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Greetings and welcome to our summer issue of LifeLines at this unprecedented time in Biocom’s 25-year history. My hope is that the employees of our more than 1300 members of Biocom throughout California and Japan are all safe and well as we tackle the challenge of defeating the COVID-19 pandemic together.

I’m proud to lead California’s life science association, witnessing firsthand the passion and dedication of our members who are devoted to developing tests, treatments and vaccines for the coronavirus, as well as related conditions, and all those working tirelessly to keep humanity healthy during these times.

I have had the pleasure of keeping in touch with our members virtually over the past six months of quarantine and stay-at-home orders. Doing so has allowed me to learn much about the fortitude of our researchers, entrepreneurs, and large biopharma and medical device leadership. One positive outcome of the new remote lifestyle is that I hear from more CEOs within our membership and on our Board of Governors who have more time to connect without the packed schedule of travel and in-person meetings. I greatly appreciate the time I get with them to learn even more about their companies, their people and their technologies. I’ve also learned how much they support the efforts of our association to help with their challenges.

And throughout these challenges, I want to assure our members that Biocom staff across the state have stepped up their efforts to deliver all that you have needed most to function effectively as an essential industry within California. We’ve convened experts within our membership to develop a return to work guide called “The Path Forward” to assist with workplace safety practices and HR issues; we’ve identified the firms that are best suited to conduct coronavirus testing for our members and for local government agencies; and we’ve provided millions of masks and hand sanitizer to members in need through our partnership with the California Governor’s Office of Emergency Services (Cal OES).

Personally, I was honored to serve on a government Task Force to develop safety precautions to allow companies to safely reopen and for employees to feel confident in returning to work. Perhaps equally as important, we’ve conducted dozens of virtual meetings and seminars to continue to inform our membership as well as legislators on COVID-19 issues while we have been unable to meet face-to-face. And we’ll continue to do all of this until we have effectively ensured that the COVID-19 challenge has been overcome together, and that we are all better prepared for potential future threats as well.

It’s been a great pleasure to hear directly from our members about the important work they are doing to combat COVID-19. Some of our members, such as INOVIO Pharmaceuticals, have stood with me at press conferences held by San Diego
Mayor Kevin Faulconer to inform the public of their progress; I’ve connected others such as Helix with public health officials who have been eager to hear about their diagnostic tests and treatments. There are companies such as Sanguine, Scanwell Health, Xencor and others who you’ll hear more from in this edition of *LifeLines*. All of these members have one thing in common—they work relentlessly each day to defeat COVID-19. Not for fame or fortune, but for the same reason that they have gone to work each day for decades—to improve the human condition. I’m positive you’ll feel that dedication as you read their stories.

I’ll conclude by once again assuring you that we will be working diligently at Biocom to deliver value to our growing membership at a time when we know that you need us more than ever before. You’ve told me this in my many conversations this past spring and summer. My staff and I hear you—and will continue to draw our inspiration from you within this industry that has been called to serve at a critical time in our history. Please stay safe and well!

Joe Panetta
President and CEO, Biocom

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As the COVID-19 pandemic continues to shape our world in unexpected ways, the life science industry is stepping up to meet these needs—just as expected.

Stay-at-home orders. Maintaining a six-foot distance. Remembering to grab a mask before stepping out the front door. In a matter of months, the COVID-19 pandemic has completely transformed how we conduct our day-to-day lives.

Life science companies across the world are working tirelessly to innovate new vaccines, therapies and technologies to help combat a virus that has already claimed far too many lives. And this is exactly what the life science industry exists for: to discover and develop novel products that will help improve human health.

California is no exception to this rule. Across the third-largest state in the country and the fifth-largest economy in the world, biotech, pharmaceutical and diagnostic companies are racing to uncover anything that will help slow—or, in some cases, stop altogether—the rapid spread of the SARS-CoV-2 virus.

Three California-based organizations in particular highlight the industry’s dedication to quelling what has become an unprecedented time for all of us. While their approaches may be vastly different, they are all united in their shared goal of overcoming COVID-19.

**Lundquist Institute and BioLabs LA: Incubating Innovation**

With accelerators, startups and venture capital funds sprouting up across all of Los Angeles, it should come as no surprise that the county’s life science industry is putting significant effort behind battling the COVID-19 pandemic.

Take The Lundquist Institute for Biomedical Innovation, for example. Home to countless innovations and responsible for more than a dozen spin-out companies bringing discoveries to the patient bedside, the world-renowned research institute is dedicating significant research efforts to better understanding the SARS-CoV-2 virus.

Keith Hoffman, Ph.D., senior vice president, business development and technology transfer at The Lundquist Institute, agrees that Los Angeles is already well on its way to becoming a central hub for scientific innovation—proven by its success at BIO Digital Week this past June.
“The engine was already rolling, but now, with proof that LA has world-class talent, spaces, unity and a newly founded life science grit, the area is poised for explosive further growth. This progress will enable the development of innovations that will positively affect human health, worldwide.”

Lundquist has multiple research efforts relating to COVID-19 underway, including identifying biomarkers for predicting COVID-19 outcomes, discovering metabolic and neuroinflammatory responses to infection and conducting multiple clinical trials of convalescent plasma and use of monoclonal antibodies. The HIV Research Group at Lundquist is also participating in studies investigating COVID-19 prevention and treatment, led by Eric Daar, M.D.—one of roughly 25 physician researchers serving on the NIH COVID-19 Treatment Guidelines Panel.

PhaseBio: Battling the (Cytokine) Storm

As COVID-19 began to take its hold over the United States in February and March of this year, the team at San Diego and Malvern, Pa. based PhaseBio Pharmaceuticals had two concerns: First, did they have any masks or personal protective equipment they could donate to first-line responders? And secondly, could one of their programs address or contribute to the ongoing knowledge of COVID-19 complications?

“First and foremost, when we think about developing a new medication, we think of it from the perspective of does it serve a medical necessity? How critical is that medical necessity? The more so it is, the more likely we are to develop that medication in a straightforward manner that allows us to go through the regulatory cycle efficiently,” said Jonathan Mow, chief executive officer of PhaseBio.

This is how the cardiovascular company began examining PB1046—a therapy being investigated for pulmonary arterial hypertension (PAH)—as a treatment for hospitalized COVID-19 patients who are at high risk for rapid clinical deterioration and acute respiratory distress syndrome (ARDS). When it first came to light that PB1046 may be effective in treating these patients in the most critical of conditions, Mow knew it was PhaseBio’s responsibility to see if they could confirm this “may be”—but only if it made sense for them to. PhaseBio’s investigators seemed to think so, but Mow wanted to make certain.

“The last thing we wanted to do was throw a harebrained idea against the wall: something that might work but would utilize resources that are already fairly tight in the medical community, especially for those on the frontlines.”

