



LONGFELLOW

Creating space for ground-up innovation.

As the top life science provider across our markets, Longfellow's focus is to deliver state-of-the-art environments. From single buildings to entire campuses, we provide infrastructure for connection, collaboration, and creativity. Bring us your real estate needs, goals, and dreams.

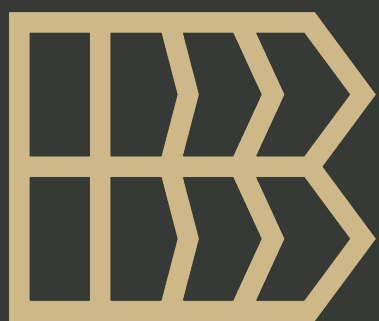
We can build them out.

3.2M SF of space available across 3 development sites in Sorrento Mesa

lfrep.com/development-services

San Diego • Bay Area • Boston • New York City • Research Triangle • Durham • United Kingdom

Longfellow partners with leading universities, institutions and companies to deliver holistic real estate solutions for life sciences and technology organizations. We invest in and develop real estate assets to create transformational work environments. We provide leasing, facilities and property management services for our tenant partners.



BIOTERRA

A natural step up.

±316,000 SF

**Delivering
2024** All new
lab space.

5897 OBERLIN DR.

**SAN DIEGO,
CALIFORNIA
92121**

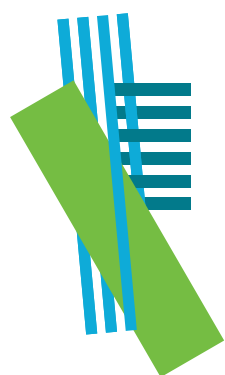


TONY RUSSELL
858 410 1213
tony.russell@am.jll.com
Lic. #01275372

TIMOTHY OLSON
858 410 1253
tim.olson@am.jll.com
Lic. #01364117

GREG MOORE
858 410 6367
greg.moore@am.jll.com
Lic. #02068852

bioterrasd.com



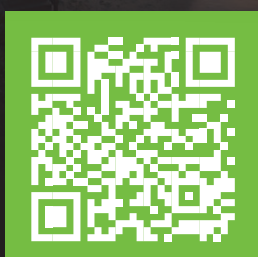
**CALIFORNIA
LIFE SCIENCES**

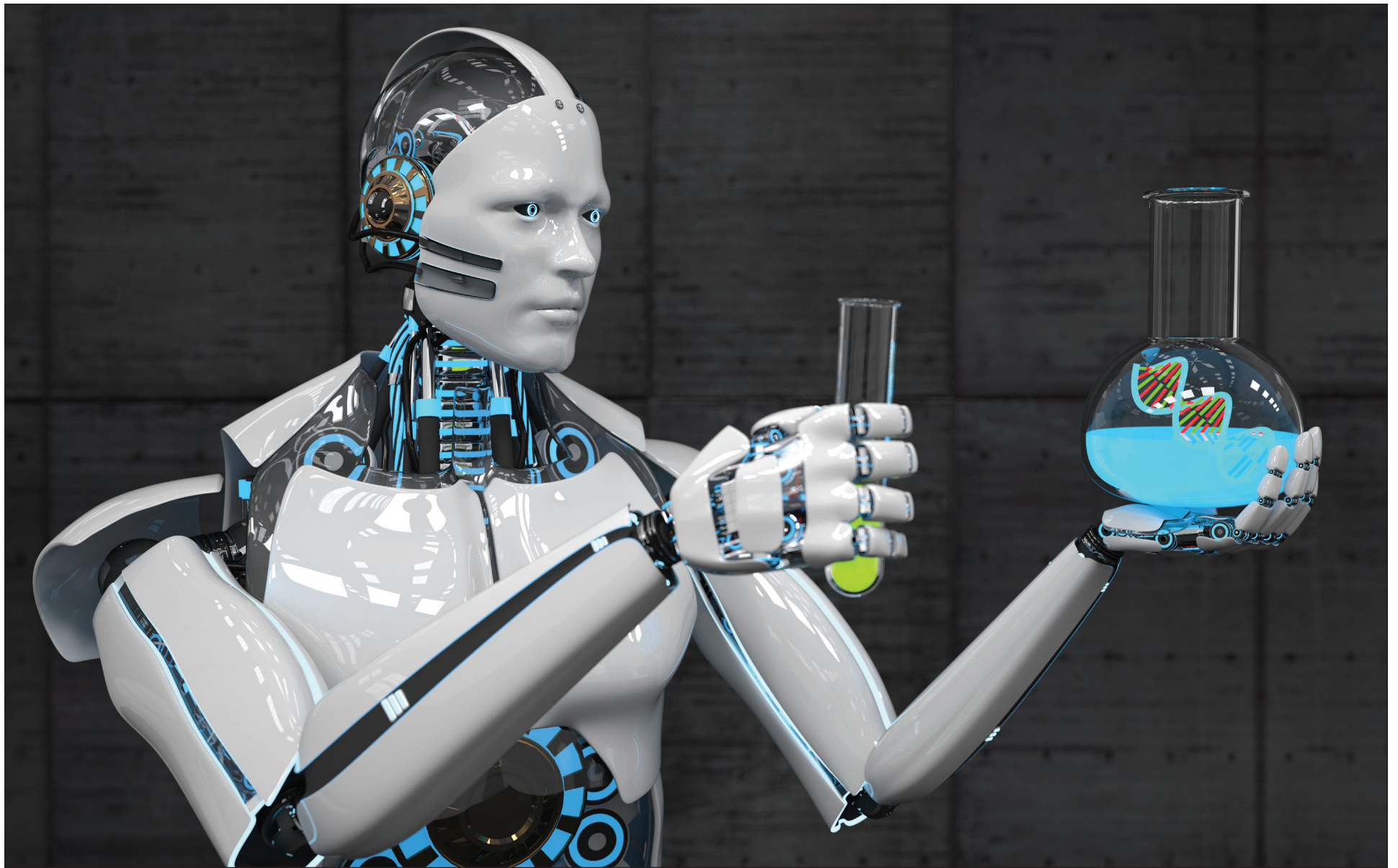
The State's Most Impactful Life Sciences Membership Organization

