

SPECIAL REPORT: LIFE SCIENCES

Helping the Life Science Industry Accelerate R&D

San Diego's Biotech Boom Backed By Research Institutions and Contract Organizations

■ By NATALLIE ROCHA

Local life science companies big and small have been going public and securing funding to advance their research and drug pipelines in what could be described as a biotech boom.

For many of these commercial companies, they turn to contract research organizations (CROs) and contract manufacturing organizations (CMOs) to help them get the job done. Additionally, the area's life science research institutes have played a crucial role in meeting this moment of industry growth and delivering innovative work that translates to healthcare solutions.

The **San Diego Business Journal** connected with a few of the organizations that are supporting the life science industry and driving innovation.

Helping Companies Scale

In Q2 of this year, venture capital funding totaled \$2 billion and almost half of these deals were with fast-growing life science companies. In recent months, startups have received funding, M&A deals have popped up and more than 10 biotech companies have gone public through IPOs and SPAC mergers.

Larger pharmaceutical companies often have the resources and manpower to conduct R&D operations in-house if they choose. With capital in hand, these smaller companies are moving fast and the need to scale leads many biotech companies to rely on contracting organizations to help them make it happen.

For instance, **Metacrine**, a clinical-stage biopharmaceutical company that specializes in therapies for patients with liver and gastrointestinal (GI) diseases, announced their IPO in September of last year. The company's CEO and president, **Dr. Preston Klassen** said that as a small biotech they work with CROs and choosing the right relationship for your work is critical.

"As a small company do you go with a CRO that's on the smaller side or do you go with one of the large CROs? Will you have enough share of mind? You really have to build the right relationships in the right way to have things work out," Dr. Klassen said.

Kevin Lustig, CEO and founder of **Scientist.com**, the world's largest AI-powered marketplace for medical research, said that San Diego has an extremely high concentration of CROs in the region. According to a website his team created about five years ago called **ContractResearchMap.com**, the San Diego region is home to more than 600 labs.

Lustig added that in addition to the influx of funding to the industry, the coronavirus pandemic has led biopharmaceutical and healthcare companies to reevaluate their supply chains. With this in mind, companies may opt to build relationships with contract organizations in their community for the accessibility and to minimize the risk of supply chain disruptions.

Comprehensive Solutions

Commercial biotech and pharmaceutical companies are not the only sector of the industry projected to grow. According to Grand View Research estimates, the 2021 U.S. pharmaceutical contract manufacturing and research services market is valued at \$187.2 billion.

One of San Diego's largest contract manufacturing organizations, **BioLegend**, recently agreed to be acquired



Photo Courtesy of Ajinomoto Bio-Pharma Services

Ajinomoto Bio-Pharma Services recently announced that it will open a high-speed multi-purpose fill-finish line in its state-of-the-art commercial manufacturing facility in San Diego.

for \$5.25 billion by **PerkinElmer**. **BioLegend** is a global provider of high-quality reagents, assays, and other life science technologies. The company's founder and CEO, **Gene Lay**, told the Business Journal that this deal allows them to expand into new sectors and offer their clients a more complete offering of services.

Working with a CRO or CMO that offers a variety of services is an attractive, one-stop shop option for growing biotech companies.

Ajinomoto Bio-Pharma Services US is a fully integrated contract development and manufacturing organization (CDMO), with sites in Belgium, United States, Japan, and India, providing comprehensive process development services, cGMP manufacturing and drug product fill finish services of small molecule and large molecule APIs and intermediates.

For a global CDMO with a local presence, **Aji Bio-Pharma** has the opportunity to impact a diverse range of life science sectors, said President and CEO **Nobuhisa Shimba**.

"One of the great things about being a CDMO is that we have the

opportunity to impact many different diseases each year by working with a variety of clients to manufacture products currently in phase 1 clinical trials all the way up to commercial products," Shimba said. "Last year we worked on over 50 different disease indications which is very meaningful for us. Our responsibility is to work with our clients to help make sure medicines are delivered on time to patients that need them."

During the pandemic, the company also had the opportunity to work on a number of COVID-19 related products to help quickly meet the needs of their clients and adapt to the new way of work.

"On the client-side, the most meaningful change was the successful expansion of our virtual interactions with clients including enabling them to watch the operations performed on their products through remote viewing and conducting remote audits," Shimba said.

