-licensed, commercial modular manufacturer located in the Bay Area.

Although UrbanBloc is still relatively young, the company has in the last six years made major investments in the East Bay. The company purchases most of its materials from local suppliers. They've also recruited several employees from local community colleges and work programs. And they've proved to be a strong supporter of San Leandro High School, having hosted multiple manufacturing day tours, hired interns from the school, and participated in youth development programs such as Pilot City.

"The East Bay has been wonderful for us on numerous levels," Trela says. "The City of San Leandro has been absolutely amazing. ... We consider them a strategic partner."





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# Taking action to preserve affordable housing

## EAST BAY ASIAN LOCAL DEVELOPMENT CORPORATION (EBALDC)

[ebaldc.org/](http://ebaldc.org/)

**Innovation:** Preserving affordable housing by purchasing existing multifamily properties

**Location:** Oakland

**Executive Director:** Joshua Simon

**Regional significance:** Housing the Bay Area's diverse workforce needs while preserving the character of the East Bay

**East Bay favorite:** "My favorite thing about the East Bay is its culture and creativity."

It's obvious to anyone who lives or works in Oakland that The Town is currently experiencing a construction boom. That's good news for the increasing numbers of businesses looking to make Oakland their home.

But with the city's growing status also comes new challenges, the biggest of which is housing affordability. Rents in the East Bay continue to rise faster than wages and inflation. And while the City of Oakland has permitted 22,000 new housing units since 2016, only about 2,000 of those are affordable units, The Mercury News reports.

The East Bay Asian Local Development Corporation, or EBALDC for short, has been building affordable housing communities for the past 45 years, working to make Oakland a more equitable, livable and compassionate place to live. Four years ago, the organization made the decision to expand its activities to help meet the unique demands the Bay Area economy is placing on the city, as executive director Joshua Simon explains.

"The housing crisis has never been as bad as it is now in the 40 years I've been doing this work. People are being priced



**Casa Arabella in Oakland provides 94 units of transit-oriented affordable housing.**

out and ending up on the street faster than anyone has seen since World War II," Simon says. "So we decided to innovate."

**"The housing crisis has never been as bad as it is now... So we decided to innovate."**

**Joshua Simon**, executive director, EBALDC

Observing that it's easier to preserve existing affordable housing than build new affordable communities, EBALDC in 2016 created its Housing Acquisition Fund, which the organization uses to purchase existing market rate units and stabilize rents so residents have the option to stay in their homes. The organiza-

tion has already converted 250 market units into affordable housing through the fund as of February 2020.

What distinguishes EBALDC is its ability to partner with numerous other organizations, both public and private, to advance its goals. The Housing for Health Fund, for instance, brings together Kaiser Permanente, Enterprise Community Partners, the City of Oakland and EBALDC. The creation of the fund allowed for the purchase last year of a 41-unit market rate building in Oakland's San Antonio neighborhood.

EBALDC's next big step? Developing the Lake Merritt BART station, Simon says. "Working in joint venture with the private developer [Strada] we're able to achieve 44% affordability in the complex, and to include an innovative commercial portion."

The organization plans to use the commercial portion to "incubate" opportunity for small businesses and non-profit organizations, he says.

# Sharing resources to step up innovation

## OAKLAND GENOMICS CENTER

[ogc.bio](http://ogc.bio)

**Innovation:** Shared lab space and equipment encourages collaboration and lowers barrier to entry for biotech startups

**Location:** Oakland

**CEO:** Anitha Jayaprakash

**Regional significance:** Putting Oakland on the map as a destination for biotech startups

**Employees:** 5

**East Bay favorite:** "The food. ... It has a great food culture. And the people."

Anyone who works in the biotech industry knows all too well that even basic equipment can be prohibitively expensive. But what if companies could share equipment, and disperse those steep costs?

That question is the driving force behind Oakland Genomics Center, a Downtown Oakland-based shared workspace and incubator for biotech startups.

Organizationally, the center functions as an extension of founder Anitha Jayaprakash's biotech startup, Girihlet, which develops DNA sequencing technologies to help diagnose and treat autoimmune diseases. After working in the biotech space for a number of years, Jayaprakash came up with idea for Oakland Genomics Center in 2015 when she noticed that one of the Girihlet's biggest capital investments, its DNA sequencer, wasn't being used a lot of the time.

"We had so much down time on our sequencer, it was like, 'why can't other startups just have access to my sequencer and still continue doing their work?'" says Jayaprakash.



**At Oakland Genomics Center, researchers share lab space and specialized equipment.**

In addition to getting access to the equipment they need, Jayaprakash says that the capacity for sharing talent is what allows member companies to innovate at such a fast pace. "Biotech startups have to think very broadly, so having varied expertise in the same building helps us move much, much faster and helps us be innovative, because you're literally bringing a group of innovators together in one building."

Since 2015, Oakland Genomics Center has enabled more than 15 biotech startups to make Oakland their home. And those companies have created more than 60 skilled biotech jobs for the East Bay.

Startups that have outgrown the center haven't gone far either, renting space in nearby office building. Oakland Genomics Center thus functions as a nucleus around which a major biotech industry could be built. "Each startup contributes to a community that will help each other grow," Jayaprakash says.

The premise of Oakland Genomics Center was simple: in addition to sharing open lab space and basic wetware, member companies bring in specialized equipment that they agree to share with other members. Five years later, members have access to a multitude of biotech equipment, including second- and third-generation sequencers, analytic instruments for measuring nucleic acids, containment facilities for work with biological samples, and advanced robotics technologies.

"Together, we have all the resources we need, from instrumentation ... [to] talent ... [to] expertise," says Jayaprakash.





# “Fab labs” address region’s skills gap

## IDEA BUILDER LABS

[ideabuilderlabs.com](http://ideabuilderlabs.com)

**Innovation:** Fab labs give laypeople access to advanced manufacturing equipment to help develop marketable skills in a rapidly shifting economy

**Location:** Alameda & Oakland

**Founder and Principal:** Danny Beesley

**Regional significance:** Bringing the City of Oakland closer to its goal of becoming a “fab city,” in which the city produces everything it consumes

**Employees:** 2

**East Bay favorite:** “There’s nearly infinite opportunity here.”

A city that produces everything it consumes isn’t some far-off science fiction scenario. It’s in the City of Oakland’s near future, at least as far as Danny Beesley is concerned.

Beesley is the founder of Idea Builder Labs, an East Bay builder of fab labs (short for “fabrication labs”), facilities where citizens can gain access to the kinds of machinery and tools that constitute the modern means of production. Beesley says Idea Builders’ fab labs are addressing the region’s growing skills gap — the disconnect between what employers and the economy require and the skills students and employees actually have — today to lay the groundwork for Oakland becoming a “fab city” by 2054.