- Jonathan Mow, CEO, PhaseBio

When discussing Lundquist’s COVID-19 response, it’s important to also note what’s occurring inside BioLabs LA, the Institute’s co-working space for startups and entrepreneurs. At the incubator, multiple existing member companies are assessing if their platforms or technologies can help combat the pandemic, and several new companies have joined the space to work on COVID-specific projects. Lundquist’s ability to rapidly fill the incubator space is yet another testament to the burgeoning life science community in the region, even in the midst of something as unprecedented as COVID-19.

“It’s been great to see the entrepreneurs meet the moment and show resiliency in maintaining their existing work but also pivoting to contribute where they can during this global health crisis,” Dr. Hoffman said.

Dr. Hoffman believes that the incubator model has been an ideal way to pivot rapidly in something as unprecedented as the global pandemic.
peptide (VIP), which has an immunomodulatory mechanism that downregulates many of the culprits thought to be drivers of ARDS in COVID patients, investigators believed it may be effective in treating those who face this hyper-inflammation. PhaseBio conducted an initial analysis to see if their program may have had a positive impact on the disease-state obligations. Their suspicions—along with their investigators’ suspicions—were confirmed.

With the well-documented clinical profile of PB1046 in hand, along with a robust clinical-development plan that included a Phase 2 trial with potentially pivotal endpoints, PhaseBio received FDA authorization to launch the VANGARD study in May investigating PB1046 in these critically-ill patients. Dosing for patients began in July, and trial results are expected to be reported in the fourth quarter of the year.

Thoughtful of the current strain on our healthcare system, Mow and his team designed VANGARD in such a way that it would be as easily accomplished as possible. This included establishing a fixed dose for all patients involved, allowing pharmacists to avoid case-by-case titrations and added labor. This potentially pivotal trial is expected to readout before the end of this year, in the meantime providing hope for patients suffering from the severe complications of COVID-19.

Mammoth Biosciences: A CRISPR-Based Diagnostic Revolution

Achieving rapid, scalable and accurate testing has remained one of the most significant bottlenecks of the COVID-19 pandemic. But what if we could develop a test that doesn’t require a laboratory setting—a test that is equipment-free and disposable, capable of being distributed to any location?

That's exactly what Mammoth Biosciences is hoping to accomplish. In partnership with GSK Consumer Healthcare, the South San Francisco-based company is aiming to develop a rapid, true point-of-need test for SARS-CoV-2 detection. With results ready in less than 20 minutes, they are designing the test to be used by everyone from physicians in the clinic to consumers at home.

Mammoth and GSK Consumer Healthcare are aiming to have the device submitted for FDA Emergency Use Authorization review before the end of this year. First, the plan is for the test to be made available to healthcare facilities, and eventually they intend for it to be made available for over-the-counter consumer use as well. This way, through a decentralized-testing model, consumers can potentially interact with their health on an entirely new level.

How is Mammoth able to configure a diagnostic capable of such quick, accurate results without the traditional laboratory infrastructure? Through its CRISPR-based detection platform, called DETECTR™. DETECTR—developed by Mammoth’s team of esteemed scientists, including co-founder and CRISPR-Cas genome editing co-inventor Jennifer Doudna, Ph.D.—identifies the presence of specific nucleic acids that indicate different diseases with just a small sample.

“CRISPR offers a rapid form factor without compromising the accuracy of molecular PCR testing, which are both necessary to deliver accurate, decentralized testing at scale,” said Trevor Martin, Ph.D., Mammoth’s chief executive officer and co-founder.

But Mammoth’s DETECTR platform extends beyond potential COVID-19 detection. There’s the potential for a distributable test that can identify an entire spectrum of infectious diseases, including the flu, hepatitis and HIV as well.

The demand for Mammoth’s CRISPR-based diagnostics signifies a greater shift occurring in the testing landscape—a shift that Dr. Martin believes has been a long time coming.

“The coronavirus outbreak shed light on the need for point-of-need diagnostic testing. COVID-19 is, of course, a key focus right now, but as a society what we need is a foundational shift in diagnostics—a scalable means to widely address disease detection.”

Lauren Fish is a CanaleComm Content Manager and Senior Science Writer, combining her dual passions for science and communications to develop thoughtful content for the life science industry.
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Throughout the shutdown caused by the pandemic, every individual and every company has had to make major adjustments to the way business is done. For most of our members, this has meant pulling back on all but critical work, and unfortunately many of our friends in other economic sectors have lost jobs—hopefully just temporarily. But the Biocom policy department has never had as many demands on it, nor has our work ever affected so many of our members directly.

A constant challenge over the past months has been to keep our members abreast of the latest and most important changes to county, state and federal regulations—most of them enacted administratively with little or no advance public notice or input. In this new policy paradigm, the orders at different levels of government often cross-reference recent actions taken by another level. The interweaving of these actions is unprecedented and requires diligent internal analysis so we know when and how an action taken at one level of government will affect the others and can distribute that information quickly.

An additional obstacle to advocacy work in the current environment is the absence of in-person meetings with policy makers and their staffs. This has put a premium on pre-existing relationships, whether on the individual or organizational level. Biocom, with long-tenured staff and consultants who are leaders in their respective policy spaces, has been well-positioned to respond on behalf of our members.

An important lifeline utilized by many Biocom members was the recently enacted federal Paycheck Protection Program (PPP), which offers assistance and incentives for companies which keep their workers on the payroll. While the original program posed several compliance issues for life science companies, Biocom and many other business representatives took quick action and successfully advocated for changes that would benefit our members. We expressed concern and requested additional funding and relaxing some requirements for companies eligible to participate in PPP, including more time and flexibility to qualify for loan forgiveness, less stringent payroll expenses requirements, and ability to defer payroll taxes, among others.

Starting in late March, Biocom’s policy department quickly pivoted to interactive online events, something that we continue to build on. One issue that has become a part of the coronavirus information lexicon is FDA’s Emergency Use Authorization program, which allows validated emergency products to be marketed on a temporary basis without formal FDA approval. With many life science companies exploring or actively engaging in this space, our department organized a webinar with the FDA, “Working Through FDA’s Emergency Use Authorization (EUA) Pathway in the Era of COVID-19,” which had nearly 100 participants.

On the regional policy level, Biocom continues to communicate the latest orders in each of the largest life science clusters we serve. Often, these orders will vary greatly from one region to the other, and even in neighboring counties. We regularly field member questions regarding the orders and connect them to officials who can address specific concerns with tracing, health screening, and other topics. The policy department also continues to provide exceptional committee-driven content by our members for their peers. We’ve held numerous virtual events with expert presentations and best practice sharing sessions specifically curated for EH&S and Facilities professionals’ needs. It’s been critical to provide our members up and down the state with the latest information on re-opening/upscale facilities in these discussions so they can plan accordingly.

