

## SPECIAL REPORT: BIOTECH

# San Diego Scientists Advance Oncology Innovation

## Biotechnology and Biopharmaceutical Companies Delivering New Treatments to Fight Cancer

■ By NATALLIE ROCHA

Among the many segments of life changing work being done in San Diego's life science community, cancer research has a strong presence.

Across the **San Diego Business Journal's** list of 41 biotech companies and 11 biopharma companies these represent a sample of the life science organizations in the region. Approximately half of the organizations on each list are comprised of companies that are working on treatments for cancer patients.

Beyond the well-known approaches of chemotherapy and radiation for treating cancer, scientists have honed-in on precision medicines as a promising solution to cancer. One area in particular that is offering a variety of innovative solutions is the field of immuno-oncology.

Scientists are developing various immunotherapies which in some way or another engages with the patient's immune system and works with it to fight the cancer. The San Diego Business Journal connected with experts and company leaders who are innovating new technologies and treatments that are aimed at wiping out cancer.

### Developing Solutions

The **Moore's Cancer Center at UC San Diego Health** is one of the leading cancer research institutions in the country. **Scott M. Lippman, M.D.** is the director of the center and he shared that some of the key transformations in cancer therapies can be traced back to the growth of precision medicine around 2004 and 2005.



**Scott M. Lippman, MD**  
Director  
Moore's Cancer Center  
at UC San Diego  
Health

In the field of immuno-oncology, a couple of the pivotal features of precision medicine include researchers' ability to analyze the driver mutations behind cancer and checkpoint inhibitors, a type of immunotherapy that blocks immune checkpoint proteins from binding with partner proteins.

With this understanding of cancer at a deeper level, researchers are developing precise and sometimes even personalized medicines that help a patient's body fight their specific cancer.

At the Moore's Cancer Center, they have about 400 clinical trials happening at any given time, said **Matthew Jenusaitis, MSE, MBA**, chief administrative officer, oncology and radiation therapy at the Moore's Cancer Center.

He added that as a result of the pandemic, people put off routine health

screenings and now that things have opened up a little bit more, people are returning to the doctors and thus, their clinic volume is up 25%, versus last year.

"That's one of the unique things about an academic medical center — we're doing a lot of research and we're very adamant about the bench to bedside aspect of our research," he said. "Cancer technology and cancer therapy is evolving very quickly so your chances of survival are higher if you're enrolled in a clinical trial, and you're getting the latest technologies."

### Supporting a Growing Field

As the life science industry at large grows rapidly thanks to an increase of capital flowing into biotech, there are more companies working on ways to cure cancer. Just over the past few months a couple of the local biotech companies that went public included cancer focused companies.

Alongside rapid innovation and the need to scale, comes logistical challenges. But, San Diego-based **Biosero** has been helping companies big and small across the industry get over those hurdles through its Green Button Go software that helps automate lab workflows.

"Our focus is allowing the cancer researchers to focus on that data and focus on those analytics, and let the difficulty of connecting their devices and streamlining that data to where they need it to go to make those decisions, leave that up to companies like us because focusing on the science is hard enough," said **Tom Gilman** president and CEO of Biosero.

Biosero's Senior Applications Scientist, **Donald Chow** connects with companies to find custom solutions and make sure Biosero's technology platforms help them optimize their workflows. Chow spent many years working as a cancer researcher so he intimately understands that while advancements in technology have provided researchers with more data, they need help managing and maintaining



**Matthew Jenusaitis, MSE, MBA**  
Chief Administrative  
Officer, Oncology and  
Radiation Therapy  
Moore's Cancer Center  
at UC San Diego  
Health

that information in their work.

"Now your ability to test is sort of speeding up and now, how do you process all of that, especially with the high volumes and what you can do with it," Chow said.

He explained that as we develop more complex diagnostics to analyze a person's health and response to treatments for instance, it is important that they have the technology to keep things in order so they can make actionable decisions based on that data.

### Analyzing and Detecting Cancer Early

**Illumina** — number one on the biotech companies list and one of San Diego's largest public companies — develops sequencing technology that helps researchers analyze cancer at the genomic level. Its TruSight Oncology 500 platform is a widely used next-generation sequencing (NGS) assay that enables in-house comprehensive genomic profiling of tumor samples.

Not only is Illumina focused on developing technology to analyze cancer — the company also has its sights set on detecting the cancer as early as possible.

Notably, this year Illumina has decided to move forward with the acquisition of **GRAIL**, a healthcare company focused on life-saving early detection of multiple cancers. GRAIL's Galleri test can detect more than 50 cancers across all stages, of which 45 do not have recommended screening in the U.S.

According to Illumina, cancer kills around 10 million people a year — about 600,000 people in the U.S.

"We know that early detection of cancer saves lives by enabling early-stage intervention, when cancers are most treatable," said Illumina's CEO, **Francis deSouza**. "The Galleri blood test will be nothing short of transformational for human health and the economics of healthcare. And through acquiring GRAIL, Illumina will accelerate access and adoption of this life-saving test worldwide."



**Donald Chow**  
Senior Applications  
Scientist  
Biosero

### CAR-T Cell Therapies

**Poseida Therapeutics** is a clinical-stage biopharmaceutical company utilizing proprietary genetic engineering platform technologies to create cell and gene therapeutics with the capacity to cure cancers and genetic diseases.