Collaboration and Innovation

Before life changing treatments, from the COVID-19 vaccine to novel cell therapies, reach patients, it all starts with the dedicated work of life science research institutions. This past year, these researchers adapted not only their workflows but also their focus onto COVID-19 in addition to their core work.

"I'm incredibly proud of how our researchers and administrative staff rose to the many challenges created by this pandemic, and the ability of our staff to be so effectively working from home and on-site safely," said **Rusty Gage**, president of the **Salk Institute for Biological Studies**. "Essential work that continued included research relevant



Nobuhisa Shimba
President & CEO
Ajinomoto Bio-Pharma Services US



Rusty Gage
President
Salk Institute

to COVID-19, such as immunity to severe respiratory viruses, but we also launched several new projects and collaborations to study such topics as the structure of the virus and whether genetic changes govern the course of the disease in the lungs.”

Salk Institute has also worked with CROs and CMOs in the San Diego community and one of the benefits of these collaborations is that it helps to bridge translation of the

research discoveries and novel therapies that an industry partner will ultimately advance to the clinic.

Jill Strickland, senior vice president and chief administrative officer at **Rady Children's Hospital San Diego Research** said that their team of researchers have been at the forefront of studies surrounding COVID-19, including the investigation of diagnostic options for children with MIS-C, as well as continuing cancer care, genomic sequencing for pathogen isolation and type 1 diabetes.

“In addition to continuing work on hundreds of current research studies, our team added 40 new studies to their portfolio during this timeframe, both as independent endeavors and in partnership with CROs/CMOs and external research sites,” Strickland said.

With their partners at **UC San Diego** and its School of Medicine they've cultivated a research environment that is inclusive of the regional and global communities as they search for treatment and cures to pediatric diseases, Strickland said.

“Within the ever-growing field of medical research, exploring ways to identify, treat, prevent and even cure pediatric health concerns presents a set of challenges that is often quite different from adult studies and trials,” Strickland said. “Because children have their own unique needs, pediatric-focused research is essential to advancing effective, safe and innovative pediatric-focused care — as we always emphasize, children are not tiny adults and deserve solutions created just for them.”

Connecting with Experts

Working with subject matter experts and specialized contracting organizations is also a key to what makes San Diego's biotech community so vibrant and attractive for growing companies.



Matthew Jenusaitis,
MSE, MBA
Chief Administrative
Officer — Oncology
and Radiation Therapy
UC San Diego Health
and Moores Cancer
Center

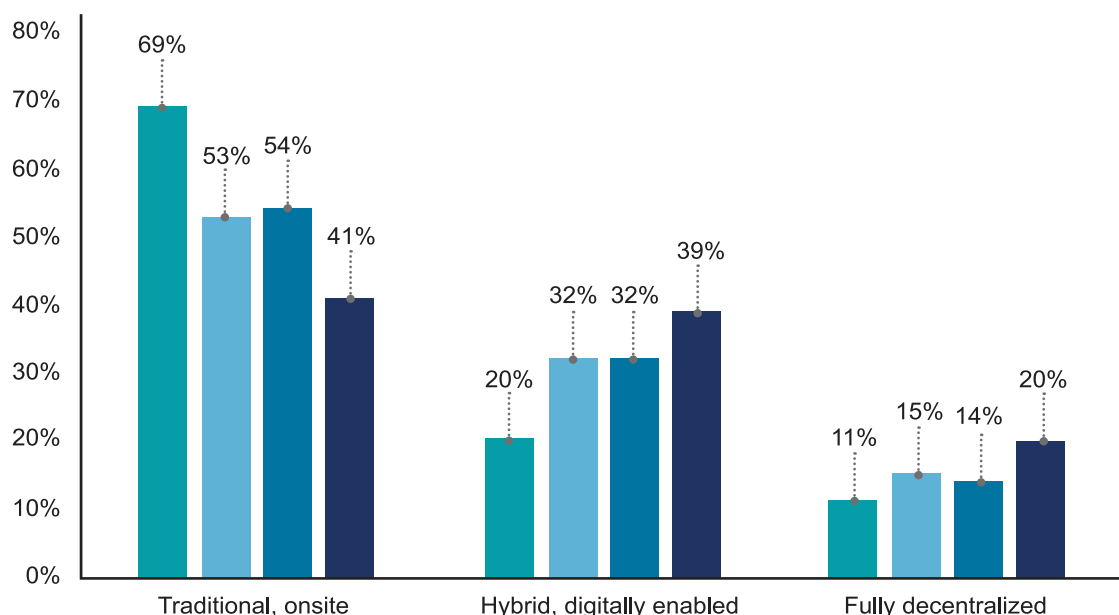
Matthew Jenusaitis, chief administrative officer, Oncology and Radiation Therapy at the **UC San Diego Health and Moores Cancer Center** said that as a leading cancer research institution, they have been one of the top innovators in the field. Recent funding to research institutions and commercial companies is really just providing the fuel to accelerate innovation that is part of the DNA of the industry.