In Sacramento, it is crucial that lawmakers understand the challenges and opportunities of the life science industry. To provide this dialogue, Biocom was proud to co-host a Sacramento virtual briefing by Assembly Speaker pro Tem Kevin Mullin and the California Biotechnology Foundation on May 28 where more than 50 legislators and staff tuned in to discuss novel COVID-19 testing, therapies and vaccines. We aim to keep educating lawmakers and staff on the industry’s extraordinary efforts to address the pandemic, and its overall contributions to the state.

Going forward, the Biocom Policy Department will use the lessons of this unique moment in time to more actively bring our members in front of decision makers and closer to each other, and in so doing will enhance Biocom’s efficacy and reach on behalf of our members.
The ongoing COVID-19 pandemic has highlighted the critical role life sciences companies play in protecting public health. In normal times, these contributions focus on long-term solutions: finding new therapies for cancer, heart disease or diabetes.

Unfortunately, SARS-CoV-2 has forced us to play a short game in parallel with the long game. The virus has killed hundreds of thousands and shut down entire economies. The world needs solutions now, and people are looking to scientists to help find them.

Like many life sciences companies, Twist Bioscience tackled the coronavirus early on, carefully balancing ongoing production needs of our synthetic biology and next-generation sequencing (NGS) product lines while adding new products for COVID-19 and most importantly, implementing rigorous efforts to keep our employees safe.

Despite these challenges, we have been working around the clock to produce high-quality DNA and RNA with our silicon platform, providing critical research materials to fight this global pandemic.

Developing a Vaccine

Twist has been at the forefront of the coronavirus fight from the pandemic’s earliest weeks, producing genetic materials, in high volumes, to power fundamental discovery studies and develop diagnostics, vaccines and therapies.

In January, we partnered with INOVIO Pharmaceuticals to help them develop a coronavirus vaccine. Inovio had been working on a vaccine for MERS-CoV, a related virus, but quickly pivoted to the new threat. The Coalition for Epidemic Preparedness Innovations gave Inovio a $9 million grant to support these efforts.

Because our gene fragments and clonal genes can be used to generate synthetic viral particles, they have become invaluable precursor molecules to drive vaccine and therapeutic development. These materials help researchers advance the science without having to handle live virus. In addition, investigators don’t have to spend valuable time cloning DNA fragments.

Contributing to Diagnostic Testing

In early March, as the virus was beginning to take root in the United States, we leveraged our strength in making nucleic acids at scale and introduced synthetic SARS-CoV-2 RNA controls, which help maintain quality for companies as they develop, verify and validate new diagnostic tests, as well as mitigating day-to-day test variations.

Twist is also supplying target enrichment tools. While next generation sequencing (NGS) can effectively detect pathogens,
As an early pioneer in the high-throughput synthesis and sequencing of DNA, Dr. Leproust is disrupting the process of gene synthesis to enable the exponential growth of synthetic biology.

Patient samples often contain low concentrations of viral particles, which can be challenging for NGS. Target capture, using DNA-based hybridization probes to isolate specific sequences out of a mixed genomic sample, can increase NGS sensitivity and specificity. Our panel is used for environmental monitoring and surveillance testing, while also providing insight into full sequence information to track viral evolution and strain origin as SARS-CoV-2 mutates.

**Identifying Neutralizing Antibodies**

We have also been collaborating closely with James Crowe, Jr. MD, at Vanderbilt University Medical Center (VUMC), supplying synthetic genes and antibodies, as well as custom antibody drug discovery libraries, to screen for therapeutic antibodies.

Twist has been working with VUMC since 2018, when they received a grant from the U.S. Defense Advanced Research Projects Agency (DARPA) to develop a Pandemic Prevention Platform (P3). P3 seeks to accelerate efforts to develop protective antibodies, going from outbreak to clinic-ready therapeutic in 60 days. Like so many others, at the direction of DARPA, Dr. Crowe and VUMC are directing this work toward COVID-19 as the pandemic is now a reality.

VUMC recently came to us with antibody sequences from a recovered patient, and we built a synthetic discovery library based on these sequences to identify effective antibodies against SARS-CoV-2.

**Antibodies for Therapeutics and Diagnostics**

In parallel with all of the work we are providing for customers, our biopharma division expedited discovery to identify numerous antibodies to the spike protein on SARS-CoV-2 and separately antibodies to the ACE2 receptor on human cells, all of which are being optimized now.

COVID-19 has forced everyone to learn on the fly. Fortunately, we have transferrable tools and skills, acquired through years of rigorous research and development. These capabilities have generated an unprecedented response to SARS-CoV-2—consider how rapidly the viral genome was initially sequenced.

By providing large quantities of synthetic genetic material, by leveraging our strengths to fill worldwide gaps, Twist has helped accelerate the research, giving companies the tools they need right now to develop urgently-needed diagnostics and therapies.
Heeding the Call to Save the World

To say that the first half of 2020 has been momentous would be the understatement of the century. In January, we were happily gathering at the J. P. Morgan Healthcare Conference in San Francisco, and then at the Biocom 10th Annual Global Life Science Partnering Conference in La Jolla in February. 2020 was off to a great start and promised to be a good year ahead.

Then came March. Life as we knew it came to a screeching halt and every person in the Bay Area suddenly faced a new reality of sheltering in our homes, moving our work and schools online, shuttering our economy and reorganizing our priorities.

For the healthcare and life science industry, it was a call-to-action like none other: save the world.

March and April seem like a blur, but I recall feeling so immensely proud to work in this industry. And I still do.

Bay Area life science companies—and indeed companies across the world—turned on a dime to develop diagnostics, therapeutics and vaccines for COVID-19. Many of our members—from the largest companies to the smallest startups—made a hard pivot to repurpose existing drugs and re-focus research projects and novel technologies to find solutions for this unprecedented global pandemic. Many are still working around the clock to advance these projects.

Digital health companies jumped in, creating testing and tracking solutions to help identify and contain the spread of the virus. Telehealth companies moved to the forefront as in-person doctor visits were not possible.

What the world needs to understand is that the life science industry heeded this call to action because they could, because they cared, and because it was the right thing to do.

Amidst the backdrop of the pandemic, another painful truth about our country has surfaced: minorities, and specifically African-Americans, suffer in numerous ways from systemic racism and have been inordinately impacted by COVID-19. Our industry, like others, has an obligation to find ways to involve our minority communities in more opportunities so they can more equitably share in the wealth and benefits of our society and economy.

At Biocom, we are having frank conversations about how we can identify our unconscious biases, improve our programming and ensure we are elevating people who need to be seen and voices that need to be heard. We are reaching out to our members to understand their efforts and how we can best support them. We are committed to keeping diversity, equity and inclusion top-of-mind and look forward to engaging with you to drive real and systemic change.