"To date, other CAR-T therapeutics have not had much success outside of hematologic malignancies," said **Eric Ostertag, M.D., Ph.D.**, chief executive officer of Poseida.

"The deep and durable responses in our trial demonstrate that CAR-T products have the potential to work well against solid tumors, even at low doses, when using the appropriate technology platform."

The company's CAR-T product candidates modify the immune system's T-cells to treat multiple myeloma, prostate cancer and other solid tumors like breast, ovarian, colorectal or pancreatic cancers.

Additionally, Poseida is developing P-MUC1C-ALLO1, an allogeneic CAR-T product candidate in preclinical development with the potential to treat a wide range of solid tumors derived from epithelial cells.

"In the cell therapy space, one of the most exciting approaches is the quest to create an allogeneic cell therapy for treating cancers," said **Mark Gergen**, president and chief business officer at Poseida.



**Eric Ostertag**  
CEO  
Poseida Therapeutics



**Mark Gergen**  
President & Chief  
Business Officer  
Poseida Therapeutics

### DNA Medicines

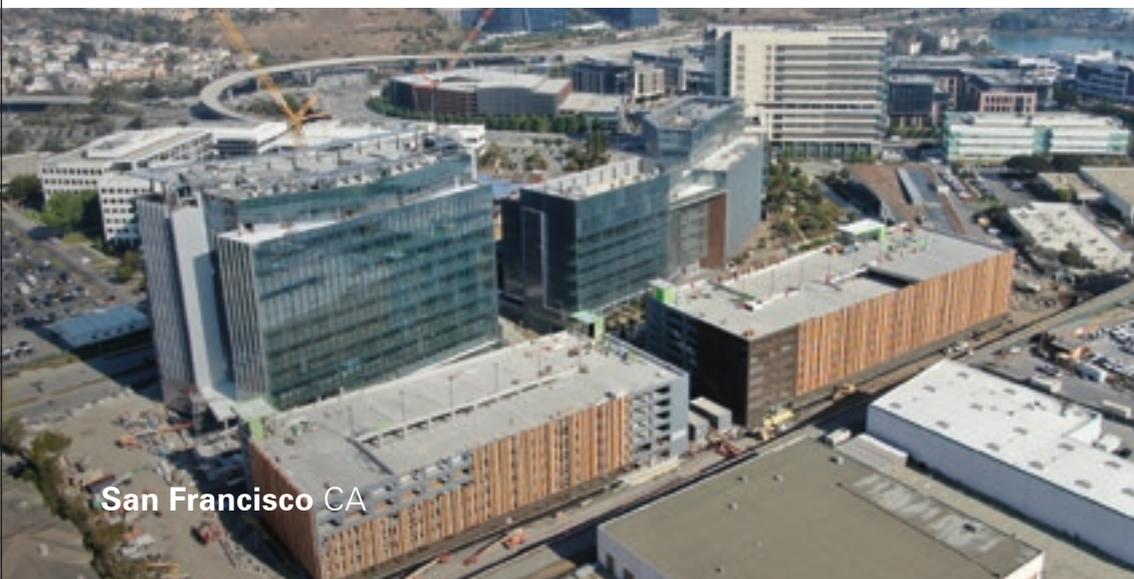
**Inovio Pharmaceuticals** develops DNA medicines and they are creating a pipeline of immunotherapies in oncology that could tackle liquid and solid tumors. Its two candidates in the pipeline are focused on an aggressive form of brain cancer, glioblastoma multiforme (GBM) and prostate cancer.



**Jeffrey Skolnik, M.D.**  
Senior Vice President,  
Clinical Development  
INOVIO  
Pharmaceuticals



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## SPECIAL REPORT: HEALTHCARE

# Healthcare Technologies Adapt to Patient Needs

## Consumer-Facing Technologies and Apps Are Digital Tools for Local Providers

■ BY NATALLIE ROCHA

Healthcare organizations have transformed their offerings to meet patients where they are at. San Diego healthcare providers are using digital platforms and consumer-facing apps to streamline care options for their patients with everything from scheduling appointments to telehealth visits.

At this point, it's clear that the integration of digital care options are here to stay. Now, healthcare organizations are finding ways to build tools and platforms that help their patients get accessible care and actionable solutions in a tailored manner beyond the pandemic.

The **San Diego Business Journal** connected with the leaders at local healthcare organizations who are embracing the digital transformation of care.

### COVID Catalyzed Transformation

As the COVID-19 pandemic changed many aspects of life, it challenged our healthcare systems to keep people safe in and outside medical centers. That meant finding ways to connect with patients in a way that kept both their staff and the community safe.

**Stacey Hrountas**, CEO of **Sharp Rees-Stealy Medical Centers** shared that healthcare providers who were at high risk for contracting COVID-19 were able to triage patients while remaining safe.

"Patients have routinely expressed how much they like the convenience of virtual urgent care," Hrountas said. "To put it in perspective, before COVID, approximately 1 to 2 percent of all Sharp Rees-Stealy visits were virtual; by phone or video. When the crisis hit that number increased exponentially and by the beginning of April 2020, 70% of all visits were virtual. Today, between 14 to 20% are virtual. Virtual urgent care proved so successful during the heat of the pandemic that it is now part of our standard care offerings and we are so pleased we can offer patients a variety of way to receive our award-winning care."