Beesley isn’t the only one who thinks Oakland can achieve that admittedly lofty goal: the City of Oakland, along with 28 other cities, has taken the Fab City Pledge, which commits the city to establishing a fully circular economy in less than 40 years. Idea Labs was instrumental in persuading the City of Oakland to take the pledge.

So far Idea Builder has built three fab labs in the East Bay, one each at Laney College, College of Alameda and Castlemont High School, as well as five labs for Ravenswood School District in East Palo



The typical Idea Builder fab lab offers citizens access to a mixture of traditional and advanced manufacturing equipment.

Alto. The typical Idea Builder fab lab ranges in size from around 1200 square feet to nearly 6000 square feet, and features a mixture of traditional and advanced manufacturing equipment, such as laser cutters, 3D printers and CNC routers. There are often technicians on hand to help people use the machines and hold workshops.

In providing citizens with opportunities to train on high-tech manufacturing equipment, Idea Builders says its fab labs have already resulted in the launch of new businesses and the placement of dozens of students into local industry.

Beesley says moving to the East Bay was pivotal to making his vision of creating a network of fab labs come to life. “There’s a lot of money here, there’s a lot of interest here, and there’s a lot of business happening,” he says. “So it makes it much easier for me to push big ideas.”

Moreover, he “strongly feel[s] that the East Bay, and Oakland in particular, is beginning to pull some of the spotlight over to focus on what’s happening here, because we can see what hasn’t worked in San Francisco and Silicon Valley and begin to approach things differently.”

# College program in touch with industry needs

## OHLONE COLLEGE

Smart Manufacturing Technology Program

[ohlone.edu/smart-manufacturing-technology](http://ohlone.edu/smart-manufacturing-technology)

**Innovation:** Industry-academic engagement creates college curriculum responsive to industry needs

**Location:** Fremont

**Coordinator:** Rose-Margaret Eking-Itua

**Regional significance:** Developing the skillsets needed to power the East Bay’s advanced manufacturing hub

**East Bay favorite:** “I love the East Bay for its rich diversity of cultures, the beautiful landscapes and the amazing opportunities for collaborative innovations.”

From semiconductors to cleantech to food and beverage production, Fremont, California has in the past decade become a global hub for advanced manufacturing. The Fremont Innovation District, located in the city’s Warm Springs neighborhood, is home to such household names as Tesla, Seagate, ThermoFisher and Boston scientific, as well as numerous startups driving innovation in the manufacturing sector.

All that production needs workers — more precisely, skilled workers — but filling those needs can be tricky business for Bay Area companies. A 2018 Accenture survey found that 70% of business leaders reported finding the right talent is a major challenge for their company.

That’s where Ohlone Community College’s new Smart Manufacturing Technology Program comes in. The program’s curriculum was developed in collaboration with an industry advisor roundtable comprised of local business leaders, economic development officers, policymakers, and regional workforce and education partners. The goal of the program is to supply Fremont and other Bay Area manufacturers with a stream of talent to power its core activities while also creating pathways to careers in advanced manufacturing for its diverse student population.



Ohlone college is training students for the “Fourth Industrial Revolution.”

“The smart manufacturing program was really born out of the need from manufacturing companies in Fremont and in the Silicon Valley,” explains Rose-Margaret Eking-Itua, professor of engineering at Ohlone College and coordinator of the Smart Manufacturing Program.

Noticing that there was “quite a bit of disconnect” between industry and academia, Eking-Itua says of the program, “we decided to really listen to what industry was saying and we’ve put ourselves at the forefront of bridging that gap.”

Eking-Itua says the program is train-

ing students for the skills that will be required by the “Fourth Industrial Revolution.” As such, the program furnishes students with knowledge and skills needed to succeed in “Industry 4.0” fields such as industrial IoT, additive manufacturing and other emerging manufacturing disciplines.

Although the program only just launched last Fall with a Smart Advanced Manufacturing Summit, Ohlone College says companies have already expressed interest in hiring interns through the program.





# Sustainable materials replace animal products

## BOLT THREADS

**boltthreads.com**

**Innovation:** Developing sustainable, animal product-free textiles using biology and cutting-edge technologies

**Location:** Emeryville

**Co-Founder and Chief Science Officer:** David Breslauer

**Regional significance:** Innovative products have drawn attention to the East Bay's dense cluster of synthetic biology companies

**Employees:** 95

**East Bay favorite:** "It's close to my parents. Hi, mom and dad!"

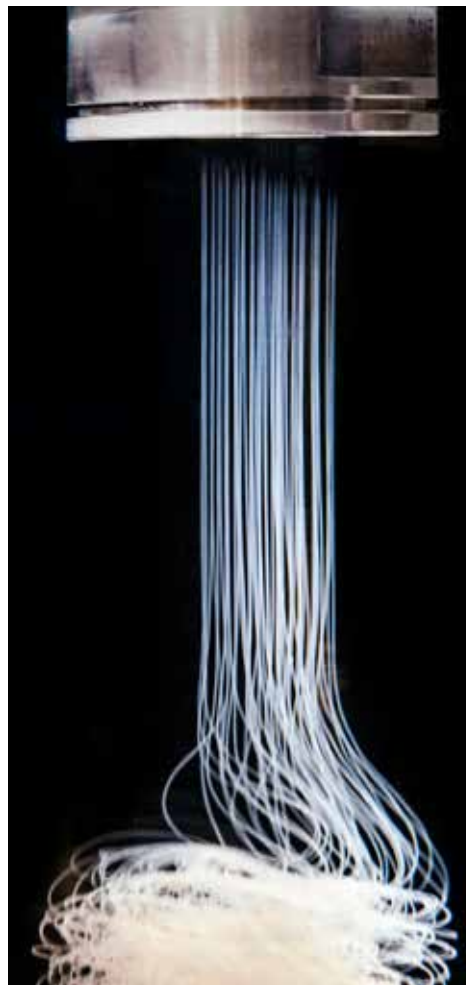
**M**ost people know by now that leather products carry with them a high carbon footprint. What people may not realize is that most of the alternatives, including vegan leather, are actually petroleum products, meaning they bring with them carbon burdens of their own. That's a problem for people avoiding animal products not just for ethical reasons, but also to reduce their carbon footprint.

Enter: Bolt Threads. Based in Emeryville, California, Bolt Threads has developed innovative ways of recreating popular animal-derived textiles and other materials. Mylo, the company's alternative leather product, for instance, is harvested from an unlikely source: mushrooms.

More precisely, it's made up of mycelium, the branching underground structure of fungi (mushrooms are actually the fruiting bodies of the organism). Bolt Threads developed Mylo from mycelium cells by engineering them to assemble themselves into a supple, yet durable, material. Unlike leather, which requires years of raising a cow to produce — with all the waste and pollution that entails — Bolt Threads says Mylo can be produced in a matter of days.