In June, we released the Biocom 2020 California Economic Report, which provides a comprehensive look at the size and scope of California’s life science industry. The Bay Area continues to be a powerhouse of life science activity, generating almost $140 billion in economic activity in 2019 and directly employing more than 145,000 people, primarily in the sectors of Research and Lab Services, Biopharmaceutical Manufacturing and Medical Devices and Diagnostics. Our Bay Area report encompasses nine counties—Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma—and the life science industry is spread out amongst them. This year, we included breakout summaries for the Peninsula, the East Bay, and the City and County of San Francisco, and I encourage you to check them out to see the life-saving innovation and production taking place all around the bay.
Michelle Nemits is the Executive Director of Biocom’s Bay Area office and is responsible for building the framework for enabling the creation of a strong, well-connected life science community in the Bay Area.

Although 2020 has been a tumultuous year, it’s important to reflect on the silver linings, which I hope will make lasting changes to how we work and live. At Biocom, it has provided an opportunity for our members up and down the state to engage in events and committees together, enabling networks to extend beyond the boundaries of the region in which companies operate. It has also been a time for Biocom to provide guidance and interpretation of the ever-changing landscape and regulations. And lastly, it has allowed us to connect on a more human level—from our homes. I am hopeful that these changes will be lasting and lead to a more inclusive and humane “new normal”.

It’s an honor to serve this industry and support the life-saving work of our members. Here’s to the remainder of 2020—and whatever that may be, I’m sure we will be stronger for it.

The Bay Area generated $139.3B in economic activity in 2019, the highest of any regional cluster in California.

$1.97B in research funding from the National Institute of Health (NIH) for FY2019

$1.97B

Key life science occupations: Biological Scientists; Biochemists and Biophysicists; and Medical Scientists

Michelle Nemits is the Executive Director of Biocom’s Bay Area office and is responsible for building the framework for enabling the creation of a strong, well-connected life science community in the Bay Area.
Recovered Patients Help Sanguine BioSciences Advance COVID-19 Medical Research

By Brian Neman, CEO & Co-founder, Sanguine Biosciences

The desire to help during times of crisis is a primal instinct. We are hard-wired to reach out and better our community when affected by tragedy. History has shown us the resiliency of communities as they unite in the aftermath of a tornado or hurricane. Strangers search for survivors, neighbors pick up shovels, and volunteers travel from across the country to help put a community back together. We have an instinctual, protective factor toward our community, fellow countrymen, and humanity in general, to offer support and help during a crisis. A crisis, whether a small event in our neighborhood or a worldwide event such as a pandemic, can leave us feeling vulnerable, isolated, and helpless. Hence our desire to “do something” is an instinctual confrontation to fear and empowers us to grasp the uncontrollable. Assisting during a crisis helps us cope and gives meaning to our experience.

However, the challenges of a pandemic and the physical isolation associated with it are unique. How does a community unite in the midst of a pandemic without putting undue stress on the frontline workers? Once recovered from COVID-19, how does a person give meaning to their experience, the associated isolation, and being a direct witness to what it was like having the virus?

Sanguine Biosciences, our California-based technology company, has been partnering with medical research institutions across the United States to retrieve blood samples from recovered COVID-19 patients. Recovered patient samples contain antibodies against the virus that can be used to develop a vaccine to prevent future infections. They are also used to produce other treatments to help patients with an active infection who cannot adequately fight the virus.

Sanguine’s patient engagement and digital health model offers a concierge service for blood sample collection. We deploy mobile healthcare workers to the patient’s home for sample collection and verify health history and other data through medical records. Using these procedures, the patient does not need to travel to a physician’s office for a blood draw, allowing hospital staff to continue focusing on treating active patients. The at-home visits are scheduled conveniently for the patient with a licensed mobile healthcare worker. The mobile medical personnel take all necessary precautions, such as wearing personal protective equipment to ensure their safety and the safety of the patients.

Since March, we have been working on COVID-19 research partnering with companies such as Epivax and Vir to further our understanding of the virus, the commonalities among an affected population, its symptoms, treatment, and a preventative vaccine. The collection of blood samples from recovered COVID-19 patients is vital towards these efforts and identifying and collecting as many samples as possible is paramount toward this research.

Any crisis can create fear and isolation—however, our response to a crisis can increase our humanity and allows our resiliency to flourish. A hero is defined in many ways and comes in many forms and recovered COVID-19 patients are some of the many heroes in this fight. We are deeply grateful for all recovered COVID-19 patients in making your recovery work for others by advancing medical research. We are appreciative of patients who wear the band-aid of honor towards these efforts.


Brian Neman is CEO and co-founder of Sanguine Biosciences and focuses on commercialization and relationships with researchers. He is an adjunct professor of Digital Health at USC, and co-founded Sanguine in 2010 out of his graduate program in healthcare administration at USC. He also serves on Biocom’s Big Data Committee.
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Returning to Work During COVID-19: How the Life Science Industry Can Lead by Example

As of this writing, the novel coronavirus has infected more than 20 million and killed more than 700,000 people around the world since it first emerged in China last December. It has compelled many governments to lock down their populations to a degree unimaginable until recently. It is causing the most brutal recession in living memory.

As lockdowns are lifted, reinstated and lifted again around the country, businesses across all sectors are trying to figure out what reopening looks like. Corporate leaders are being forced to take action without ever having experienced this kind of event previously, and often without a plan in hand or in mind. The life science sector, with our mix of essential workers in research and manufacturing, and business and support staff working from home, is in a great position to show other industries how to safely reopen.

On April 14, based on feedback from Biocom members, Joe Panetta established the Biocom COVID-19 Return to Work Task Force. The task force comprises more than 50 Biocom members and staff who have been working tirelessly to learn everything we can about the science, policies and environmental health and safety (EH&S) issues of COVID-19, and then disseminate this information to Biocom members. The result is the The Path Forward: Biocom’s Return to Work Guide for California’s Life Science Industry, a playbook to help leaders prepare the workplace and the workforce as the economy reopens. This includes a comprehensive Risk Assessment Checklist to help employers identify gaps in their protocols and systems for preventing transmission of COVID-19. We’ve also developed testing and tracing strategies and have negotiated testing solutions for Biocom members.