We are bringing our acclaimed FAST advisory program to SoCal, bringing customized, expert advising to entrepreneurs in the **San Diego, Orange County, and Los Angeles** ecosystems.

Helping an ever-increasing pool of early-stage life science innovators perfect their business models.

LEARN MORE AT: califesciences.org/fast-program





Insights to biological data, gained with the help of sophisticated computing, have the potential to solve some very human medical problems.

SPECIAL REPORT: LIFE SCIENCE

Merging the Biological With the Computational

LIFE SCIENCE: How AI Helps Drive a New Era of Diagnostics and Biomedicine

■ By JEFF CLEMETSON

When scientists began mapping of the human genome, the discoveries in our DNA unleashed an era of biology that advanced breakthroughs in diagnostics and biomedicine beyond what was imaginable when the work began.

Today, with DNA sequencers readily available in many labs around the world, a new technology in computing is quickly becoming an indispensable tool in advancing the work based on the genome.

Artificial intelligence (AI), also referred to as machine learning, is when computers are used to perform tasks that typically require human intelligence. In the case of biomedicine, AI tools are often used to analyze large sets of genomic data and tell the difference between normal and abnormal DNA, for example.

The adoption of AI in medicine is a growing at a massive pace. According to an April 2021 report by **Markets and Markets** titled “Artificial Intelligence in Medical Diagnostics Market,” the global market for AI in diagnostics is projected to reach \$3.86 billion by 2025. In 2020, that number was just \$505 million. In the overall healthcare market, Markets and Markets predicts the AI healthcare market will rocket almost ten times higher in the next five years – from \$6.9 billion in 2021 to \$67.4 billion by 2027.

The report lists factors like a need to reduce healthcare costs, improving computing power, more funding for AI-based startups and an “influx of large and complex

datasets” as main drivers for the growing market for AI in healthcare and biomedicine.

Finding Cancer with Computers

A large part of the influx of complex data in biomedicine is the race to find better diagnostic tools in the treatment of cancer.

Before the advent of genome sequencing, detecting cancer meant taking a tissue sample of a tumor and analyzing it under a microscope. Researchers today are developing tools to detect cancer with blood from a liquid biopsy and using AI-enhanced computing to analyze it for signs of the presence of cancers in the body.

“It’s the age of biology. DNA sequencing has become mainstream and more cost-effective, but I think

we’ve only scratched the surface of what’s possible to improve in human health when we look at epigenomics,” said **Bluestar Genomics** CEO Dave Mullarkey.

Epigenomics is the study of the way genes are switched on and off without changing a DNA sequence. Bluestar Genomics is developing a liquid biopsy platform that combines machine learning with a proprietary biomarker analysis technology to precisely screen for epigenomic changes and detect cancer much earlier than existing methods.

“Improved DNA sequencing tools are enabling a new understanding of what happens when genes are turned on and off, proteins are produced, or aren’t, or additional molecules attach themselves to DNA and change cellular function,” he said. “Understanding all the changes that turn a normal cell into a cancer cell will speed efforts to develop new and better ways of diagnosing, treating and preventing cancer.”

AI Fuels Emerging Technologies

Micronoma is taking a similar approach to cancer detection using a different science. The company is also analyzing blood drawn in a liquid biopsy, but instead of looking for epigenomic markers, it is searching for microbes that signal the presence of cancer – a science that is enabled by AI computing.