Logistically, medical centers have been stretched thin during the pandemic, and leaning on technology that helped maximize their resources while meeting the increased need for care was also essential to overcoming these challenges.

"The immediate challenge presented by COVID was that our contracted nurse triage support system was inundated by calls from all across California – it was taking them 10 hours to return calls," Hrountas said. "Because we started training our doctors and advanced practice providers in 2014 to deliver

quality health care virtually, we were able to quickly implement an on-demand urgent care program. Virtual urgent care was an immediate win – with our doctors and our patients."

**Shane Thielman**, corporate senior vice president and chief information officer at **Scripps Health** said that they have seen a huge increase in engagement with their MyScripps platform, a patient portal powered by electronic health record vendor, Epic.

"The COVID pandemic played a major role in the increased use of the patient portal and became a vehicle to standardize telemedicine as a standard of care delivery," Thielman said. "21% of all eligible ambulatory care visits were delivered via telemedicine this past year."

### Consumer Driven Change

Digital healthcare proved to be not only an essential tool to keep people safe during a health crisis, but it has also been adopted by patients as an integral tool for accessible healthcare.

Consumers are using digital health tools now more than ever and feel comfortable making this a standard element of their care. On average, 80% of consumers are likely to have another virtual visit, even post COVID-19, as most consumers were satisfied with their first experience with first visits, according to the **Deloitte** 2020 Survey of U.S. Health Care Consumers.

"The digital and physical worlds are increasingly more inseparable for our patients," said **Chris Van Gorder**, president and CEO of Scripps Health.

"The volume of on-line interactions has continued to grow year-over-year and much of this is driven by consumer expectations. Patients expect a frictionless and connected experience whether online or in-person, and digital health has enabled new value for consumers towards improved access, convenience, experience, engagement and affordability."

In addition to the day-to-day doctor's appointments patients need, healthcare organizations like **Palomar Health** have also embraced technology as a way for people to feel more connected to their loved ones during a hospital stay.

"Technology will never replace our need or desire for human interaction, but it can facilitate it," said **Palomar Health** President and CEO **Diane Hansen**. "In the early stages of the pandemic, no visitors were allowed inside the hospital so we instituted an iPad lending program to connect patients with their loved ones. It was so successful we have continued it even though visitors are now allowed so people can visit their loved ones across the globe."



**Diane Hansen**  
President & CEO  
Palomar Health

### Demand for Virtual Care is Up

At the onset of the pandemic in San Diego County, **Kaiser Permanente** quickly expanded its virtual care program by more than 700 percent. In comparison, before the pandemic, Kaiser conducted about 22 percent of primary care visits on its virtual platform and today nearly 40 percent of primary care visits remain on the virtual platform.

"When medically appropriate, accessing healthcare on a virtual platform has proven to be a highly effective and convenient option for our membership, particularly in primary care and behavioral health settings," said

**Dave Horton**, chief administrative officer at Kaiser Permanente. "For example, at the height of the pandemic, more than 95 percent of primary care and 99 percent of mental health visits were conducted on a virtual platform. Today, virtual health appointments continue to be in high demand with nearly 40 percent of primary care and more than 80 percent of mental health visits conducted on our virtual platform."

Given the increased engagement with their digital platform, this year Kaiser Permanente launched an app that offers patients a one-stop shop for their care options. While there has been an overall increase of patients across all age groups using digital tools, Kaiser Permanente's members ages 26-44 utilize the most, and members ages 13-17 are the lowest utilizers.

At Scripps Health, Thielman shared that the three largest cohorts of users on its digital platform are ages 36-54 followed by 55-72 and then 18-35. He added that females in all age cohorts outnumber men in terms of

enrollment in the patient portal.

"Increasingly more patients are accessing the portal via their mobile device with almost 50% of logins completed from a mobile device," he said.

### Offering Specialized Care

With patient engagement up, healthcare providers are expanding the possibilities of care by offering specialized services including mental health care, diagnostics and maternity care to name a few.

"During the COVID-19 pandemic Tri-City Medical Center significantly increased access to care through multiple telehealth digital platforms in a variety of service areas," said **Steve Dietlin**, president and chief executive officer of **Tri-City Medical Center** in Oceanside. "I'm especially proud of the robust telehealth services we offer through our Out-patient Behavioral Health Clinic at a time when so many in our community continue to experience mental health challenges."

According to the **Deloitte** 2020 survey of health care consumers, about a third to half of consumers are comfortable using at-home diagnostics for various reasons.

For Kaiser Permanente, the beginning of their digital tools began with its pilot Tele-Derm program that launched in San Diego back in 2010. Since then, they've built on that foundation and have offered broad-based virtual health visits in all specialties since 2014.

Through the Tele-Derm platform, primary care physicians could securely share digital images with Kaiser's dermatology team of any suspicious skin lesions or conditions identified on their patients during a regular office visit. Dermatologists could then review these images almost immediately and determine if the patient should seek a dermatology visit.

The running theme in the future of healthcare is personalized and accessible health tools. Advancements in point-of-care technology has also made it easier than ever for healthcare providers to offer tools that connect patients with their diagnostic results.