What I’ve come to realize is that the life science industry is better suited than other industries for building plans to re-enter the workplace. As part of the larger healthcare system, we have a strong understanding of SARS CoV-2 and the pandemic it has created. We are natural rule followers when it comes to safety in laboratory and manufacturing facilities. And we are accustomed to being guided by principles of environmental health and safety and the standard operating procedures (SOPs), that are the operating rules of our trade. Whether it is GMP manufacturing or tissue culture research, we share an understanding about the stringent cleaning standards and protocols required for these operations. GMPs, SOPs, EH&S, QA/QC are an inherent part of our biotech culture, but so are the social behaviors, habits, beliefs and customs of our industry. This culture will help us navigate this uncertain time better than most businesses. It also creates a responsibility to lead others where we can. While other industries can be forced into habits of using masks, distancing, hygiene and enhanced cleaning, changing their behaviors and attitudes, indeed changing their culture, can be a challenge. It’s clear that this pandemic requires leadership and the biotech industry is well-suited to steer other business sectors in the right direction as well.

In response to COVID-19 and our industry’s need to bring employees back to labs and workspaces safely, The Path Forward: Biocom’s Return to Work Guide for California’s Life Science Industry was created.
Re-opening strategies must address breaking up congregations of people in indoor spaces and super-spreader events. Where that’s not feasible, like in a manufacturing suite or research laboratory, we need to create virus barriers using social distancing, wearing masks, enhanced cleaning of facilities and good hygiene. We also need to support those employees that become sick with the coronavirus and those who might otherwise go to work sick due to financial burdens.

Testing, tracing and isolation are core to any return to work strategy. “Regular testing on a global scale, across all industries, would both help keep people safe and help get the economy back up and running,” Amazon CEO Jeff Bezos wrote in a recent shareholder letter. Whether we are looking at society as a whole or our individual businesses, we must test, trace and isolate in order to break the chain of transmission of COVID-19.

Without a vaccine, contact tracing is the best tool available to stem the spread of an outbreak. However, states are struggling to train enough tracers, and those states that have sufficiently beefed up their contact tracing systems are struggling with the reporting. As months go by since the first recorded U.S. COVID-19 case, the virus is still outpacing our ability to track it. Biotech companies can have a big effect on that. Regardless of your testing strategy, every company should have at least one employee trained in contact tracing. Tracing the affected individuals for every positive case is the only way to break the chain of transmission.

Can we return to work and still control the spread of the coronavirus? Is there a balance between acceptable control of SARS-CoV-2 and acceptable social and business functions? Americans have a low tolerance for requirements of shelter-in-place mandates so this has been challenging, but the biotech community is in a position to help lead the nation out of this pandemic, not only through innovation in diagnostics and in treatments but by teaching the country how best to re-open while we battle this pernicious disease.
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Visit fishersci.com/covid-19 to learn more about our response to the COVID-19 outbreak and the new resources we’ve added.
Vertex is a serial innovator, relentlessly pursuing new medicines to treat multiple serious diseases, regardless of modality.

WHERE

Cures

With a culture that thrives on diversity, inclusion and giving back, Vertex partners with Biocom and its membership network to build community programs that support the local innovation ecosystem.

MEET

Community

In 2018, Vertex was recognized as Biocom’s Community Partner of the Year for its dedication to building San Diego’s life science community.

Vertex also collaborates with Biocom Institute to expand and enhance STEAM education for San Diego students, providing hands-on opportunities to explore science in the real world.

Vertex is a global biotechnology company that invests in scientific innovation to create transformative medicines for people with serious diseases. The company has multiple approved medicines to treat the underlying cause of cystic fibrosis and is pursuing treatments for several other serious diseases. With Biocom’s support in advocacy, workforce development, and community programs, Vertex continues to advance important research to improve peoples’ lives. Discover how Biocom connects cures to community for California’s life sciences companies.
Virtual Classroom Visits Are in Vogue

For twelve years, Biocom Institute’s flagship community program, the San Diego Festival of Science & Engineering, has facilitated industry-to-classroom connections. Through a variety of mediums including Women in STEM programs, career panels, high school career pathway programs, Expo Day at Petco Park, and more, it has led the effort to bring life science and our industry to life for K-12 students in San Diego County and beyond.

As COVID-19 forced our schools, students, teachers, and companies into a new remote-learning reality, the San Diego Festival of Science & Engineering adapted swiftly and purposefully to support our community with virtual connections. The response from our members was incredible.

Here’s what we know: it is critical to expose students to possible careers, so they can aspire to jobs that they may not have otherwise known existed. In this new reality of distance-learning, students have fewer opportunities for interaction and collaboration, and even fewer chances to be exposed to science, technology, engineering, arts, and math (STEAM) in the classroom. In these uncertain times, we remain committed to supporting students of all socio-economic backgrounds in our state, as well as their teachers. We remained determined to continue to provide impactful educational experiences for our community.

And so, like the rest of the world, we went virtual.

Throughout this challenging time, we have been motivated by three goals. First, we are committed to continuing to connect STEAM professionals with the greater community, especially our K-12 students. Second, we are committed to providing relief to teachers during distance-learning, in the form of an educational supplement to their lectures. And finally, we heard from our industry partners, overwhelmingly, that they were looking for additional opportunities to support our education community while simultaneously providing volunteer or engagement opportunities for their employees.

Two weeks after lock-down orders went into effect, our STEAM TEAM program was launched. The STEAM TEAM program is a series of 30-minute virtual classroom visits. Flexibility was the name of the game: STEAM TEAM leveraged the virtual meeting platform of the teacher’s choice, worked within their (sometimes wonky) class schedules, tailored our discussions to units or topics the class was learning or had covered, and we conducted the sessions in the language spoken by the students and their parents.

The requests from educators came flying in; the need was overwhelming, and the response from our industry partners matched it.

In no time, we were virtually placing professionals from STEAM industries into K-12 classrooms throughout the state to talk about their jobs and career paths, share inspirational—or at the very least entertaining—anecdotes about their fields, and expose students to STEAM in a way their teachers might not be able to.

Thanks to participation, feedback, and the ongoing support of so many Biocom member companies, the program has evolved quickly. Since it’s launch in April, the program has impacted 330 students from twelve school districts throughout California. STEAM professionals from eighteen companies have already virtually visited classrooms, and we are just getting started! Complete with templates for the educators, students, and professionals alike—it’s a virtual field-trip-in-a-box, and we are looking for more professionals to get involved!

Don’t just take our word for it. Hear from our STEAM TEAM professionals, our classroom visitors:

"I’m fortunate to have joined the STEAM TEAM and to provide encouragement to students considering or continuing STEM careers. As the father of two daughters—one in college and studying a STEM field and the other a Junior in high school—I have tried to teach them the importance of STEM in solving real-world problems. Answering the inquisitive questions from Ms. Lewellen’s students and offering inspiration along the way was an incredibly rewarding experience. I would love to be involved again in the future, whether it be virtual or in person."

- Chris Ross, Industry Manager - Biotechnology, Fisher Scientific
Earlier this year, thousands of students, teachers, parents, and industry professionals gathered at the San Diego Festival of Science & Engineering’s EXPO Day for hands-on STEAM activities.