“The university is working very collaboratively with the private sector, and it's bringing

Advantages of decentralized trials

Of the clinical trials sponsored by your company from 2019-2021, please indicate the breakdown of trials (in percentages)-onsite, decentralized, or hybrid.

■ 2019 ■ 2020 H1 ■ Pandemic ends in Q4 2020 ■ Pandemic continues in Q1 2021



Source: PPD.

Deloitte, 2021 global life sciences outlook

The pandemic required researchers to adapt to decentralized clinical trials and more companies embraced digital or hybrid options.

together a lot of really active research that's really changing the face of cancer, and changing the face of how we do things,” Jenusaitis said.

Additionally, right across the street from the Moores Cancer Center there are more opportunities for cutting edge research to grow into commercial solutions at the **Center for Novel Therapeutics (CNT)**. Jenusaitis said that this facility, which was designed to accelerate cancer research to clinical trials and then to market, offers space for researchers to grow their discoveries into something bigger.

Having subject matter experts at the head of a commercial operation is a huge advantage for a startup both clinically and financially, said **Marcus Hompesch, M.D.**, CEO and chairman of the board at **ProSciento**, a specialty CRO.

With 17 years of experience, ProSciento does the comprehensive planning of programs for life science companies, with a specific focus on non-alcoholic steatohepatitis



Marcus Hompesch,
M.D.
CEO & Chairman of
the Board
ProSciento

(NASH), diabetes, obesity and related metabolic diseases.

Dr. Hompesch explained that having subject matter experts guide decisions early in the process is a huge benefit that pays off when making decisions for a company, especially a small biotech figuring out the best investment for their capital.

While it could be pricier in the short-term to invest in a local CRO versus an international one, building the relationship with a specialized company pays off in the long run.

“I think we are just at the beginning of seeing growth in the specialty CRO domain we're really working with subject matter experts who know your indication by heart and deeply, care about the science and good science behind your integration, who can enable...early decision making for

you,” Dr. Hompesch said. “You have every opportunity to discover every relevant safety or efficacy concern, early on, if you're giving it the right thought.” ■



Photo by Earnie Grafton, courtesy of Rady Children's Hospital.

A clinical laboratory scientist works in the Rady Children's Institute for Genomic Medicine lab.