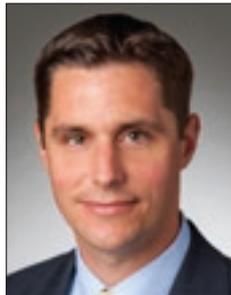
"Most recently, Scripps has begun to offer home-based biometric monitoring for patients with hypertension and maternal patients," Thielman said. "This has helped expand the boundaries of the delivery system beyond the traditional sites of care. The different digital modalities and services have built upon each other and will continue to in the future as patients seek a connected and continuous relationship with their provider and an increasingly more personalized experience." ■



**Steve Dietlin**  
CEO  
Tri-City Medical



**Stacey Hrountas**  
CEO  
Sharp Rees-Stealy  
Medical Centers



**Shane Thielman**  
Corporate SVP &  
Chief Information  
Officer  
Scripps Health



**Chris Van Gorder**  
President & CEO  
Scripps Health



**Dave Horton**  
Chief Administrative  
Officer  
Kaiser Permanente



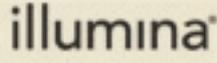
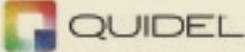
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# THE LIST BIOTECH COMPANIES

► Ranked by number of local employees as of September 1, 2021

Rank	Company Address Website Phone	Local employees: 2021 2020 % + (-)	Major products/ company description	Top local executive Year founded locally	
1	<b>Illumina Inc.</b> 5200 Illumina Way, San Diego 92122 www.illumina.com 858-202-4500	 3,850 3,631 6	Improving human health by unlocking the power of the genome	Francis deSouza 1998	
2	<b>Dexcom Inc.</b> 6340 Sequence Drive, San Diego 92121 www.dexcom.com 858-200-0200	 2,760 2,070 33	Develops, manufactures & distributes continuous glucose monitoring systems for diabetes mgmt.	Kevin Sayer 1999	
3	<b>Quidel Corp.</b> 9975 Summers Ridge Rd, San Diego 92121 www.quidel.com 800-874-1517	 866 808 7	Development, manufacturing & marketing of diagnostic tests, assays, instruments.	Douglas Bryant 1979	
4	<b>Tandem Diabetes Care Inc.</b> 11075 Roselle St, Suite 200, San Diego 92121 www.tandemdiabetes.com 858-366-6900	 802 1,043 (23)	Maker of the t:slim X2 Insulin Pump with Control-IQ	John Sheridan 2006	
5	<b>NuVasive, Inc.</b> 7475 Lusk Blvd., San Diego 92121 www.nuvasive.com 858-909-1800	 700 600 17	Largest spine-focused technology company in the world.	Chris Barry 1997	
6	<b>BioLegend Inc.</b> 8999 BioLegend Way, San Diego 92121 www.biolegend.com 858-750-5245	 630 550 15	Develops world-class, cutting-edge antibodies & reagents for biomedical research	Gene Lay 2002	
7	<b>Neurocrine Biosciences Inc.</b> 12780 El Camino Real, San Diego 92130 www.neurocrine.com 858-617-7600	 560 503 11	Biopharmaceutical company developing treatments for neurological, endocrine & psychiatric disorders.	Kevin Gorman 1992	
8	<b>Ionis Pharmaceuticals Inc.</b> 2855 Gazelle Court, Carlsbad 92010 www.ionispharma.com 760-931-9200	 547 na na	Exploiting its leadership position in antisense technology to discover & develop novel drugs	Brett Monia, Ph.D. 1989	
9	<b>ResMed</b> 9001 Spectrum Center Blvd., San Diego 92123 ResMed.com 858-836-5000	 530 530 0	ResMed is a global leader in digital health, helping millions of people across 140+ countries sleep, breathe, and live healthier lives outside the hospital.	Mick Farrell 1989	
10	<b>Sorrento Therapeutics Inc.</b> 4955 Directors Place, San Diego 92121 www.sorrentotherapeutics.com 858-203-4100	 502 <sup>(1)</sup> na na	Clinical-stage & commercial co. developing new therapies to treat cancer and COVID-19	Henry Ji 2006	
11	<b>Maravai LifeSciences Holdings, Inc.</b> 10770 Wateridge Cir Suite 200, San Diego 92121 www.maravai.com 858 546 0004	 490 <sup>(2)</sup> 390 <sup>(3)</sup> 26	Makes critical products to enable the development of various therapies, diagnostics & vaccines.	Carl Hull 2020	
12	<b>Arena Pharmaceuticals Inc.</b> 6166 Nancy Ridge Drive, San Diego 92121 www.arenapharm.com 858-453-7200	 363 <sup>(1)</sup> na na	Small molecule drugs targeting G protein-coupled receptors in four major areas	Amit Munshi 1997	
13	<b>Fate Therapeutics Inc.</b> 3535 General Atomics Court, Suite 200, San Diego 92121 www.fatetherapeutics.com 858-875-1802	 356 <sup>(2)</sup> na na	Clinical-stage company developing cellular immunotherapies for patients with cancer.	Scott Wolchko 2007	
14	<b>Inovio Pharmaceuticals Inc.</b> 11494 Sorrento Valley Road, San Diego 92121 www.inovio.com (858) 597-6006	 320 <sup>(4)</sup> na na	Co. designing DNA medicines to treat and protect people from infectious diseases & cancer.	J. Joseph Kim 1979	
15	<b>Millennium Health</b> 16981 Via Tazon, San Diego 92127 www.millenniumhealth.com 877-451-3534	 287 320 (10)	Specialty laboratory providing clinicians with drug testing and medication monitoring services.	Andrew A. Lukowiak, Ph.D. 2007	
16	<b>Acadia Pharmaceuticals Inc.</b> 12830 El Camino Real, Suite 400, San Diego 92130 www.acadia-pharm.com 858-558-2871	 252 241 5	Focused on the development and commercialization of innovative medicines to address CNS disorders	Steve Davis 1997	
17	<b>Mirati Therapeutics</b> 3545 Cray Court, San Diego 92121 www.mirati.com 858-332-3410	 232 232 0	Targeted oncology company with a pipeline of medicines for precisely defined patient populations.	Charles Baum 2013	
18	<b>Poseida Therapeutics</b> 9390 Towne Centre Dr #200, San Diego 92121 www.poseida.com 858-779-3100	 215 170 26	Biopharmaceutical company using proprietary platform technologies to develop cell and gene therapies	Eric Ostertag 2014	
19	<b>Turning Point Therapeutics, Inc.</b> 10628 Science Center Dr STE 200, San Diego 92121 www.tptherapeutics.com 858 926 5251	 201 <sup>(2)</sup> na na	Clinical-stage precision oncology biopharma co. developing novel small molecule, targeted therapies.	Athena Countouriotis 2013	