"No dead cows, no dead dinosaurs — it's a perfect solution," says David Breslauer, co-founder and chief science officer.

Mylo isn't the only material Bolt Threads has managed to recreate using sustainable methods. The company describes its Microsilk product as "spider silk made by humans." Spider silk fiber is remarkable among natural fibers for its



BOLT THREADS

**Bolt Thread's microsilk has the softness and durability of silk.**

high tensile strength, elasticity, durability and softness. Bolt Threads says it has developed technology to replicate this process sustainably at large scale.

The company has also developed an animal-free alternative to silk protein, a popular cosmetics ingredient, called B-silk.

Breslauer and his co-founders Dan Widmaier and Ethan Mirsky initially founded Bolt Threads in San Francisco in 2009, but they quickly relocated the company to the East Bay, where they were able to take advantage of a number of benefits.

"It is a great area with a ton of biotechnology companies that we can interact with," says Breslauer. "The real estate companies and the city government have a very strong understanding of how to work with deep science companies. It's a really complete and effective infrastructure all around."

Although Breslauer asks readers to "keep following us in 2020 for some very exciting announcements that should really bring Bolt Threads into your daily lives," consumers can already find the company's materials in several products. The company collaborated with Stella McCartney and Adidas, for instance, last year to produce a Microsilk tennis dress.

It also launched a skincare line, Eighteen B, which makes use of the company's B-silk protein. The company says users can expect to see improvement in their skin's barrier function in as little as four weeks.

**No dead cows, no dead dinosaurs — it's a perfect solution,"**

**David Breslauer**, co-founder and chief science officer

# Building a better battery to power the future

## ENOVIX

**enovix.com**

**Innovation:** Patented three-dimensional battery architecture enables high-capacity silicon anode

**Location:** Fremont

**CEO and Co-Founder:** Harrold Rust

**Regional significance:** East Bay factory will create more than 100 jobs and help cement region's status as high-tech manufacturing hub

**Employees:** 65

**East Bay Favorite:** "The East Bay is a great place to combine the talent and resources for battery innovation."

**I**n nearly every respect, our mobile devices are better than they've ever been. They're faster, they have better screens, and they support more features. But when it comes to battery life, it's hard not think there's been a regression.

The problem is that as batteries become denser and more efficient, new and existing software programs and applications increase their demands on the hardware. The result is that you're still hard pressed to go more than a day without charging your smartphone or laptop.

Enovix is out to change that.

"There hasn't been much, if any, innovation in lithium ion batteries since Sony invented them in 1991," Harrold Rust, Enovix co-founder and chief executive, explains. "If you look at the track record, the rate of improvement has been very slow, and it's been driven almost entirely by advancements in materials and chemistry."

Enovix has taken a different approach, he says. Their focus is on battery architecture — more specifically, developing a high-silicon percentage anode. Silicon

**Enovix's silicon anode technology represents a 30-80% increase in energy density over existing batteries.**



anodes have long been held up by the industry for their potential to improve battery density, due to silicon's high capacity.

While refinements of existing lithium ion technologies result in an average 5% increase in density each year, Enovix's silicon anode technology represents a 30-80% increase in energy density over batteries on the market today.

The key innovation enabling Enovix's high-silicon percentage anode is the company's patented three-dimensional cell architecture, which vertically stacks

high-capacity silicon anodes, cathodes and separators. The best part?

Three-quarters of the production process is identical to that used for conventional lithium ion batteries. That could allow manufacturers to retrofit their existing lines with only a small capital investment, resulting in an immediate 30% or greater increase in line production (when measured in Megawatt hours).

Having raised \$160 million in funding already, Rust says Enovix's next step is to build their first factory, which is currently slated to be built near their headquarters in Fremont. The company expects the factory to create at least 100 manufacturing jobs for the East Bay once it comes online.

Of their East Bay headquarters, Rust says "Fremont ... has turned into kind of a nexus for energy innovation and clean tech, which has been very helpful for us in attracting talent. ... It's well-located to attract talent from all of the Bay Area ... both in terms of engineering talent and production workers."



# Investing in STEM transforms lives

## NEW APPLIED SCIENCES CENTER TO LEAD THE REGION

**LEROY MORISHITA**  
President, California State University, East Bay

Cal State East Bay's partnership with innovation leaders throughout the East Bay and Silicon Valley results in thousands of educated graduates with diverse perspectives and essential skills entering highly competitive fields. More than 80% of our graduates contribute to the local economy by working in the Bay Area. In this time of global crisis, our university continues to prepare students for careers with potential for growth to meet the region's future industry needs.

Improving and expanding access to STEM education is critical to the health and economic strength of the East Bay and broader region. Cal State East Bay's Institute for STEM Education hosts multiple community-facing programs to build the pipeline into STEM from the K-12 level. We are preparing early learners to enter college with their sights set on STEM-related careers.

Plans are underway to build an Applied Sciences Center with interdisciplinary space and leading-edge labs for innovative student and faculty research projects. The newly created Green Biome Institute, the first plant conserva-

**We are preparing early learners to enter college with their sights set on STEM-related careers.**

tion and genomic profiling institute in a California public university, will be housed in the Applied Sciences Center. This flagship research lab is one of the many learning spaces that will allow students to develop hands-on experience and build their industry-specific networks before graduation. Importantly, we are committed to opening this new building entirely through private support. To date, we have raised more than \$24 million towards the \$30 million project.

The College of Science is our fastest growing college, with engineering, computer science, construction management and health sciences undergraduate majors having each more than doubled since 2010. In that same time, traditionally underrepresented populations in STEM education have increased 117%. In recognition of our achievements, Money Magazine recently rated us as the 14th most transformative university in the United States.

Our alumni tell us their degrees significantly changed their and their families' lives and their communities. As president of Cal State East Bay, I am proud that our students not only reflect the vibrant, creative, and multicultural Bay Area but are poised to unlock innovative solutions to the critical problems facing society today.

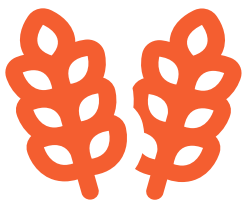
## Help match Wareham's \$1 million pledge toward the CSUEB Applied Sciences Center to lead the region.

Wareham Development and the stellar research and tech companies at our vibrant Emeryville and Berkeley campuses are proud employers of CSUEB grads on STEM career paths.

It's time to build an Applied Sciences Center so that the College of Science, CSUEB's fastest-growing college, continues to meet the needs of the region while significantly increasing its population of students from traditionally underrepresented populations in engineering, computer sciences, construction management, and health sciences.

Please contact William Johnson, vice president for University Advancement at CSUEB, 510-885-4710, for investment opportunities and to match our pledge.