➔ *Biological page 20*



Dave Mullarkey
CEO
Bluestar Genomics



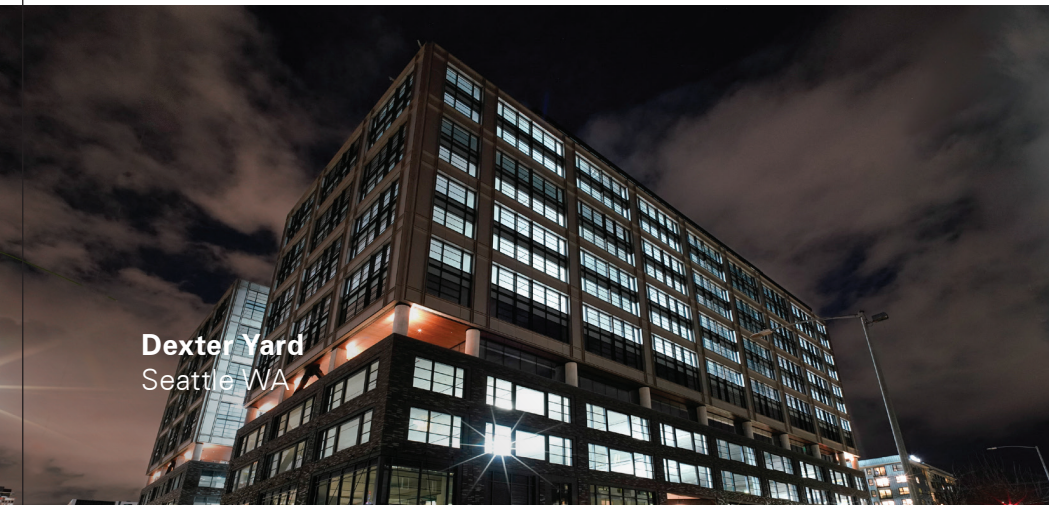
Center for Life Science | Boston
Cambridge MA



Gateway of Pacific
San Francisco CA



Center for Novel Therapeutics
San Diego CA



Dexter Yard
Seattle WA



Granta Park
Cambridge U.K.

Discover Here®

BioMed Realty is a leading provider of real estate solutions to the life sciences and technology industries. We own and operate high quality life science real estate comprising 14.9 million square feet concentrated in leading innovation markets throughout the United States and the United Kingdom, including Boston/Cambridge, San Francisco, San Diego, Seattle, Boulder and Cambridge, U.K.

We are dedicated to facilitating the growth of our portfolio tenants as their needs evolve and provide exclusive access to upcoming opportunities within BioMed's ~25 million square foot portfolio, allowing tenants to grow their business and transition easily between properties.

BioMed's unique, integrated platform with 250+ experienced life science real estate professionals provide our tenants with instant access to the real estate industry's leading professionals in development, leasing, operations, and facilities management. Our assembly of the best team in the industry creates an in-house portfolio, platform, and pipeline from which our tenants derive exceptional benefits, efficiency, and expertise for their mission-critical facilities.



Biological

➔ from page 18

“You can imagine machine learning as helping people doing discovery in the human genome, but the human genome only has 23,000 genes. When you look at a microbiome, you have 2 million genes to find ... that’s a hard endeavor. I think that’s part of why microbiome science is only now exploding,” said Micronoma CEO **Sandrine Miller-Montgomery**. “You can’t just look at AT-GCs [DNA proteins] in 2 million different combinations and try to get knowledge out of that.”

Miller-Montgomery said Micronoma’s team used AI to help analyze microbes found in blood from patients with various forms of cancer.

“From a discovery point of view, it was very interesting for us to be able to use AI to figure out that the cancer tissue in the lung was a different signature on the microbe side than what you’d find in a breast cancer tissue, for example,” she said.

Micronoma is now using AI to develop a platform to detect the difference between the DNA of cancerous microbes and benign microbes to be used commercially as a diagnostics tool.

Epic Sciences is using its diagnostics platform to “transform care for cancer patients by identifying and analyzing circulating tumor cells (CTCs) that can inform treatment decisions,” said Epic CEO **Lloyd Sanders**. The process also informs the AI on how to better learn its function.

Epic’s imaging platform was innovated to analyze all cells from a patient’s blood on each slide in order to avoid making “biased assumptions,” Sanders said. The look-at-everything approach over time then “enables AI and machine learning



Sandrine Miller-Montgomery
CEO
Micronomas



Lloyd Sanders
CEO
Epic Sciences

models, coupled with multi-omics methods, to identify cells that matter, while learning and driving more precise data analytics.”

“Diagnostic technologies can power a true personalized medicine revolution – but must move faster, unencumbered by existing research frameworks and imperfect standards of care,” he added. “We have evolved our technology platform with this purposeful revolution in mind.”

Another company revolutionizing diagnostics with a novel approach utilizing machine learning is **Arima Genomics** – “the market leader in 3D genomics, a technology that provides access to the sequence, structure, and regulatory landscape of genes within the nucleus of a cell,” said **Anthony Schmitt**, senior vice president of science at Arima.

“Coupled with improved machine learning algorithms, 3D genomics can help improve clinical biomarker detection and classification, patient stratification, optimization of epigenetic feature classification, prediction of gene expression and prediction of drug response, among other biological insights,” he said.