**(NR)** Not ranked  
**na** Not available  
**Source:** The companies, SEC Filings.  
 In case of a tie, companies are ranked by number of employees in 2020, and then alphabetically.  
 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. 619-802-8456. 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.  
 (1) Business Journal estimate as of Dec. 31, 2020. Includes full-time and part-time employees. Source: Form 10-K.  
 (2) Business Journal estimate as of June 30, 2021. Source: Form 10-Q.  
 (3) Business Journal estimate  
 (4) Business Journal estimate.



## Enabling the miracles of science.

Maravai LifeSciences is proud to be a part of the San Diego community. With over 450 employees, we enable the development of drug therapies, diagnostics and novel vaccines, and support research on human diseases through our portfolio of market-leading companies and proprietary technologies. Maravai's portfolio companies are ISO-9001:2015 certified and have earned thousands of citations in peer-reviewed scientific publications.

TriLink Biotechnologies, a part of Maravai, has been a pioneer in nucleic acid synthesis & manufacturing since its inception in 1996. Biopharma companies turn to TriLink as a critical supplier of modified nucleic acids and as a CDMO partner to help them move from early research into clinical trials. TriLink's proprietary CleanCap® mRNA co-transcriptional capping technology has been critical in the fight against COVID-19 as a vaccine component.

In 2019, a special honor was bestowed on Maravai from the county and city of San Diego who proclaimed November 19th as mRNA Day in honor of TriLink's facility expansion to increase capacity for cGMP and general mRNA, oligonucleotide and plasmid manufacturing and Maravai's new global headquarters to support biomedical innovation.

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

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20	<b>Ligand Pharmaceuticals Inc.</b> 11119 N. Torrey Pines Road, Suite 200, San Diego 92037 www.ligand.com 858-550-7500	 155 <sup>(1)</sup> na na	Develops programs that lead to licensing deals or acquiring royalty revenue-generating assets	John Higgins 1987	
21	<b>Biocept Inc.</b> 9955 Mesa Rim Road, San Diego 92121 www.biocept.com 858-320-8200	 150 90 67	Assays, products & services provide actionable information to improve outcomes for cancer patients	Michael Nall 1993	
22	<b>Codex DNA</b> 9535 Waples Street, Suite 100, San Diego, CA 92121-2993 www.codexdna.com 858-228-4115	 130 75 73	Synthetic biology solutions addressing bottlenecks in DNA and mRNA for many downstream markets.	Todd Nelson 2011	
23	<b>Bionano Genomics, Inc.</b> 9540 Towne Centre Drive, Suite 100, San Diego 92121 www.bionanogenomics.com 858-888-7600	 126 <sup>(2)</sup> na na	Life science tools for genome mapping to enable comprehensive study of large structural variations	R. Erik Holmlin 2011	
24	<b>Singular Genomics Systems, Inc.</b> 10931 North Torrey Pines Road Suite 100, La Jolla 92037 www.singulargenomics.com 858-333-7830	 124 <sup>(3)</sup> na na	Healthcare, Medical Instruments & Supplies	Andrew Spaventa 2016	
25	<b>Halozyyme</b> 11388 Sorrento Valley Road, San Diego 92121 www.halozyyme.com 858-794-8889	 123 na na	Biotechnology company focused on developing and commercializing novel oncology therapies.	Helen Torley 1998	
26	<b>Arcturus Therapeutics</b> 10628 Science Center Drive, San Diego 92121 www.arcturusrx.com 858-357-7894	 118 <sup>(4)</sup> na na	Clinical-stage messenger RNA medicines company.	Joe Payne 2013	
27	<b>Adamis Pharmaceuticals Corp.</b> 11682 El Camino Real, Suite # 300, San Diego 92130 www.adamispharmaceuticals.com 858-997-2400	 115 <sup>(1)</sup> na na	Co. developing & commercializing products in various therapeutic areas.	Dennis Carlo 2006	
28	<b>Erasca, Inc.</b> 10835 Road to the Cure Suite 140, San Diego 92121 www.erasca.com 858-465-6511	 102 <sup>(3)</sup> 30 <sup>(5)</sup> 240	Clinical-stage precision oncology co. developing therapies for RAS/MAPK pathway-driven cancers.	Jonathan Lim 2018	
29	<b>DermTech Inc.</b> 12340 El Camino Real, San Diego 92130 www.dermtech.com 858-450-4222	 96 50 92	Bringing non-invasive precision genomics to the diagnosis & treatment of skin disease.	John Dobak 2012	
30	<b>AnaptysBio</b> 10835 Road to the Cure, #100, San Diego 92121 www.anaptysbio.com 858-362-6295	 94 <sup>(4)</sup> na na	Therapeutic antibody product company	Hamza Suria 2005	