# Take a break, Bessie...They've got milk covered

## PERFECT DAY

**perfectdayfoods.com**

**Innovation:** Using fermentation to create milk proteins that are nutritionally identical to those in cow's milk

**Location:** Emeryville

**CEO and Co-Founder:** Ryan Pandya

**Regional significance:** Perfect Day is one of a growing number of innovative meat- and animal product-alternative producers calling the East Bay their home

**Employees:** 100

**East Bay favorite:** "The views and the quiet from the Berkeley fire trails."

**T**oday's ethically- and environmentally-conscious eaters enjoy a slew of widely available milk alternatives, including soy, almond, cashew and oat-based products. But even with all these alternatives on the shelves, it's hard not to still pine for the singular flavor — not to mention nutrition — found in regular old milk.

Enter Perfect Day, an Emeryville-based producer of animal-free dairy products. Using fermented plant sugars, Perfect Day has developed a completely animal-free milk product that mimics the complex mixture of proteins, sugars and fats found in cow's milk, but without all the downsides.

The company was founded in 2014 by Ryan Pandya and Perumal Ghandi. Pandya, a chemistry and biological engineering grad who contributed to Tufts University's seminal research on lab-created meat, was working in the pharmaceutical industry when he realized that some of the technologies the industry uses to make medicines could be applied to solve other problems, like creating better dairy alternatives.

"I was already primed from my edu-



**"We've loved it here; we never want to move."**

**Ryan Pandya**, Co-founder, Perfect Day

cation not to think about milk and cows as magic, but as biology and chemistry," Pandya says. "If only that magic, whatever it is, was in a plant-based milk, now all of a sudden you have the ability to make everything milk can make."

Recognizing the important role that fermentation already played in the food industry to create common food compo-

**Perfect Day plant-based products reproduce the combination of sugars, fats and proteins found in cow's milk.**

nents like vitamins, probiotics and enzymes, Pandya and his team got to work on developing their dairy-free milk using this safe and proven process. By grounding their product in established food science, the company was able to bring their milk to the market in just five years.

The result is that Perfect Day's milk can provide the creamy, je-ne-sais-quoi-ness so often lacking in dairy alternatives without all the harmful effects associated with animal agriculture. Perfect Day milk requires significantly less water and energy to produce than cow's milk, and it generates far fewer greenhouse gasses. It also allows consumers to completely avoid supporting the cruelty associated with factory farming of animals.

While in its early years the company rented spaces in Menlo Park and South San Francisco, by its second year the company was already feeling at home in its Emeryville headquarters. "We've loved it here; we never want to move," Pandya says.

# Sustainable fish farming ready to scale up

## TSAR NICOULAI CAVIAR COMPANY

**tsarnicoulai.com**

**Innovation:** Waste stream nutrient recovery technology enables more sustainable sturgeon farming

**Location:** Concord

**President:** Ali Balouchi

**Regional significance:** Company's Concord headquarters brings a unique, innovative ag business presence to the East Bay

**Employees:** 40

**East Bay favorite:** "I'm a monster foodie. So my East Bay favorite is the diverse foods and cultures. ... You can find a little pocket of everything."

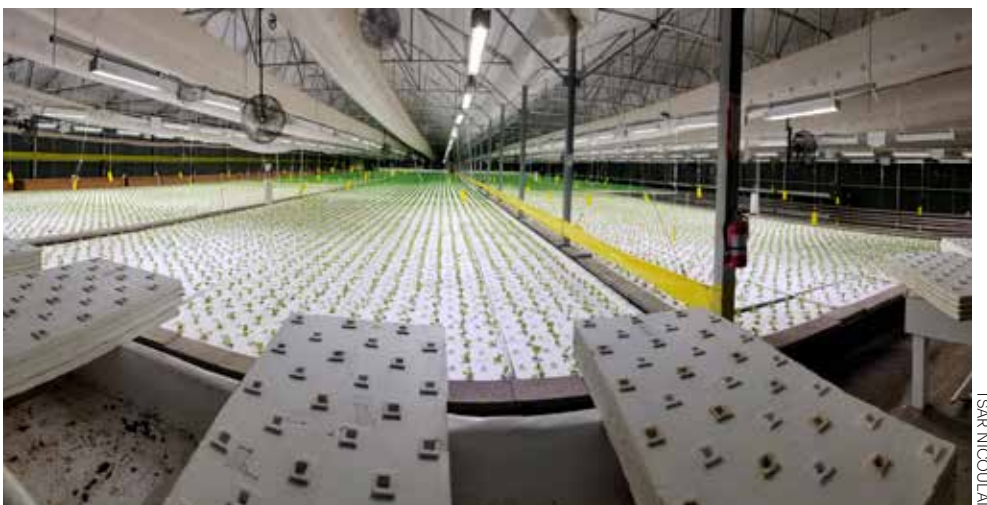
**W**ith a name like Tsar Nicoulai, you might expect the caviar you bought to come from somewhere in Eastern Europe, where caviar is traditionally found. In fact, every can of Tsar Nicoulai caviar comes from the company's Northern California sturgeon farm.

Founded in 1984 by Iranian immigrants who thought the name "Tsar Nicoulai" would furnish their brand-new caviar brand with a sense of heritage and prestige, the company today operates the only eco-certified sturgeon farm in the United States.

While raising sturgeon for caviar has a reputation for being a water-intensive process, Tsar Nicoulai Caviar Company has developed an innovative method of recycling water that reduces water consumption by 70%. They've created the first and only aquaponics caviar operation in the world, in which sturgeon are raised in waters that also include an array of plants and bacteria.

It's a complete ecosystem: nutrients extracted from the waste water of the sturgeon tanks feed thousands of heads of butter lettuce — their roots suspended in water — which act as natural filters for the water.

The key innovation is the company's waste stream nutrient recovery system, which uses probiotics and natural enzymes to extract nutrients from the waste water. The technology is currently being



**Nutrients extracted from the waste water of fish tanks feed a crop of hydroponic butter lettuce, while the roots of the plants filter the water.**

patented, which will enable Tsar Nicoulai to share the technology with other sturgeon farmers through licensing agreements.

How do the results of Tsar Nicoulai's sustainable sturgeon farming stack up against Old World producers? Three Best in the Country awards from Good Foods and a Sofi Award from the Specialty Food Association are nothing to sneeze at. But the perfect symbol of the status Tsar Nicoulai caviar has attained globally may be NASA's selecting the company's product as a gift to send to Russian astronauts aboard the International Space Station.

While Tsar Nicoulai's farm is located

near Sacramento, where a small cadre of sturgeon farmers that supplies nearly 80% of U.S. demand for caviar exists, the company's headquarters are in Concord. That means employment for East Bay residents and tax revenue for the City of Concord and Contra Costa County.