Schmitt said it can be difficult to explain the impact of any one component of a biological system or to predict effects of interactions between components, but there is “great potential in emerging machine learning capabilities in facilitating an understanding and visualization of these systems.”

“I envision that one day there will be diagnostic tests and precision treatments for cancer and other diseases based on 3D genomics data,” he added. “Researchers have only begun to scratch the surface of what’s possible with this technology.”

AI and Beyond

Scratching the surface of what’s possible with technology is a hallmark of San Diego’s innovative life sciences sector. One company that is fusing the world of biology with the world of computing in a real way is **Cardea Bio**.

“Inside your computer, the CPU is the processor that makes the computer work. There is also a GPU that draws the graphics on your screen. We’re the first and only company to offer a BPU – a Biosignal Processing Unit,” said Cardea CTO **Brett Goldsmith**.

Cardea’s BPU, which is still waiting FDA clearance, is designed to run multiple tests on a single blood sample,

potentially allowing doctors and clinicians to do things like track a patient’s overall immune system response and test for different cancer markers.

“That means that we can drive a potential paradigm shift in cancer detection – going from the current sporadic testing based on hunches or being so late stage that the cancer manifests physically, to monitoring cancer biosignals,” Goldsmith said. “Through regular non-invasive tests, you’re always on top of what’s going on in your body. Our BPU platform is capable of doing this, and so are others, but our approach is going to be a lot more affordable for people, compared to the costs of current testing.”

Internet of Biology

In the future, Goldsmith sees an adoption of “bio-compatible electronics” to create an “Internet of Biology” similar to how Internet of Things technology works today.

“We will be able to get a step closer to deciphering what’s really going on with the most advanced technology on Earth – the biosignals in nature and biology,” he said.

Cardea is already taking that step toward an Internet of Biology. The company recently announced a partnership with **The Gates Foundation** to investigate how the body and microbiome all around it communicate information.

“We’re going to develop an electronic nose capable of detecting infectious diseases via breath,” Goldsmith said. “These biosignals can be read out with electronics that are compatible with biological environments.”

In AI, the future will be in improving data management, according to **CRISPR-QC** President **Ross Bundy**.

“AI is only as good as the data it gets, so understanding how to get as much data as possible with as small or no burden to actually enter the data and organize it so the AI can give us those insights is really the thing limiting us,” he said. “If useful, well-organized data can be collected without errors in a time-and-cost efficient manner, there are thousands of smart people out there who can build great AI that will unlock the next big breakthroughs in medicine.”

Those breakthroughs will come when data can be gathered and organized from across a range of disciplines like genomics, metabolomics and proteomics all at once,” he added. “When we’re talking about complex issues like long-term degenerative diseases like Alzheimer’s, Parkinson’s, or just aging in general, real answers are going to be at the intersection of these different fields, as our bodies operate as a system of systems, not siloed fields.”

CRISPR-QC is studying how to optimize therapies using CRISPR technology to edit out RNA or DNA from the body.

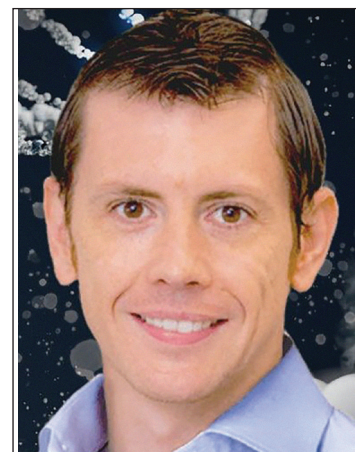
“CRISPR has this enormous potential to actually cure genetic diseases, like Type 1 Diabetes, liver disease, or even difficult viral infections like HIV. The problem here is that since you’re editing people’s DNA, every person’s unique DNA introduces a unique variable every time,” Bundy said. “This isn’t diagnostics, rather it’s using similar techniques to diagnostics to optimize to the patient’s unique situation, which in some ways is just as important, and in gene therapy even more so.” ■