Silvana DelPiccolo is Director of Community Relations for Biocom. She manages Biocom’s STEAM education and outreach programs in the state of California, as well as Biocom member companies’ community engagement efforts in these programs.

"During this challenging and isolating time, it’s more important than ever to connect and converse with our younger generations. Participating in a STEAM TEAM virtual class visit and sharing my experience working as a scientist in biotech with a group of enthusiastic 5th graders could not have been more rewarding! The class was engaged, asked tons of questions, and made me feel hopeful about our scientists of the future. I can’t wait for another STEAM TEAM event!"

- Jennifer Griffin, PhD, Scientist II - Medicinal Chemistry, Bristol-Meyers Squibb

If you or a colleague want to make an impact on students, teachers, and the future of the STEAM industry, join us! Visit www.lovestemsd.org/steam-distance-learning to sign up.

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- Jennifer Griffin, PhD, Scientist II - Medicinal Chemistry, Bristol-Meyers Squibb
The COVID-19 crisis has created unprecedented coordinated action by the biotechnology industry to develop new drugs and vaccines. Many companies have committed to work together to test and manufacture potential therapies and vaccines, to speed up the normally years-long timeframe so we can save lives and return our societies to normalcy. At Xencor, we have licensed access to one of our core XmAb® technologies, Xtend™ Fc domains, to Alexion Pharmaceuticals, Inc., and Vir Biotechnology, Inc., which are testing antibodies therapies incorporating Xtend Fcs in patients with COVID-19.

Xencor is a clinical-stage protein engineering company focused on discovering and developing monoclonal antibodies and cytokines to treat patients with cancer and autoimmune diseases. We use our proprietary XmAb technology platforms, in which we make small changes to the structure of an IgG antibody’s Fc domain, to enhance properties and create new mechanisms of therapeutic action. Xencor developed Xtend Fc domains to increase the half-life of antibodies by enhancing their ability to avoid the usual degradation pathway of proteins in the circulation.

Xtend’s ability to enhance antibody half-life has been demonstrated in many clinical-stage programs through numerous clinical studies, which has resulted to date in an approved therapy, Alexion’sUltomiris®, a complement inhibitor antibody that allows for a longer duration of action, less frequent dosing and reduced patient burden of therapy compared to Alexion’s previous generation therapy, Soliris®. Ultomiris is approved for marketing in the U.S., Japan and Europe for treatment of patients with a variety of rare blood disorders. Due to Ultomiris’ potential to address immune-related toxicity, Alexion is initiating a Phase 3 study for treating patients with severe COVID-19, adults who are hospitalized with severe pneumonia or acute respiratory distress syndrome (ARDS).

While Alexion is exploring its established therapy in the COVID-19 setting, the ability to extend antibody drug half-life and reduce dosing frequency in patients potentially makes technologies like Xtend an important, desirable feature in antiviral therapy for pandemic use. Before we even knew the extent to which this pandemic would grow, in January of this year, we licensed Xtend to Gilead Sciences, Inc., for developing and commercializing elipovimab, Gilead’s first-in-class, effector-enhanced broadly neutralizing anti-HIV antibody, which is currently in Phase 1 development, as well as three additional anti-HIV antibodies.

As the pandemic developed, we were contacted by our friends at Vir, to whom we previously provided a license to Xtend for their influenza A and hepatitis B virus antibody programs, which are now both in Phase 1 studies. After just a few days, we had entered into a new agreement, granting them non-exclusive access to Xtend to enhance the half-life of VIR-7831 and VIR-7832, antibodies they are investigating as potential treatments for patients with COVID-19. These two antibodies bind to epitopes on the SARS-CoV-2 virus that are shared with SARS-CoV-1 (SARS), which indicates that these epitopes are highly conserved and could make it more difficult for escape mutants to develop. In fact, the antibodies were based on an antibody isolated from a patient who recovered from SARS in 2003, and a paper recently published in Nature details the characterization of this antibody, which may cover the entire family of related coronaviruses. Vir anticipates proceeding directly into a Phase 2 study with VIR-7831 and VIR-7832 this summer.

We are encouraged by the industry’s response to COVID-19 and look forward to the progress not only from our partners but also from efforts using other technologies and approaches, as well. At Xencor, we are committed to broadly using Xtend technology, and our other XmAb tools, to rapidly develop potential treatments for COVID-19.
Biocom's Economic Impact Report Measures California's Dominance in Life Sciences


“There is no more important time for our industry than right now, during an unprecedented global pandemic,” said Joe Panetta, president and CEO of Biocom.

“During the COVID-19 crisis, we will continue to keep our finger on the pulse of the life sciences, and future reports will reveal important data on how the pandemic affected our industry, its millions of related jobs and its economic impact across the state.”

The report includes key economic and demographic data for California's three main life science regions—the Bay Area, Los Angeles and San Diego—weighed against employment growth, which continues to outpace national averages.

The Bay Area led the way with a 12 percent employment increase over the past five years, with Southern California close behind at just over 9 percent. Average annual wages in the Bay Area were well above the 2019 national average of $67,979, coming in at $116,799.

The report further breaks down regional employment into dozens of sub-industries within and adjacent to the life science sector.

“This report demonstrates that the work the industry does every day has a significant economic impact on California, providing high-paying jobs across the state that contribute to the economic health of our communities,” said Panetta.

Overall, California's life science industry continues to see steady growth, with a 13% increase in the number of statewide jobs over the past five years. California also received the most research funding from the NIH of any state, with a total of $4.59 billion in fiscal year 2019.

Regionally, the Bay Area was found to have directly employed more than 145,000 in life science and supported more than 387,000 total jobs, generating $139 billion in economic impact.

Los Angeles County received the largest amount of NIH funding in 2019 at over $1.15 billion and directly employed more than 93,000 individuals, generating $44.2 billion in economic activity.

Meanwhile, San Diego County contributed $41.3 billion to the local economy and directly employed over 68,000 in 2019, supporting over 175,000 total jobs in the region. With significant job growth in biopharmaceuticals manufacturing, medical devices and diagnostic equipment and research and lab services over the last five years, San Diego boasted 4.8 times the national average concentration of biochemists and biophysicists in 2019.

The report is also broken down into fact sheets related to important regional clusters of life science organizations. Fact sheets that summarize regional findings can be found for the East Bay, The Peninsula, the City and County of San Francisco, Southern California, Los Angeles City and County, and the City and County of San Diego. These data sheets provide key information for the many companies that make up California's unique life science microclusters.

As a representative of over 1,300 members of California's life science economy, Biocom looks forward to leveraging the findings of the 2020 Economic Impact Report to continue accelerating innovation by advocating for funding growth, business tax relief and talent attraction initiatives to support the state's dynamic life science industry.