Of the company's East Bay headquarters, Tsar Nicoulai president Ali Balouchi calls finding their headquarters space in Concord "a lucky bounce." After nearly six years there, Balouchi says "we wouldn't have it any other way. Concord is our new home. And we try to publicize Concord as much as we can. It's a great business city, and it's also a great family city."



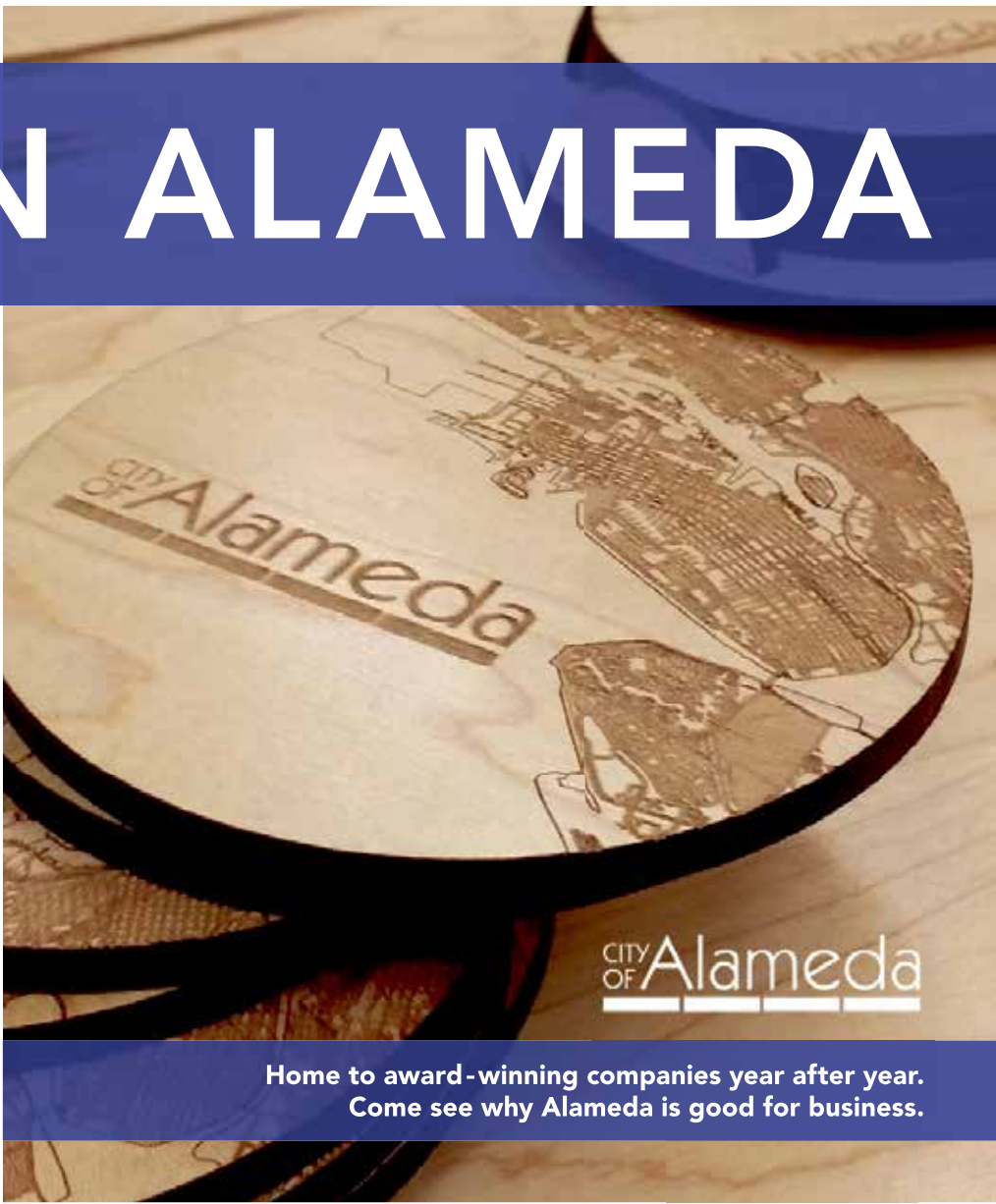
# MADE IN ALAMEDA

Congratulations to 2020  
Innovation Award Finalist



Strengthening the East Bay workforce  
with access to 21<sup>st</sup> century  
manufacturing skills

PAST AWARDEES AND FINALISTS



# HOME OF INNOVATORS SINCE 1852

Congratulations to the Oakland finalists in the  
2020 East Bay Innovation Awards:

- Back to the Roots
- Designing Justice Designing Spaces
- East Bay Asian Local Development Corp.
- Idea Builder Labs
- Oakland Genomics Center
- Zoo Labs

Learn more about Oakland’s central location,  
vibrant arts scene, abundant green spaces,  
and hopping bars and restaurants, along with  
details on our efforts to  
make Oakland an easy,  
efficient, and prosperous  
place to do business at  
[Business2Oakland.com](http://Business2Oakland.com).







# Color blindness seen as a thing of the past

## ENCHROMA

**enchroma.com**

**Innovation:** Special optical filters allow colorblind individuals to experience the full spectrum of visual perception

**Location:** Berkeley

**CEO and Co-Founder:** Andrew Schmeder

**Regional significance:** EnChroma has helped put the East Bay on the map for optical innovation and made the East Bay the epicenter for the color blind

**Employees:** 50

**East Bay favorite:** “The East Bay hills. I love being able to escape the city and be in nature.”

**T**he standard color range of human perception is estimated to consist of more than 1 million distinct hues and colors. Individuals with color blindness, by comparison, see just 10% or fewer of those.

It’s a disparity that affects people’s lives. For decades, eye care professionals have told patients with color blindness that there’s nothing they can do for them. That’s all while color blind individuals suffer daily from major obstacles and frustrations, from inability to match clothes or pick ripe fruit, to inability to see stoplights or interpret graphs and diagrams.

Founded in 2010 by Don McPherson, a doctor of glass science, and Andy Schmeder, a mathematician, EnChroma is dedicated to allowing every one of the 350 million people with color blindness — that’s one in 12 men and 1 in 200 women — to experience clear, vibrant color and overcome those everyday obstacles.

The key innovation is the company’s special optical filters. The filters cut out small slices of light where the problematic overlap of red and green occurs, enabling color blind individuals to see more of the broad spectrum of light most people just take for granted. EnChroma spent years refining its glass, conducting clinical trials at Cal and UC Davis. In the process, it created a brand-new market — one that EnChroma currently dominates — for color blind eyewear.