THE LIST

CRO & CMO

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

Rank (Last year)	Company Address Website Phone		# of employees: S.D. County Companywide	Type(s) of research	Area(s) of focus	Headquarters	Top local executive Year est. locally	
1 (NR)	BioLegend Inc. 8999 BioLegend Way, San Diego 92121 www.biolegend.com 858-750-5245		700 740	Clinical Preclinical	BioLegend accelerates biomedical research and discovery with our broad portfolio of high-quality reagents, assays, and other life science technologies	San Diego	Gene Lay 2002	
2 (1)	Ajinomoto Bio-Pharma Services 11040 Roselle St., San Diego 92121 www.AjiBio-Pharma.com 858-882-0123		524 1,500	Clinical Preclinical	Ajinomoto Bio-Pharma Services offers comprehensive CDMO capabilities for small and large molecule APIs, including high potency, ADCs and oligos	San Diego	Nobuhisa Shimba 1998	
3 (2)	ProSciento, Inc. 855 Third Ave., Suite 3340, Chula Vista 91911 www.prosciento.com 619-427-1300		260 270	Clinical	ProSciento is the leading specialized clinical research organization (CRO) focused on NASH, diabetes, obesity, and related metabolic diseases	Chula Vista	Marcus Hompesch 2003	
4 (NR)	Catalent Pharma Solutions 7330 Carroll Road, San Diego 92121 www.catalent.com 858-805-6383		220 15,000	Clinical Preclinical	Catalent's San Diego facility focuses on early stage development of small molecule and peptide drug candidates from the bench to the clinic	Somerset, NJ	Bryan Knox 2007	
5 (5)	Argonaut Manufacturing Services Inc. 2841 Loker Ave. E., Carlsbad 92010 www.argonautms.com 888-834-8892		140 140	CMC	Argonaut provides contract manufacturing for biopharmaceutical Drug Products, diagnostics and life science organizations	Carlsbad	Wayne Woodard 2016	
6 (3)	MicroConstants 9050 Camino Santa Fe, San Diego 92121 www.microconstants.com 858-652-4600		120 120	Clinical Preclinical	MicroConstants is a GLP-compliant clinical and preclinical CRO focused on performing regulated bioanalysis, drug metabolism, and PK analysis	San Diego	Gilbert Lam 1998	
7 (4)	PCI Pharma Services 6166 Nancy Ridge Drive, San Diego 92121 www.pciservices.com 858-997-1490		105 ⁽¹⁾ 4,000 ⁽¹⁾	Clinical	Provides clinical trial material management services for clinical studies	San Diego	Mark Shepanski 2010	
8 (6)	HD Biosciences Inc. 6122 Nancy Ridge Drive, San Diego 92121 www.hdbiosciences.com 858-888-7888		87 ⁽¹⁾ na	Preclinical	Target validation, plate-based pharmacology, infectious disease, Immuno-oncology, custom service	Shanghai, China	Chunxia Wang 2014	
9 (NR)	Absorption Systems, a Pharmaron company 7901 Vickers St., San Diego 92111 www.absorption.com 858-427-0892		80 12,000	Clinical CMC Preclinical	Absorption Systems is a leading scientific, non-clinical CRO that provides pharmaceutical, biotech, medical device companies and regulatory agencies w	Beijing	Vatsala Naageshwaran 1999	
10 (NR)	Miq Partners 1920 Palomar Point Way, Carlsbad 92008 www.miqpartners.com 760-659-5167		28 120	Clinical	Automation for medical devices: Assembly, leak testing aseptic filling, inspection, heat staking, traceability, etc. / ISO 13485 / ISO 9001 / AS9100D	Carlsbad	Olaf Tessarzyk 2013	
11 (8)	Infinity Laboratories 10840 Thornmint Rd, Suite 113, San Diego 92127 www.infinitylaboratories.com 858- 618-4708		25 ⁽¹⁾ 200 ⁽¹⁾	Clinical CMC Preclinical	Infinity Laboratories is a network of premier chemical & microbiological laboratory testing services	Castle Rock, CO	Sophia Sueck 1997	
12 (12)	Abbiotec 350 W. 9th Avenue, Suite 107, Escondido 92025 www.abbiotec.com 858-586-0500		15 20	CMC Preclinical	Antibody manufacturing for research and diagnostics	Escondido	Hervé Le Calvez 2007	
13 (10)	EZ Labs, LLC 6195 Cornerstone Court East, Suite 109-110, San Diego 92121 www.ezlabs-LLC.com 858-784-1816		14 14	CMC	Analytical development consulting and R&D laboratory services for CMC drug development (small molecules)	San Diego	Anna Eidelman 2016	
14 (9)	Cato Research SMS 6480 Weathers Place, Suite 104, San Diego 92121 www.cato.com 858-452-7271		10 400	Clinical CMC Preclinical	CATO SMS, formed by the merger of CATO Research and SMS-oncology, is a high-performance team that can tackle the toughest challenges with confidence	Cary, NC	Randal Lane 1988	
15 (11)	Tioga Research 6330 Nancy Ridge Drive, Suite 102, San Diego 92121 www.tiogaresearch.com 858-202-1569		10 11	CMC Preclinical	We support the research and early development of next generations of topical, transdermal & other skin-applied products	San Diego	John M Newsam 2011	
16 (NR)	Somatek 9466 Black Mountain Road, Suite 150, San Diego 92126 www.somatek.com 619-734-9000		7 7	CMC	Bioprocess development, assay development, program and outsource management	San Diego	Mark Fitchmun 2002	
17 (NR)	CytoLogistics LLC 6352 Corte del Abeto, Carlsbad 92011-1408 www.CytoLogistics.com 858-642-1988		6 6	Preclinical	CytoLogistics provides research and drug development services: custom conjugations, cell-based assays, compound screening, and flow cytometry	Carlsbad	Leonardo Ancheta 2000	
18 (NR)	CalChem Synthesis 3550 General Atomics Court, San Diego 92121 www.calchemsynthesis.com 858-455-6100		3 3	Preclinical	Route scouting and route development, synthesis of APIs for preclinical and toxicology studies, process R&D and scale up and tech package transfer.	San Diego	Jalal Haddad 2012	