Find the full report at www.biocom.org/eir

Jennifer Landress is Biocom's Senior Vice President & COO. In addition to general oversight of the organization, Jennifer spearheads Biocom’s international outreach and capital development initiatives.
THANK YOU.

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Long-Lasting Strategies for the Treatment and Prevention of COVID-19

The novel coronavirus has brought out the best in research and the biotech industry as we collectively seek to identify a preventative or treatment to stop or slow the pandemic. At Cidara, we have decades of experience in the infectious disease space, so pivoting our efforts toward the coronavirus represented a natural extension of our capabilities. We have initiated programs to identify and develop a potential protective agent against SARS-CoV-2 (the virus causing COVID-19) and its complications. Our fundamental programs in development include a novel, long-lasting antifungal candidate called rezafungin and our Cloudbreak® antiviral platform, yielding a new class of drug candidates called Antiviral Conjugates (AVCs). Our philosophy has always centered around the development of long-acting drugs, a necessary concept for protection of patient populations at risk for serious infections.

Our most advanced AVC program is CD377, a development candidate for universal treatment and prevention of the flu with potent long-lasting virucidal activity that concentrates in the lung. Its key attributes, combined with the modular nature of the Cloudbreak antiviral platform, demonstrate our rationale for developing AVCs to protect from other respiratory viruses, including the coronavirus, and how efficiently we have been able to create this program.

AVCs represent a new class of drugs that combines two approaches: potent antiviral activity to directly kill the virus, and engagement of the immune system to maximize viral clearance. AVCs are designed to target the virus instead of the cells that are under attack by the virus, providing immediate protection for patients and slowing the spread of infection. The small size of AVCs allows for rapid concentration in the lungs to attack the virus and fight off infection. In COVID-19 where severe lung damage is common, protection at this site first invaded by respiratory viruses is crucial.

Upon the release of the genetic sequence of SARS-CoV-2, we began synthesizing AVCs with the potential to both prevent and treat COVID-19. We have initiated in vitro testing against a panel of coronaviruses, including SARS-CoV-2, that block the key step of viral fusion to lung epithelial cells while simultaneously recruiting immune cells to fight the infection.
epithelial cells while simultaneously recruiting immune cells to fight the infection (Figure 1). We will advance the most potent candidates for evaluation in animal models. Our goal is to identify AVCs that offer long-lasting, universal protection from all coronaviruses.

In addition to the direct effects of COVID-19 in the body, many patients with severe COVID-19 infection under intensive care may also be at risk for invasive fungal infections. In fact, aspergillosis, a serious invasive fungal infection, has been observed in up to 30% of severe COVID-19 patients and could be contributing to their poor outcomes. Complicating this issue is the use of immunosuppressants in severe COVID-19 patients to alleviate the dangerous cytokine storm that exacerbates the illness, making patients even more susceptible to invasive fungal species. Rezafungin could play a role in the future as a prophylactic against invasive fungal species in high risk COVID-19 patients. Rezafungin, already in two Phase 3 trials, is designed to be dosed on a once-weekly basis, potentially limiting the number of interactions with healthcare providers and enabling earlier discharge compared to daily dosing with other antifungals in the same class.

Overall, our goal is to advance long-acting therapeutics to improve the standard of care for patients who are facing serious fungal or viral infections. With our fundamental programs and deep expertise in infectious disease, we are expanding our efforts to provide both preventative and treatment options for coronaviruses, including COVID-19, and related complications.

Dr. Stein has been President, CEO and Director of Cidara since January 2014. Previously he was CEO of Trius Therapeutics, Inc. from 2007 until its acquisition by Cubist Pharmaceuticals, Inc. in September 2013.
IF we were to find a silver lining in the COVID-19 pandemic, it would be that the life sciences and pharmaceutical industries are answering the call to collaborate. No one can solve this alone, and the pace of partnership is bringing to bear what I believe is the right mix of innovation and action.

Our mission at Cytiva is to advance and accelerate therapeutics. This means that we help scientists and clinicians develop diagnostics, therapies, and vaccines, and support pharmaceutical companies to manufacture therapies in efficient time and at scale. In this unprecedented public health crisis, an interesting caveat is the support of global governments, which allows our industry to move faster. Also, academia can significantly step up efforts to contribute to COVID-19 solutions.

Cytiva is a newly named company with a heritage of more than 200 years. In April 2020 we joined the Danaher Corporation. We are 7000 associates in 40 countries, and the United States is naturally one of our main hubs. The famous California spirit of innovation applies well to biotechnology, and we are proud to participate in several collaborations of promise to fight the COVID-19 pandemic.

A Trio of California Partnerships

Cytiva is providing tools for a proposed antibody cocktail intended to shield against COVID-19 infection. Sorrento Therapeutics and Mount Sinai Health System in New York City have joined forces to create the treatment, which is expected to enter Phase 1 trials in Q3 2020.

A project led by famed San Diego biologist Erica Ollmann Saphire and funded by the Bill and Melinda Gates Foundation will use instruments and consumables from Cytiva. Our partnership with Saphire started during the Ebola crisis, and she will now focus her search on antibodies against COVID-19.

Once a treatment is discovered and approved, there is the huge question of how to make it in great volumes. We are contributing to a partnership between Trilink and the Imperial College London that goes inside our own bodies to solve this. Trilink is synthesizing RNA to support a candidate vaccine that uses genes to copy a vaccine that focuses the immune system’s attention on the surface of the novel coronavirus. Cytiva is supporting the manufacture of RNA for this project.

COVID-19 knows no geographical boundaries. I think it’s worth also mentioning endeavors in other parts of the world that combine universities, pharmaceutical companies, and several teams from Cytiva.

From Oceania—an Early, Concerted effort

In January, the Coalition for Epidemic Preparedness Innovations (CEPI) tasked the University of Queensland to develop a COVID-19 vaccine. This is a particular design of recombinant protein, based on the university’s proprietary molecular clamp technology. The vaccine targets the virus’ ‘spike protein’ and locks it in its native shape, allowing the immune system to recognize and then neutralize the virus.

The University of Queensland’s candidate is being taken forward by pharmaceutical company, CSL, who is scheduled to start clinical trials this quarter.

Japan Chooses the DNA Route

Takara Bio has started their first in-human trials, focusing on a plasmid DNA vaccine. The vaccine would generate the SARS-CoV2 protein which would become an antigen, and help people develop immunity against the virus. Along with Osaka University and AnGes, Cytiva is contributing instruments and consumables to support the large-quantity manufacture of plasmid DNA.
Emmanuel Ligner has been the President of Cytiva since July 2017, when it was known as GE Healthcare Life Sciences. He has deep roots in biopharma, leadership and engineering and is driven to bringing transformative health to patients.