**Glasses made with EnChroma’s optical filters can help many of those affected by color blindness.**

It’s not just technological innovation that makes EnChroma such a champion to the color blind community. Last year, the company launched its EnChroma Glasses Loaner and Color Accessibility program at the Georgia O’Keeffe Museum in New Mexico. The program enables public venues, schools, state parks, libraries and other organizations to address color accessibility — an issue that has until recently gone mostly unacknowledged — by loaning EnChroma glasses out to color blind guests and students.

EnChroma was founded and remains in Berkeley, where the vertically integrated company’s eyewear is designed, assembled and shipped. The company today occupies a 20,000 square foot-plus building in West Berkeley, where approximately 50 employees — up from a team of just eight in 2014 — come to work.

“The East Bay is a really interesting place because it combines an incredible talent pool, some of the smartest people in the world, honestly, as well as incredible diversity,” says Andy Schmeder, co-founder and CEO. “But it also has great infrastructure. ... We’re able to tap into multiple different talent pools as well as the logistical infrastructure [we need] to do all this activity.”

# Microbes make a fertilizer that doesn’t pollute

## PIVOT BIO

**pivotbio.com**

**Innovation:** Naturally occurring microbes replace polluting synthetic fertilizers

**Location:** Berkeley

**CEO:** Karsten Temme

**Regional significance:** Nearly 70 scientists applying their knowledge to tap into the potential of microbes

**Employees:** 100

**East Bay favorite:** “The amount of hiking and trails we have throughout the East Bay hills is phenomenal.”

**B**efore there was commercial fertilizer, there were microbes.

More precisely, there were naturally occurring microbes in the soil that performed the same function that synthetic fertilizers do today. Over the last 120 years, however, farmers have replaced this naturally occurring fertilizer almost entirely with commercial synthetic fertilizers.

That innovation has allowed crops to grow bigger, increasing the productivity of farming. But it has also led to pollution — a lot of pollution. Studies estimate that as much as 60% of fertilizer isn’t captured by the crop. The fertilizer that isn’t absorbed by the plant decomposes into nitrous oxide, a greenhouse gas that is responsible for about 5% of global warming. Runoff from chemical fertilizer also contributes to algae blooms, which can suffocate fish and harm ecosystems.

Pivot Bio aims to replace the \$212 billion chemical fertilizer industry with a natural alternative. To develop that alternative, the company harnessed the power of not only biology, but also machine learning and computational modeling to “remodel” microbes so that they produce the level of nitrogen today’s farmers need.



**Pivot Bio has developed microbes that use natural processes to produce all the nitrogen crops need.**

the corn plant, producing all the nitrogen the plant needs to grow big. Because the nitrogen is transferred directly to the plant, it’s not just better for the environment, it’s also more reliable and consistent, Pivot Bio claims.

If Pivot Bio is successful at replacing synthetic fertilizers with their natural solution, Temme says they could stop around a gigaton of carbon emissions from being released into the atmosphere each year. That translates into actual tenths of a degree Celsius in global warming per year, he says. That’s in addition to the positive impact their natural fertilizer would have on downstream effects like water quality and soil health.

Pivot Bio has its origins in graduate research that Temme and his co-founder, Alvin Tamsir, conducted at the University of California. The company spent some time in QB3’s incubator for life science startups in Mission Bay before moving to the East Bay, initially setting up headquarters in Wareham’s offices in Emeryville, before moving to a Wareham property in Berkeley, where they’ve been ever since.

“Our innovation is to use the microbes that [fertilize crops] naturally and build a product that is more efficient and doesn’t have half of it turning into pollution,” explains Karsten Temme, co-founder and chief executive.

After years of development, the company’s first product, PROVEN, is available across most of the U.S. in time for the 2020 corn growing season. With PROVEN, farmers simply plant their corn alongside Pivot Bio’s microbes. These microbes then form a symbiotic relationship with



INNOVATION AWARDS JUDGES

<b>Heike Abeck</b> Bayer	<b>Michelle Frey</b> ULI San Francisco	<b>Sylvia Lewis</b> Sigray, Inc.	<b>Rachel Osajima</b> Alameda County Arts Commission
<b>Jessica Appelgren</b> Impossible Foods	<b>Lili Gangas</b> Kapor Center	<b>Manny Lieras</b> American Indian Child Resource Center	<b>Neil Planchon</b> NTEN Oakland
<b>Courtenay Carr Heuer</b> Scientific Adventures for Girls	<b>Adriana Grino</b> Kenneth Rainin Foundation	<b>Mark Martin</b> Bay Area Community Colleges	<b>Linda Renteria</b> Casa Sanchez Foods
<b>Carol Cherkis</b> BioInfoStrategies	<b>Zeydi Gutierrez</b> AB&I Foundry	<b>Kathy Medeiros</b> Aduro Biotech	<b>Michael Rose</b> Semifreddi's
<b>Karen Cook</b> Alameda County, GSA, Office of Sustainability	<b>Seth Hubbert</b> Tech Exchange	<b>Ken Mintz</b> AT&T	<b>Vin Rover</b> Private Island Homes
<b>Erendina Delgadillo</b> Oakland Museum of California	<b>Sandy Hunter</b> Hunter Hawk Inc	<b>Haitham Mokahel</b> Pharmaceutical Professional	<b>Dr. Arup Roy-Burman</b> Elemeno Health
<b>Patrick Dempsey</b> Lawrence Livermore National Laboratory	<b>Johnny Jaramillo</b> ABAG / MTC	<b>Vanessa Morelan</b> GRID Alternatives	<b>Gene Russell</b> Manex
<b>Mark Duesler</b> Food Service Technology Center	<b>Bruce Katz</b> PolyPlus Battery Company	<b>Tina Neuhausel</b> Sustainable Contra Costa	<b>Wendy Sommer</b> StopWaste
<b>Peter Engel</b> Contra Costa Transportation Authority	<b>Lindy Khan</b> Contra Costa County Office of Education	<b>John Nguyen</b> Alameda County Transportation Commission	<b>Elisabeth Sporer</b> SO-arch
<b>Kenneth Epstein</b> NewCap Partners, Inc.	<b>Tetyana Kletskova</b> Cleantech Open	<b>Dawn O'Connor</b> Alameda County Office of Education	<b>Gregory Theyel</b> Biomedical Manufacturing Network
<b>Grace Erickson</b> OCHO Candy	<b>Dave Kohn</b> Alameda County, ITD	<b>Patience Ofodu</b> Workforce Development Board of Contra Costa County	<b>Trevor Thorpe</b> CBRE
<b>Shawn Flynn</b> TechCode	<b>Megan Lehtonen</b> OSIsoft		<b>Minh Tsai</b> Hodo Foods
			<b>Scott Wilson</b> Lawrence Livermore National Laboratory

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The new Advanced Manufacturing Laboratory (AML) brings together science and engineering expertise, leading edge technology, academic partners, and industry experience under one roof.