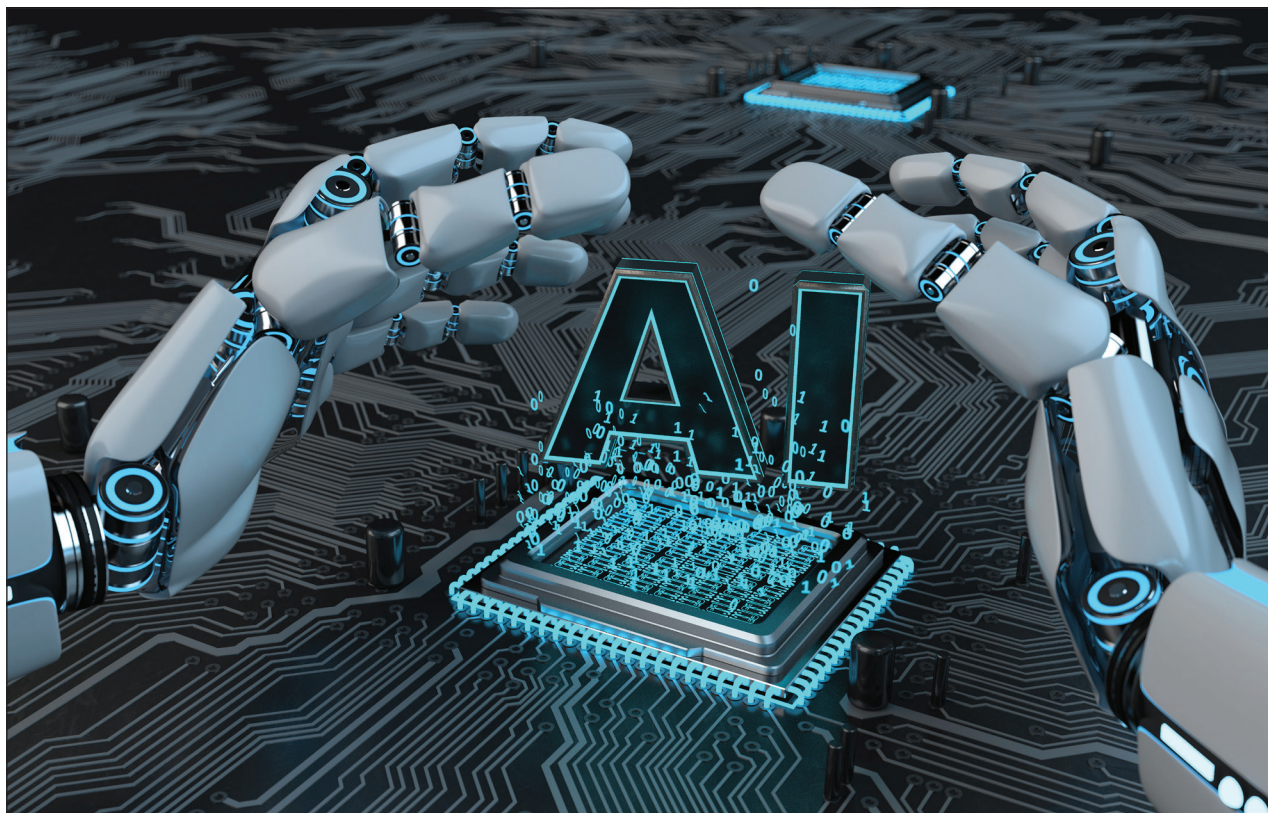
Brett Goldsmith
CTO
Cardea Bio



Anthony Schmitt
Senior Vice President of Science
Arima Genomics



Ross Bundy
President
CRISPR-QC



Artificial intelligence will help medical doctors and researchers make sense of large data sets.



BCG partners with medical technology, device, and diagnostic companies to address the industry's most pressing challenges, transform enterprises, and improve patient outcomes.

We help companies develop innovation and growth strategies, conduct successful digital transformations, and build resilient supply chains to outperform in inflationary environments. And we assist companies in finding solutions for health equity and other ESG issues to drive positive societal impact.

Jason Jager: Managing Director and Senior Partner, Jager.Jason@bcg.com
BCG San Diego 401 West A Street Suite 950, San Diego, CA 92101
www.bcg.com



BIOMEDICAL DEVICE MAKERS

Ranked by number of local full-time employees as of March 1, 2022

Rank	Company Address Website Phone		# of local full-time employees: 2022 2021	# of companywide employees	Description	Top local executive Headquarters Year est. locally	
1	BD (Becton, Dickinson and Co.) 3750 Torrey View Court, San Diego 92130 www.bd.com 858-617-2000		4,000 4,000	75,000	Manufactures devices for medication management, diagnostic testing & biomedical research	Michael Garrison Franklin Lakes, N.J. 1997	
2	Thermo Fisher Scientific Inc. 5791 Van Allen Way, Carlsbad 92008 www.thermofisher.com 760-603-7200		3,500 2,400	80,000	Advance discovery, translational research, molecular medicine	John Sos Daniella Cramp Waltham, Mass. 1987	
3	Dexcom Inc. 6340 Sequence Drive, San Diego 92121 www.dexcom.com 858-200-0200		2,773 2,760	6,182	Develops, manufactures & distributes continuous glucose monitoring systems for diabetes mgmt.	Kevin Sayer San Diego 1999	
4	Quidel Corp. 9975 Summers Ridge Road, San Diego 92121 www.quidel.com 800-874-1517		1,330 866	1,620	Development, manufacturing and marketing of diagnostic tests, assays, instruments	Douglas Bryant San Diego 1979	
5	Hologic Inc. 10210 Genetic Center Drive, San Diego 92121 www.hologic.com 858-410-8000		1,031 974	6,451	Innovative med tech company primarily focused on improving women's health	Kevin Thornal Marlborough, Mass. 1982	
6	Tandem Diabetes Care Inc. 11075 Roselle St., Suite 200, San Diego 92121 www.tandemdiabetes.com 858-366-6900		791 802	2,404	Maker of the t:slim X2 Insulin Pump with Control-IQ	John Sheridan San Diego 2006	
7	ResMed 9001 Spectrum Center Blvd., San Diego 92123 ResMed.com 858-836-5000		530 530	8,000	Digital health products to help people sleep, breathe, and live healthier lives outside the hospital	Mick Farrell San Diego 1989	

(NR) Not Ranked

Source: The companies.