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na Not available

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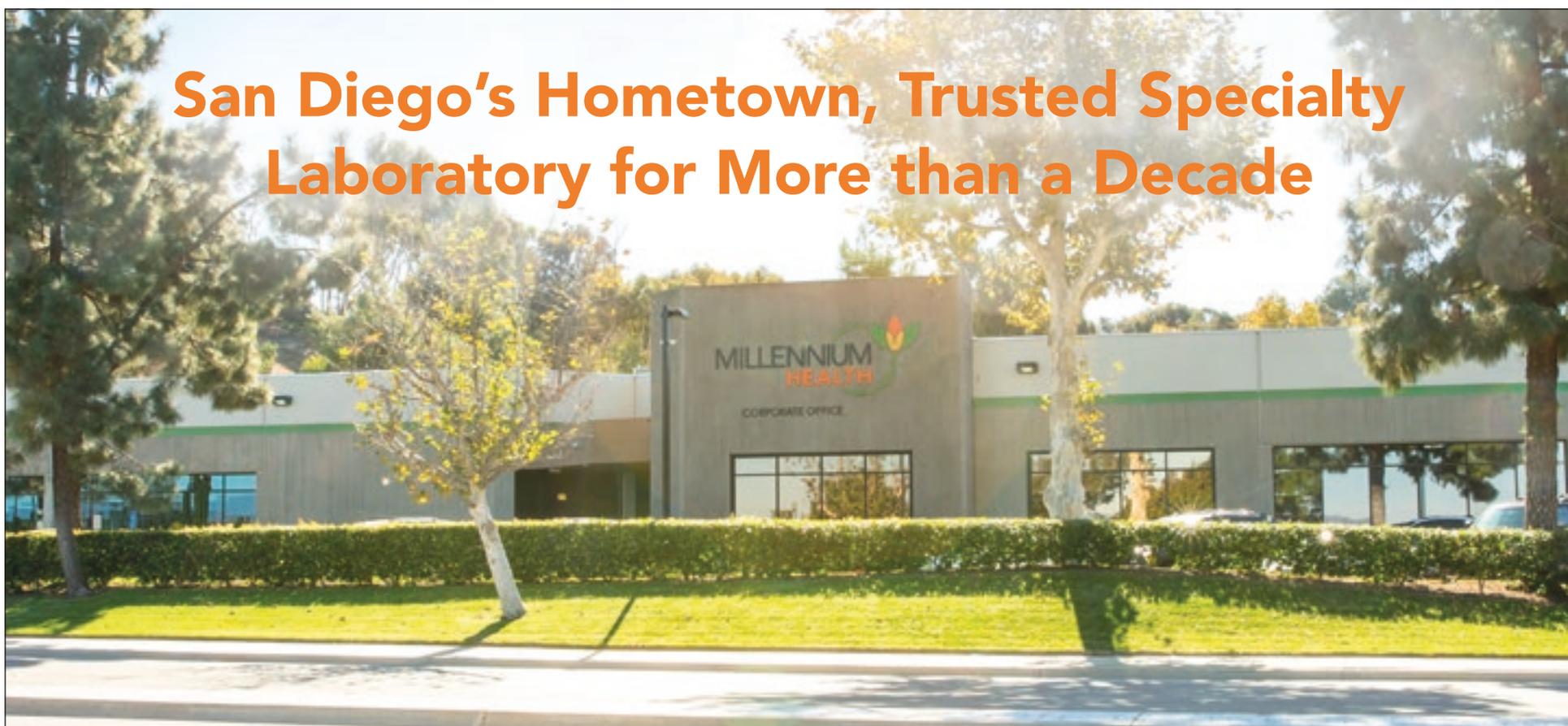
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(5) As of Dec. 31, 2019. Source: Form 10-Q.