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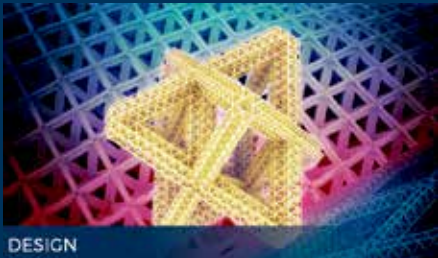
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This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.





# Organic gardens in a kit for urban dwellers

## BACK TO THE ROOTS

**backtotheroots.com**

**Innovation:** Indoor gardening kits empower ordinary people to grow their own food

**Location:** Oakland

**Co-Founders:** Nikhil Arora and Alejandro Velez, Co-Founders

**Regional significance:** Small East Bay team is helping people across the country re-engage with growing food

**Employees:** 12

It's not often that the results of an experiment cooked up in a fraternity kitchen end up being sold in more than 10,000 stores across the country. But that's exactly what happened for Oakland-based indoor gardening innovator Back to the Roots.

Classmates Nikhil Arora and Alejandro Velez founded Back to the Roots in 2010 when they were still college students. Recognizing that millennials are an increasingly urban demographic, the pair saw an opportunity to create a gardening experience tailored to those who have disconnected from the land, for instance, those who don't have a green thumb or didn't grow up with a backyard.

That idea coalesced with the company's first product, a grow-your-own mushroom kit, inspired by a lecture in which their professor mentioned that coffee grounds, which cafes usually throw out, make an excellent compost — the substance upon which mushrooms thrive.

That mushroom kit is still available today, along with a diverse line of more than 21 indoor gardening kits, which can be found at stores like Lowe's, The



BACK TO THE ROOTS

Home Depot and Target. Those kits range from an aquaponics fish tank and water garden, to self-watering planters, to old-fashioned dill seeds and soil in a can. Back to the Roots says the kits have given more than a million people the opportunity to grow their own organic gardens.

Founded when Arora and Velez were both UC Berkeley undergrads, Back to the Roots has found the East Bay to be an unparalleled source of talent and support for the company. Alice Waters, Chez Panisse head chef, gave the pair the confidence they needed early on to keep pursuing their project with her positive reaction to their home-grown oys-

**Back to the Roots offers more than 21 types of home gardening kits.**

ter mushrooms. The coffee grounds they used to experiment were originally collected from Peet's Coffee, an East Bay institution whose original location is in North Berkeley. And the company recently received a little extra push from Golden State Warriors point guard Steph Curry and his wife, Ayesha, with whom they created a co-branded gardening kit called Kitchen Herb Garden by Ayesha Curry.

"We are so lucky we went to school in the East Bay, and Back to the Roots is still based in the East Bay," says Velez. "The mentorship, the access to capital, and just the ability to expand from a fraternity kitchen to now over 10,000 stores is something that, frankly, I can't imagine having [done] anywhere else."

Says Arora: "The East Bay, it's resilient, it's innovative, for us it's the hub of sustainability, of the food movement, of entrepreneurship. All that comes together in the East Bay, so we can't imagine being anywhere else."

# Filtration process can cut shipping impact

## PORIFERA

**porifera.com**

**Innovation:**

Unique membrane concentration technology gently removes water from beverages, foods and other products to create high-value concentrates

**Location:** San Leandro

**CEO:** Olgica Bakajin

**Regional significance:**

Headquartered in San Leandro, with a production facility in Hayward, Porifera's technologies are having a global impact on shipping and waste

**Employees:** 28

**East Bay favorite:** "I love the farmer's markets. ... It's this wonderful experience of getting your food, and it's all fresh, and it's personal."

We're all familiar with food concentrate: it's that ingredient in juice or soup you want to avoid, right?

If that's your full impression of food concentrates, then San Leandro-based Porifera has developed an innovative technology that's sure to change how you think about concentrates.

Conventional concentration methods require the application of heat to the product, which can indeed irreversibly damage delicate flavor compounds. Porifera's unique membrane concentration technology, on the other hand, gently removes the water by leveraging a process called forward osmosis, which uses a semipermeable membrane to separate water from stuff that's dissolved in it.

The upshot is that Porifera's technology can be relied upon to process even the most challenging liquids that tend to clog or foul other membrane technologies.

What would motivate someone to want to make a concentrate out of painstakingly-prepared beverages like wine or beer in the first place? The same reason any commercial food manufacturer would: concentrating food or beverages reduces transport costs and increases shelf life. The company says its technology can reduce the volume of stored or shipped products by as much as 20 times while preserving taste, color and nutrition.



PORIFERA

**Porifera's filtration removes some of the water from foods and beverages, decreasing their volume so less fuel needed to transport them to market.**

**"If we can shrink the volume of what we ship by one-tenth ... that's where we save money on shipping and are more sustainable."**

**Olgica Bakajin**, founder, Porifera

There's also the environmental impact — concentrated products weigh less and thus require less fuel to transport.

"Shipping contributes huge amounts of CO2 emissions. It's projected to be 17%

of global CO2 emissions in 2050," founder Olgica Bakajin notes. "But if we can shrink the volume of what we ship by one-tenth ... and still deliver great, fresh product, that's where we save money on shipping and are more sustainable."

In addition to reducing the volumes of food and beverage products, Porifera's forward osmosis process can be used to concentrate waste while extracting clean water. The company has already helped multiple East Bay breweries and wineries separate post-brewing waste into water and solids.



# COVID-19 clinical studies ramp up quickly across Kaiser Permanente Northern California

## DRUG CLINICAL TRIALS AND BLOOD PLASMA PROGRAMS ARE IN PLACE IN MULTIPLE HOSPITALS

BY JAN GREENE,  
KAISER PERMANENTE DIVISION OF RESEARCH

In the race to find safe and effective treatments for seriously ill patients with COVID-19, Kaiser Permanente in Northern California is enrolling patients in nationwide clinical trials and participating in an expanded access program of a novel treatment strategy that uses blood plasma from recovered patients.

Kaiser Permanente's research division in Northern California is taking a careful approach to choose the most promising investigational treatments to protect patients and produce reliable evidence, explained Dr. Alan S. Go, regional medical director of the Kaiser Permanente Northern California, or KP NCAL, Clinical Trials Program based out of the group's Division of Research in Oakland.

"There's tremendous pressure," Go said. "Our treating clinicians are doing the best they can to provide supportive care for people who are really ill. We want to make sure we're supporting the evidence base so that at the end of the day, we have some treatments we can say really work rather than relying on anecdotal reports or uncontrolled studies."

Kaiser Permanente hospitals in Northern California are participating in clinical trials sponsored by industry that compare patients who receive the new medications with similar patients who do not, considered an important design element to produce reliable results.