CRO Contract Research Org. **CMO** Contract Manufacturing Org.
CMC Chemistry, Manufacturing, and Controls
na Not Available
Source: The companies.
In case of a tie, companies are ranked by number of companywide employees, 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. Eric Alderete, calderete@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.
⁽¹⁾ Business Journal estimate























BUILDING
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THE LIST

LIFE SCIENCE RESEARCH INSTITUTIONS

► Ranked by number of faculty members as of July 1, 2021

Rank	Institution Address Website Phone		# of: Faculty members Employees ⁽¹⁾	Companywide employees	Institution description (area(s) of focused research)	Headquarters	Top local executive Year est. locally	
1	Rady Children's Hospital - San Diego Research 3020 Children's Way, San Diego 92123 www.rchsd.org/research 858-966-5910		250 250	5,100	Rady Children's Hospital is committed to discovering treatments and cures for childhood diseases.	San Diego	Jill Strickland 1954	
2	Moore's Cancer Center at UC San Diego Health 3855 Health Sciences, La Jolla 92093 http://cancer.ucsd.edu 858-822-5913		70 900	900	NCI-Designated Comprehensive Cancer Center dedicated to scientific innovation & clinical excellence in 200+ types of cancer. Ranked No. 1 in San Diego for cancer care by U.S. News & World Report.	La Jolla	Scott Lippman 1978	
3	Salk Institute for Biological Studies 10010 N. Torrey Pines Road, La Jolla 92037 www.salk.edu 858-453-4100		54 953	1,456	The Salk Institute is a basic research institution for the life sciences.	La Jolla	Rusty Gage 1960	
4	Sanford Burnham Prebys 10901 N. Torrey Pines Road, La Jolla 92037 www.sbpdiscovery.org 858-646-3100		39 508	509	Dedicated to finding cures for human disease, improving quality of life, and educating and training the next-generation of scientists.	La Jolla	C. Randal Mills Kristina Vuori 1976	
5	J. Craig Venter Institute 4120 Capricorn Lane, La Jolla 92037 www.jcvi.org 858-200-1800		25 100	150	J. Craig Venter Institute is advancing the science of genomics to develop unique insights and answers about disease, health, and the environment for the benefit of all.	La Jolla	J. Craig Venter 2006	
6	La Jolla Institute for Immunology 9420 Athena Circle, La Jolla 92037 www.lji.org 858-752-6500		20 488	488	Non-profit independent research institute solely focused on studying the power of the immune system.	La Jolla	Erica Ollmann Saphire 1988	
7	Rady Children's Institute for Genomic Medicine 3020 Children's Way MC5129, San Diego 92123 www.radygenomics.org 858-576-1700		17 66	70	Enabling Rapid Precision Medicine™ via rapid Whole Genome Sequencing™ to newborns and infants with rare diseases.	San Diego	Stephen Kingsmore 2014	
8	University of Southern California, Alzheimer's Therapeutic Research Institute 9860 Mesa Rim Road, San Diego 92121 www.keck.usc.edu/atri 858-964-4644		7 160	160	The mission of the Alzheimer's Therapeutic Research Institute's (ATRI) is to rigorously test methods for early detection of and treatments for Alzheimer's disease (AD).	Sorrento Mesa	Paul Aisen 2015	
9	CureScience 10225 Barnes Canyon Road, A207, San Diego 92121 www.curescience.org 858-800-2973		5 5	14	Mission: Transdisciplinary approaches for pre-symptomatic detection and personalized therapeutics	San Diego	Shashaanka Ashili 2013	
10	Human BioMolecular Research Institute 6351 Nancy Ridge Dr, Suite B, San Diego 92121 www.HBRI.org 858-458-9305		0 3	4	HBRI's mission is to conduct basic research related to cancer and cardiovascular disease.	San Diego	John Cashman 1998	

Source: The institutions.
In case of a tie, institutions are ranked by number of employees in San Diego County.
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. Eric Alderete, eralderete@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.
(1) Employees include faculty, postdoctoral researchers, graduate students, research support and administrative staff, facilities technicians, etc.

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