## San Diego's Hometown, Trusted Specialty Laboratory for More than a Decade



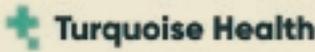
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32	<b>Cidara Therapeutics</b> 6310 Nancy Ridge Drive, Suite 101, San Diego 92121 www.cidara.com 858-752-6170	 70 79 (11)	Developing long-acting therapeutics designed to save lives and improve the standard of care.	Jeffrey Stein, PhD 2013
33	<b>Otonomy Inc.</b> 6275 Nancy Ridge Drive, Suite 100, San Diego 92121 www.otonomy.com 858-242-5200	 56 <sup>(2)</sup> na na	Develops and commercializes innovative therapeutics for diseases and disorders of the ear	David A. Weber 2008
34	<b>Kinnate Biopharma Inc.</b> 11975 El Camino Real Suite 101, San Diego 92130 www.kinnate.com 858-299-4699	 52 <sup>(3)</sup> na na	Focused on the discovery & development of small molecule kinase inhibitors for treating cancer.	Nima Farzan 2018
35	<b>BioAtla</b> 11085 Torreyana Road, San Diego 92121 www.bioatla.com 858 558 0708	 36 <sup>(2)</sup> na na	Develops specific and selective antibody-based therapeutics for the treatment of various cancers	Jay Short 2007
36	<b>Regulus Therapeutics Inc.</b> 10614 Science Center Drive, San Diego 92121 www.regulusrx.com 888-734-8587	 25 <sup>(3)</sup> na na	Discovery & development of a new & major class of medicines targeting microRNAs	Jay Hagan 2007
37	<b>Janux Therapeutics, Inc.</b> 11099 North Torrey Pines Road Suite 290, La Jolla 92037 www.januxrx.com 858-750-4700	 22 <sup>(3)</sup> na na	Preclinical biopharma co. developing therapeutics for treating patients with cancer.	David Campbell 2017
38	<b>Stemson Therapeutics</b> 3550 General Atomics Ct. Building 2, Suite 131, San Diego 92121 www.stemson.com 858-952-0445	 15 10 50	Stemson Therapeutics is a pre-clinical stage cell therapy company with a mission to cure hair loss	Geoff Hamilton 2018
39	<b>La Jolla Pharmaceutical Co.</b> 4747 Executive Drive, Suite 240, San Diego 92121 www.ljpc.com 858-452-6600	 14 17 (18)	GIAPREZA™ (angiotensin II) injection; XERAVA™ (eravacycline) for injection	Larry Edwards 1989
40	<b>Medicinova Inc.</b> 4275 Executive Square, Suite 650, La Jolla 92037 www.medicinova.com 858-373-1500	 9 <sup>(2)</sup> na na	Biopharmaceutical company developing unmet medical need compounds	Yuichi Iwaki 2000
41	<b>Turquoise Health</b> 600 B St., Suite 300, San Diego 92101 www.turquoise.health 858-208-0249	 1 na na	Healthcare price transparency platform simplifying pricing to reduce cost and complexity of billing	Chris Severn 2020

(NR) Not ranked

na Not available

Source: The companies, SEC Filings.

In case of a tie, companies are ranked by number of employees in 2020, and then alphabetically.

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. 619-802-8456. 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.

(1) Business Journal estimate as of Dec. 31, 2020. Includes full-time and part-time employees. Source: Form 10-K.

(2) Business Journal estimate as of Dec. 31, 2020. Source: Form 10-K.

(3) Business Journal estimate as of June 30, 2021. Source: Form 10-Q.



## Corporate Directors Forum

### San Diego's leader in Corporate Governance

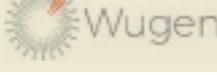
Corporate Directors Forum was founded in 1991 with the purpose of helping directors become better directors.

If you are a director of a company board or member of the management team, advise boards, plan to be a director, or are looking to build your own board, Corporate Directors Forum provides board-focused peer networking and director education in corporate governance "best practices" for those committed to continuous learning.

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# THE LIST BIOPHARMA COMPANIES