In case of a tie, companies are ranked by number of companywide employees.

To the best of our knowledge, this information is accurate as of press time. While every effort is made to ensure the accuracy and thoroughness of

the list, omissions and typographical errors sometimes occur. Please send corrections or additions to the Research Department at the San Diego Business Journal at sdbjlists@sdbj.com. This list may not be reprinted in whole or in part without prior written permission from the editor. Some companies have declined to participate or did not return a survey by press time. It is not the intent of this list to endorse the participants or to imply a company's size or numerical rank indicates its quality.



LIFE SCIENCE PROJECTS REQUIRE SPECIALIZED EXPERIENCE...

WE HAVE IT.













To discuss your next project, please contact:
Drew DeFalle – Business Development, 619.209.1501, drew.defalle@swinerton.com

ENR CA #1 General Contractor | 100% Employee-Owned | CA License No. 92
swinerton.com



BIOMEDICAL DEVICE MAKERS

Ranked by number of local full-time employees as of March 1, 2022

Rank	Company Address Website Phone		# of local full-time employees: 2022 2021	# of companywide employees	Description	Top local executive Headquarters Year est. locally	
8	Axelgaard Manufacturing Company Ltd. 520 Industrial Way, Fallbrook 92028 www.axelgaard.com 760-451-8000		137 130	137	Patented medical electrodes, hydrogels	Jens Axelgaard Fallbrook 1985	
9	ACI Medical LLC 1857 Diamond St., San Marcos 92078 www.acimedical.com 760-744-4400		35 36	35	Treatment of peripheral artery diseases, venous diagnosis, contract manufacturing, sports recovery	Ed Arkans San Marcos 1995	
10	Advanced Brain Monitoring Inc. 2237 Faraday Ave., Suite 100, Carlsbad 92008 www.advancedbrainmonitoring.com 760-720-0099		30 30	45	Neurotech company and pioneer in brain science with a platform to tackle a myriad of neurodegenerative issues	Chris Berka Carlsbad 1999	
11	Aethlon Medical Inc. 11555 Sorrento Valley Road, San Diego 92121 www.aethlonmedical.com 619-941-0360		11 11	13	Devices for medical needs in cancer, infectious disease, and other life-threatening conditions	Charles J. Fisher, Jr., M.D. San Diego 1998	
12	AVACEN Medical 2365 Camino Vida Roble, Suite C, Carlsbad 92011 www.avacen.com 888-428-2236		10 10	10	AVACEN 100, AVACEN PRO, AVACEN PRO+ & AVACEN CSS thermotherapy and cardiovascular screening FDA-cleared medical devices	Thomas Muehlbauer Carlsbad 2009	
13	Advanced Monitors Corp. 7098 Miratech Drive, Suite 130, San Diego 92121 www.admon.com 858-536-8237		9 7	15	Portable endoscopes, video otoscopes, infrared thermometers, digital thermometers, surgical lasers	Rick Ferlito San Diego 1998	

(NR) Not Ranked
Source: The companies.
In case of a tie, companies are ranked by number of companywide employees.
To the best of our knowledge, this information is accurate as of press time. While every effort is made to ensure the accuracy and thoroughness of

the list, omissions and typographical errors sometimes occur. Please send corrections or additions to the Research Department at the San Diego Business Journal at sdbjlists@sdbj.com. This list may not be reprinted in whole or in part without prior written permission from the editor. Some companies have declined to participate or did not return a survey by press time. It is not the intent of this list to endorse the participants or to imply a company's size or numerical rank indicates its quality.



DOING WORK
THAT MATTERS

We are accelerating the speed of research and innovation by delivering science-centric software and laboratory automation solutions that enable researchers to orchestrate their discoveries at every stage.

Have you considered joining a world-class team committed to making an impact,
www.biosero.com?

BIOSERO 
A BICO COMPANY



Customized Cancer Treatment
Options – AI for Oncology

A cancer diagnosis can feel overwhelming, and working with doctors to quickly identify therapy options that will have the best outcome is complex.

For diagnosed patients, **precision medicine** with the CureMatch Decision Support System helps doctors identify therapies that are tailored to each person’s unique molecular profile, supporting the oncology team with options that are ‘matched’ to an individual’s tumor.

If you have cancer or want to help someone who does, find out how you can give **The Gift of CureMatch** for precision medicine – helping the doctor and the patient identify the top matching therapy options.