Some of these trials include:  
– **Remdesivir**, an investigational antiviral drug made by Gilead Sciences. Kaiser Permanente Northern California is taking part in Phase 3 clinical trials, along with more than 150 other medical facilities worldwide, which currently include six KP NCAL hospitals as well as Kaiser Permanente hospitals in other regions. Hospitalized patients are being enrolled to receive the intravenous medication in one of two trial protocols, one for severe disease and another for moderate disease.

– **Selinexor**, a selective inhibitor of nuclear export, or SINE, agent being tested by Karyopharm Therapeutics as an antiviral and anti-inflammatory therapy for COVID-19.

KP NCAL is also participating in an expanded access program to give selected COVID-19 patients convalescent blood plasma, taken from COVID-19 patients who have clinically recovered from the infection. Researchers believe blood plasma from recovered patients could provide antibodies to attack the virus and help critically ill COVID-19 patients recover more quickly.

"It's going to take time," said Dr. Jacek Skarbinski, an infectious disease specialist and principal investigator for several of KP NCAL's COVID-19 clinical trials. "There are no shortcuts to rigorous research. So, we're working to build a lasting infrastructure to evaluate new therapies that are going to help us in the long run."

**"There are no shortcuts to rigorous research. So, we're working to build a lasting infrastructure to evaluate new therapies."**

Dr. Jacek Skarbinski,  
Infectious disease specialist



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Congratulations to Emeryville's 2020 Innovation Award Finalists:  
**BOLT THREADS, PERFECT DAY, and ZYMERGEN**





# Mountain of waste gets a new life

## MEDINAS

**medinas.com**

**Innovation:** Used healthcare equipment marketplace and cloud-based asset management software help hospitals recoup costs and divert toxic chemicals from landfills

**Location:** Berkeley

**CEO:** Chloe Alpert

**Regional significance:** Diverting waste from landfills helps protect the environment of the East Bay and the world

**Employees:** 25

**East Bay favorite:** “The juxtaposition of city and nature is what makes the East Bay so unique. One minute you can be in a cafe reading and the next you can be going on a hike.”

It might surprise you to learn that even with all the money you and your insurance company might seem to pay them, not-for-profit hospitals have on average an operating margin of just 1.7%. Many hospitals can barely afford to keep their doors open, much less expand their services or open new wings.

One source of this dire state is administrative waste: the U.S. healthcare system generates an estimated \$765 billion in waste each year.

It's that astounding magnitude of waste that inspired Berkeley-based tech startup Medinas to want to make a dent in the problem. Founder Chloe Alpert started the company in 2017 after learning that billions of dollars' worth of perfectly functional medical equipment ends up in landfills each year because hospitals don't have an easy way of connecting with prospective buyers.

Her solution? An online marketplace for pre-owned equipment to connect buyers with sellers and a sophisticated based asset management system that gets hospital administrators out of spreadsheets and into the cloud.

Medinas's solutions alone are helping the company's customers reclaim anywhere from 5% to 20% of their capital budget, Alpert says. And to date, Medinas has helped hospitals save a combined \$70 million in sales equivalency, she adds.

The sustainability component to Me-



**An online marketplace for pre-owned medical equipment has helped hospitals save millions of dollars.**

dinas's mission is equally urgent. By connecting buyers and sellers of used medical equipment, Medinas reports it has helped divert more than 33,000 pounds of equipment from landfills over the past year-and-a-half. Ninety-six percent of that was e-waste containing toxic chemicals such as poly-chlorinated biphenyls, or “PCBs,” as well as heavy metals like lead, mercury and cadmium. One-quarter of all diverted waste, Medinas says, contained radioactive materials, such as Cobalt 60, which has a half-life of more than five years.

The company's innovative approach to tackling healthcare waste has earned Medinas and Alpert a number of cash awards, including a \$500,000 Forbes Change the

World award, a \$360,000 WeWork Regional Creator award, and a \$1 million WeWork Global Creator award. Those amounts are on top of the \$5 million in venture capital the company has raised so far.

Headquartered in Berkeley, Medinas is part of a growing faction of innovative startups looking across the San Francisco Bay to set up shop.

“It's a market of untapped potential,” says Alpert of the East Bay. “Everyone always looks at San Francisco as the destination, [but] we realized that the East Bay is where there are such diverse people and lives and perspectives. ... Being in the East Bay enables us to focus a little bit more on what we're doing.”

# Edging out oil in the new industrial revolution

## ZYMERGEN

**zymergen.com**

**Innovation:** Computing platform fusing automation, machine learning, and biology as a source of new chemical building blocks.

**Location:** Emeryville

**Co-Founder, VP of Operations and Engineering:** Jed Dean

**Regional significance:** Zymergen has become the second-largest employer in Emeryville

**Employees:** 850

**East Bay favorite:** “Getting lost in the green hills of Briones.”

If the last 100 years of industrial progress were driven by advancements in petroleum materials, the next 100 will be driven by the marriage of biology and technology.

At least, that's the principle upon which Zymergen has staked its success.

The average person might not realize it, but much of what we see, touch and use in our everyday lives is derived from petroleum. Zymergen's breakthrough moment came when the company's founders, Joshua Hoffman, Zach Serber and Jed Dean, observed that the pace of industrial progress has slowed over the last century, as humans have exhausted the ways in which existing processes and materials can be combined to create new things. What was missing, they surmised, was a lack of new molecular building blocks.

So in 2014, Hoffman, Serber and Dean founded Zymergen. And to enable the creation of those new building blocks, they looked toward then-emerging machine learning and artificial intelligence technologies. Marrying these technologies with the power of biology, they bet



**Development of new chemical building blocks is transforming the materials for many everyday products.**

Industrial Revolution technologies to drive financial and operational impact.

Perhaps most impressively, clients of Zymergen have to date sold a combined billion dollars' worth of products that were made using the company's microbes.

Building their business in the East Bay has been “critical” to Zymergen's success, says Jed Dean, co-founder and VP of operations and engineering. “We see Emeryville as a critical hub not only within the Bay Area broadly, but within the world. Our ability to bring together folks whose expertise comes from these different critical dimensions, from machine learning, from automation, from biology and chemistry, and all into one location — and here in this part of the world — was essential in making the choice of Emeryville as the home for Zymergen.”

that Zymergen could become catalyst for a new industrial revolution that creates a more vibrant, sustainable future.

By all accounts, Zymergen's bet has paid off. The company has seen explosive growth, growing from a team of just three founders in 2014 to more than 800 employees as of February 2020. It also raised over \$400 million in its most recently funding round, for a total of nearly \$574 million since founding. And in July 2019, Zymergen was recognized as a ‘lighthouse’ in the Global Lighthouse Network by The World Economic Forum for its leadership in applying Fourth



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