► Ranked by number of local employees as of September 1, 2021

Rank	Company Address Website Phone	# of employees: S.D. County Companywide	Area(s) of focus	Description	Top local executive Year founded	
1	<b>Ionis Pharmaceuticals Inc.</b> 2855 Gazelle Court, Carlsbad 92010 www.ionispharma.com 760-931-9200	 547 635	Research Development Clinical trials Manufacturing	Ionis is the leader in RNA-targeted therapy, pioneering new markets and changing standards of care with its novel antisense technology.	Brett Monia 1989	
2	<b>Acadia Pharmaceuticals Inc.</b> 12830 El Camino Real, Suite 400, San Diego 92130 www.acadia-pharm.com 858-558-2871	 252 588	Research Development	Focused on the development and commercialization of innovative medicines to address CNS disorders	Steve Davis 1997	
3	<b>Poseida Therapeutics</b> 9390 Towne Centre Dr #200, San Diego 92121 www.poseida.com 858-779-3100	 215 235	Research Development Clinical trials Manufacturing	Biopharmaceutical company using proprietary platform technologies to develop cell and gene therapies	Eric Ostertag 2014	
4	<b>Traverse Therapeutics, Inc.<sup>(1)</sup></b> 3611 Valley Centre Drive, Suite 300, San Diego 92130 traverse.com 888-969-7879	 192 250+	Research Development Clinical trials	Traverse is a biopharmaceutical company whose mission is to identify, develop and deliver life-changing therapies to people living with rare disease.	Eric Dube, Ph.D. 2013	
5	<b>Halozyme</b> 11388 Sorrento Valley Road, San Diego 92121 www.halozyme.com 858-794-8889	 123 140	Development	Halozyme is a biopharma company bringing disruptive solutions to improve patient experiences and outcomes for emerging and established therapies.	Helen Torley 1998	
6	<b>Avidity Biosciences</b> 10975 N. Torrey Pines Rd. Suite 150, La Jolla 92037 www.aviditybiosciences.com 858-401-7900	 86 108	Research Development Clinical trials	Avidity is a biopharmaceutical company committed to delivering a new class of RNA therapeutics called Antibody Oligonucleotide Conjugates (AOCs™).	Sarah Boyce 2012	
7	<b>Artiva Biotherapeutics, Inc.</b> 4747 Executive Drive #1150, San Diego 92121 www.artivabio.com 858-267-4467	 36 36	Research Development Clinical trials Manufacturing	Artiva is advancing a pipeline of off-the-shelf, allogeneic NK cell therapies for the treatment of hematologic malignancies or solid tumors.	Fred Aslan, M.D. 2019	
8	<b>Stemson Therapeutics</b> 3550 General Atomics Court, Building 2, Suite 131, San Diego 92121 www.stemson.com 858-952-0445	 15 15	Research Development	Stemson is a pre-clinical stage cell therapy company with a mission to cure hair loss by leveraging the power of induced Pluripotent Stem Cells.	Geoff Hamilton 2018	
9	<b>Wugen Inc.</b> 9880 Campus Point Dr, Suite 420, San Diego 92121 www.wugen.com	 7 54	Research Development Clinical trials Manufacturing	Wugen, Inc. is a clinical-stage biotechnology company developing novel "off-the-shelf" Memory NK and CAR-T cell therapies for the treatment of cancer	Ayman Kabakibi 2018	
10	<b>Ensysce Biosciences Inc.</b> 7946 Ivanhoe Ave., Ste 201, La Jolla 92037 www.ensysce.com 858-263-4196	 3 10	Research Development Clinical trials	Ensysce Biosciences is a clinical stage company developing innovative solutions for severe pain relief while reducing the fear of abuse and overdose.	Lynn Kirkpatrick 2016	
11	<b>Polynoma</b> 11230 Sorrento Valley Road, Suite 215, San Diego 92121 www.polynoma.com 858-500-7361	 3 6	Research Development Clinical trials	Polynoma is an immuno-oncology company developing a novel polyvalent shed antigens vaccine for the adjuvant treatment of melanoma.	Patrick Mallon 2012	

na Not applicable

Sources: The companies, Bloomberg, and Yahoo Finance.

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

Biopharma includes pharmaceutical, drugmakers & therapeutics companies.

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<sup>(1)</sup> Previously listed as Retrophin Inc.

## BIOTECH

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"Inovio is poised to take on any cancer, whether it be hematological (liquid) or solid tumor," said **Jeffrey Skolnik, M.D.**, senior vice president, clinical development at Inovio Pharmaceuticals. "Inovio is creating DNA medicines that build immune cells against cancer cells, dependent upon the proteins that those cancers express, and targeted specifically to those cancers."

Dr. Skolnik explained that Inovio's potential therapies for cancer are a revolution in the ability to build an immune response against specific cancer cells that, instead of being built in a laboratory and infused into your body, like CAR-T therapies, it is administered directly to the patient.

"[It] allows the patient to build one's own immune response in one's own body ("in vivo," in the body), rather than "ex vivo," in a laboratory. Like CAR-T, Inovio's technology aims to build antigen-specific T cells that are able to target and kill cancer cells," Dr. Skolnik said.



Photo Courtesy of Poseida Therapeutics

Scientists at Poseida Therapeutics work on developing CAR-T cell therapies.

### Delivering Medicine Better

At San Diego-based **Halozyme**, they are developing novel oncology therapies designed to target the tumor microenvironment and licenses a novel drug delivery technology through corporate partnerships. The key to is Halozyme's ENHANZE, a drug delivery technology is based on the company's proprietary enzyme, recombinant human hyaluronidase PH 20 (rHuPH20).

When it is injected into the skin, it creates channels under the skin such that

you're able to then inject larger volumes of liquids and fluids and drugs where they can be exposed to the lymphatics and to the bloodstream and be absorbed. Their technology has a variety of applications,



Helen Torley  
CEO  
Halozyme

but its current focus in oncology tackles early-stage breast cancer, multiple blood cancers and multiple myeloma.

"Basically, we're not restrained in which area we use, sometimes it's doctor delivery, sometimes it's a chronic autoimmune disease," said Halozyme's CEO, **Helen Torley**. "Just think about all of the drugs that today need to be delivered in more than 5 mLs IV and that might be an opportunity for ENHANZE, so there's a very large universe."

The company has 11 partners and among them are pharmaceutical giants such as **Roche, Janssen and Bristol Myers Squibb** who are working on cancer treatments using ENHANZE.

The company's business model allows for an efficient timeline in the innovation process, as their partners do a subcutaneous (subq) injection version of a drug that's already approved, so its time from first-in-human to approval has on average been just five years, Torley said. ■



## At Traverre Therapeutics, we are in rare for life.

We come together every day to help patients, families and caregivers of all backgrounds as they navigate life with a rare disease. On this path, we know the need for treatment options is urgent — that is why our global team works with the rare disease community to identify, develop and deliver life-changing therapies. In pursuit of this mission, we continuously seek to understand the diverse perspectives of rare patients and to courageously forge new paths to make a difference in their lives and provide hope — today and tomorrow.

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