To find out about the Gift of CureMatch visit Gift of CureMatch | CureMatch
Or learn more about advancements in precision medicine digital solutions
at www.CureMatch.com

DIAGNOSTICS COMPANIES

Ranked by number of local employees as of March 1, 2022

Rank	Company Address Website Phone		# of local employees: 2022 2021	# of companywide employees	Description	Top local executive Headquarters Year founded	
1	Illumina Inc. 5200 Illumina Way, San Diego 92122 www.illumina.com 858-202-4500		4,598 3,850	9,100	Improving human health by unlocking the power of the genome	Francis deSouza San Diego 1998	
2	BD (Becton, Dickinson and Co.) 3750 Torrey View Court, San Diego 92130 www.bd.com 858-617-2000		4,000 4,000	wnd	Manufactures devices for medication management, diagnostic testing & biomedical research	Michael Garrison Franklin Lakes, N.J. 1997	
3	Thermo Fisher Scientific Inc. 5791 Van Allen Way, Carlsbad 92008 www.thermofisher.com 760-603-7200		3,500 2,400	100,000	Advance discovery, translational research, molecular medicine	John Sos Daniella Cramp Waltham, Mass. 1987	
4	Quidel Corp. 9975 Summers Ridge Road, San Diego 92121 www.quidel.com 800-874-1517		1,330 866	1,620	Development, manufacturing and marketing of diagnostic tests, assays, instruments	Douglas Bryant San Diego 1979	
5	Hologic Inc. 10210 Genetic Center Drive, San Diego 92121 www.hologic.com 858-410-8000		1,031 974	6,541	Innovative med tech company primarily focused on improving women's health	Kevin Thornal Marlborough, Mass. 1982	
6	Biocept Inc. 9955 Mesa Rim Road, San Diego 92121 www.biocept.com 858-320-8200		165 150	178	Assays, products & services, including its CNSide CSF assay, provide physicians with clinically actionable information for treating and monitoring patients diagnosed with cancer	Samuel Riccitelli San Diego 1993	
7	Exagen Inc. 1261 Liberty Way, Vista 92081 www.exagen.com 888-452-1522		150 wnd	222	Commercial-stage life sciences company focused on the diagnosis, prognosis, and management of autoimmune conditions	Ron Rocca Vista 2002	
8	DermTech Inc. 11099 N. Torrey Pines Road, Suite 100, La Jolla 92037 www.dermtech.com (858) 450-4222		132 96	274	Genomics company in dermatology focused on melanoma detection	John Dobak La Jolla 2012	
9	Helix 9875 Town Centre Drive, San Diego 92121 www.helix.com 415-916-2740		100 50	240	Population genomics and viral surveillance company	James Lu San Mateo 2015	
10	Advanced Brain Monitoring Inc. 2237 Faraday Ave., Suite 100, Carlsbad 92008 www.advancedbrainmonitoring.com 760-720-0099		30 30	44	Neurotech company and pioneer in brain science with a platform to tackle a myriad of neurodegenerative issues	Chris Berka San Diego 1999	
11	Innominata dba GenBio 15222 Avenue of Science, Suite A, San Diego 92128 www.genbio.com 858-592-9300		13 13	13	Develops, manufactures, markets immunoassays for infectious & autoimmune diseases in four formats	Frederick Adler San Diego 1994	

(NR) Not Ranked

Source: The companies.

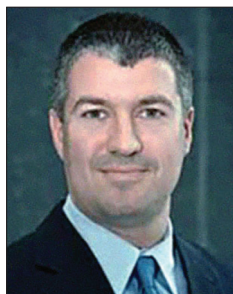
To the best of our knowledge, this information is accurate as of press time. While every effort is made to ensure the accuracy and thoroughness of the list, omissions and typographical errors sometimes occur. Please send corrections or additions to the Research Department at the San Diego

Business Journal at sdbjlists@sdbj.com. This list may not be reprinted in whole or in part without prior written permission from the editor. Some companies have declined to participate or did not return a survey by press time. It is not the intent of this list to endorse the participants or to imply a company's size or numerical rank indicates its quality.

PROVIDED BY AVACEN

AVACEN Medical® Welcomes Anthony Shimkin as New Chief Executive Officer

An industry veteran, Shimkin brings more than 25 years of medical and technology commercialization experience to AVACEN.



Anthony Shimkin

"As we continue to expand globally, Anthony's knowledge and deep industry expertise will prove instrumental to our strategic growth," said Thomas G. Muehlbauer, Chairman

and co-founder of AVACEN Medical.

AVACEN Medical, an innovator, manufacturer, and marketer of safe, easy to use, noninvasive drug-free alternatives for pain management, today announced the appointment of Anthony Shimkin as CEO. With more than 25 years of medical and technology commercialization experience, Shimkin will be responsible for driving brand awareness, expanding AVACEN's go-to-market strategy and increasing revenue growth.

"We are thrilled to welcome Anthony to the AVACEN Medical team," said Thomas G. Muehlbauer, Chairman and co-founder of AVACEN Medical. "As we continue to expand globally, Anthony's knowledge and deep industry expertise will prove instrumental to our strategic growth."

Throughout his extensive career, Shimkin held key marketing and innovation leadership roles at several notable companies, including Qualcomm, where he served as senior director of marketing and, later, senior director of business development. Before that, he held senior positions at Lantronix, Quidel, Cardinal Health, Alaris Medical Systems and Neoforma. He also led the health care equity research team at Wedbush Securities and consulted for several leading life sciences companies.

Prior to joining AVACEN Medical, Shimkin served as the senior vice president of marketing at Kajeet, a leading managed IoT connectivity service for remote patient monitoring and telehealth. Prior to Kajeet, he was chief marketing officer at Ready-Set Surgical, a cloud-based coordination platform that consolidates supply chain logistics and communications for surgical teams. Anthony was also a sales and marketing advisor at Farsight Genome Systems, a provider of an innovative SaaS platform for precision medicine, and a principal at Scienza Consulting, a consulting and interactive content marketing provider for the life sciences industry.

AVACEN Medical - Pain and Stress Relief in the Palm of Your Hand!

Millions of people live with chronic pain and stress. If you're one of them, you may have tried to manage a deep pain that never really goes away. Pain medication only



Thomas G Muehlbauer, AVACEN Medical Chairman, Danielle Forsgren AVACEN Medical CMO. Photo Courtesy of Pola Allen

masks the pain, doesn't cure anything, and poses the risk of unpleasant side effects. As a result, so many people are resigned to spending their lives in pain.

But what if you could get convenient and safe relief without medication? What if the answer was literally in the palm of your hand?

AVACEN is a unique thermotherapy device that temporarily relieves muscle and joint pain and stiffness including those associated with arthritis, promotes muscular relaxation, and increases circulation. Imagine a walk in the park without fighting the usual jolt of pain! Think about having a sense of calm and relaxation! Picture lifting your child or grandchild pain-free!

This powerful device is noninvasive, drug-free and easy to use. You also get the tremendous healing benefits associated with activating the parasympathetic from placing your hand in this small device and resting the palm of one hand on a heat transfer pad while it is subjected to negative pressure!

AVACEN Medical has just launched its third model, the PRO+. With PRO+, there is new hope on the horizon for more people to experience safe life-changing pain relief.

How Does AVACEN Work?

AVACEN introduces heat into the circulatory system through high-volume blood vessels located in the palm of the hand.

The heat increases microcirculation and reduces blood thickness. Microcirculation refers to blood flow through the smallest blood vessels which make up approximately 74% of the body's vascular system, which deliver nutrition and oxygen to tissues and helps regulate blood pressure and core-body temperature.

"With poor circulation, the blood can't get to where it's needed, and you may experience pain in your feet, extremities and fingers. AVACEN helps push that blood through those vessels," Forsgren explained.

The hand is simply put in the device, and it warms the blood, relaxes the muscles and increases the delivery of oxygen and nutrients while taking away toxins. It's a simple and safe way to relax the body by activation of the parasympathetic.

The parasympathetic nervous system is responsible for the body's rest and digestion response when the body is relaxed, resting or feeding. It basically undoes the work of sympathetic division after a stressful situation.

"When you meditate or practice yoga, you go into this relaxing parasympathetic state. Muscular relaxation also activates the parasympathetic system. And when you relax, you heal," Muehlbauer said.

It is also quite easy to use.

"Making it as easy as possible for the end-user was especially important for our home device. So, you just push one button

and relax. The device does the rest," Muehlbauer added.

Launching a New Model: The PRO+

After three years of intensive development AVACEN Medical just launched its new PRO+ at the April 2022 American Academy of Anti-Aging Medicine/Metabolic Medical Institute (A4M) conference. This device is an updated and significantly improved version of the existing practitioner's AVACEN PRO device.

"It's an absolutely hi-tech device," Muehlbauer said. "It improves our existing PRO device by adding: a color touch screen; support for larger hands; Wi-Fi; Bluetooth and RFID support for custom AVACEN Apps. It uses more durable parts that makes it five times more reliable than the current PRO device. The redesign also includes a pop-on/pop-off cuff for easier and less expensive repair of a damaged bladder. In addition, more memory allows support for over 100 languages. With the 10 times faster processor, we were able to add educational and relaxing videos, plus proven deep healing meditation music."

The AVACEN system is a promising device for people living with chronic pain. The new PRO+ model is set to give access to relief to an even larger population. In addition to pain and stress relief, all models benefit users through:

Ease of use: AVACEN device requires only one hand, and there are no complicated instructions or settings.

Convenient size: AVACEN device is small enough to carry easily and operate yourself.

No needles, wires or medications.

Brief, 20-to-30-minute sessions.

AVACEN Medical



About AVACEN Medical: AVACEN Medical, a rapidly rising INC. 5000 company for the last 3 years, is dedicated to the innovation and design of safe, easy to use, noninvasive drug-free alternatives for the management of pain associated with numerous chronic and acute conditions including the temporary relief of minor muscle and joint pain and stiffness associated with arthritis and potentially other conditions that can cause joint pain, such as CRPS, Raynaud's, and Lyme disease. Founded in 2009, AVACEN Medical is headquartered in Carlsbad, CA. Contact: Danielle Forsgren at (888) 428-2236 x702 or info@AVACEN.com.