Test, Test, Test

Meanwhile, the need for timely and reliable testing has skyrocketed. We are involved in several collaborations, including one with UK-based life sciences company Avacta to develop an affimer-based rapid test. Using Cytiva’s lateral flow material components, the idea is to develop a pregnancy-style test that can detect COVID-19 using saliva as the sample.

Cytiva also supports the development of molecular assays which form the basis of polymerase chain reaction (PCR) based COVID-19 tests. The UK diagnostic developer, Genedrive, is using our Lyo-Stable stabilization service to develop customized solutions for preserving their diagnostic samples. Genedrive aims to manufacture more than 10,000 tests per hour!

These examples illustrate the full range of molecules that show promise in finding a solution for COVID-19—anywhere in the world, anywhere in science—and there are many more that we haven’t yet announced. There is so much hope that these collaborations will lead to the scientific breakthroughs needed to overcome COVID-19.

I see the unprecedented mobilization of the scientific community around the global pandemic forging a new culture of cross-disciplinary cooperation, openness, and data sharing, which could accelerate progress more generally for the life sciences industry.

Emmanuel Ligner has been the President of Cytiva since July 2017, when it was known as GE Healthcare Life Sciences. He has deep roots in biopharma, leadership and engineering and is driven to bringing transformative health to patients.
Everything You Need to Know About At-Home Testing for COVID-19

At-home COVID-19 testing offers several advantages beyond convenience and it’s important for companies of all sizes to consider this option when determining an effective return to work strategy. An at-home test eliminates the need for a healthcare worker to wear personal protective equipment to conduct the test, frees up resources at brick-and-mortar healthcare facilities, helps maintain social distancing, and enables people to get tested without putting others at risk of infection when visiting a doctor’s office. With the new testing options, there can be misperceptions surrounding the different FDA-authorized at-home tests for COVID-19 and how they work.

First, it’s important to understand the difference between an at-home test and an at-home sample collection kit. True at-home tests can be completed entirely at home and do not require shipping specimens to a central laboratory. The testing process takes 15 minutes or less, with results available within hours. At-home sample collection kits, which make up the majority of the purported ‘at-home tests,’ allow people to collect their samples at home but then require shipment to a lab. Samples are run by lab technicians on machines following the same process used when testing in person. Factoring in the shipping time, test results may not be available for days.

Next, it’s helpful to understand the different types of tests available for COVID-19. There are currently two main categories: antibody (AKA serology) tests and diagnostic tests, which include molecular tests like RT-PCR and antigen tests.

Antibody tests detect whether people have antibodies to specific pathogens like viruses and bacteria in their blood. Antibodies are proteins produced by the immune system to fight off infections. In the case of COVID-19, the presence of antibodies indicates that a person has been exposed to the virus, whether or not he/she ever exhibited symptoms. While more research is needed, antibodies may mean that a person is immune or partially immune from becoming reinfected by the novel coronavirus. Scanwell Health (www.scanwellhealth.com) is awaiting FDA emergency use authorization for the industry’s first at-home antibody test, which involves a simple finger prick blood sample to quickly determine the presence of antibodies. Currently, the FDA only allows antibody tests to be used in a medical setting when performed by a healthcare provider, but at-home solutions like Scanwell’s should be available this summer.

Diagnostic tests detect the virus directly and include molecular tests and antigen tests. Molecular tests for COVID-19 often use RT-PCR technology to detect viral RNA, while antigen tests detect viral proteins. Both these tests can use nasal swabs, oral swabs, or saliva. These tests are useful for diagnosing an acute COVID-19 infection and at-home sample collection kits are currently available for molecular tests with a doctor’s prescription. As described above, these sample collection kits require people to ship specimens back to a central lab and can take days before test results are available. At-home antigen tests are not currently available, but it is likely that the FDA will authorize its first one by the end of 2020. Antigen tests are not meant to replace molecular tests, but are often less expensive, more scalable, and can deliver test results in minutes. Unlike the molecular tests, antigen tests will be a true at-home test and will not require the sample to be shipped back to a lab.

Each of these tests will play a role in addressing the COVID-19 crisis and help with reopening the economy. It’s very likely that the different tests will be used in combination. For example, daily antigen testing could be combined with monthly antibody testing to screen employees or students before they enter a work site or school to reduce the risks of an outbreak. Molecular tests, like RT-PCR, can then be used to confirm positive test results when needed. Until we have an effective vaccine, more testing will be critical for combating this global pandemic. The FDA is encouraging innovation on this front in the form of its emergency use authorization pathway, which continues to facilitate new testing options for patients.

Jack Jeng, M.D., is a practicing physician at UCSF Medical Center and is also Chief Medical Officer at Scanwell Health, headquartered in Los Angeles. Scanwell specializes in smartphone-enabled, at-home diagnostics, and Dr. Jeng is leading up Scanwell’s COVID-19 testing efforts.
WE GET LIFE SCIENCES
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Connecting Meaningfully While Distancing

Living in a pandemic has changed the world in more ways than one. As the Business Development Manager at Biocom in Los Angeles, I’ve had the amazing opportunity to continue to maintain relationships with our members and be inspired by their shift in focus.

As the world comes together to combat the present COVID-19 crisis, businesses everywhere are concerned with the impact it may have on their customer base, but are broadening their scope and shifting production to accommodate what seems to be the new ‘norm.’

In this unprecedented time the main focus of any company should be to provide excellent value to their customers and return to a forward growth as soon as possible. By putting the customer first at every intersection, companies will be able to retain loyalty and above all, uphold trust. Shifting the company focus to help with the pandemic reassures the member base that they have invested in the right company. Scanwell Health, a loyal Biocom Member, is a prime example of this. Scanwell Health is most commonly known for their At Home Medical UTI Testing Kits.

As the number of COVID-19 cases continues to rise, the need for at-home diagnostics and telehealth became pivotal. This shift in focus and strategy has inspired me and I’ve committed myself to continue this focus with our members.

One strategy I’ve tried to use over these past few months is making sure my customers have a clear line of communication with me and my L.A. colleagues. Not only do companies need to make sure their customers’ business needs are being met, but we are also all human, we all have families and need to show compassion and empathy for one another especially at a time like this. Now more than ever, it’s important to be there for one another and continue to move towards a brighter tomorrow.

In the words of Winston Churchill, “Those who are happiest are those who do the most for others.”

I look forward to making new connections with Biocom members in Los Angeles and finding ways to bring the region’s vibrant life science community closer together, especially during this challenging time. If you are part of a life science company in the greater Los Angeles area and we haven’t already met, I encourage you to reach out. I’m always eager to hear about new, innovative companies that are making a difference in our industry’s quest to improve human health and invite you to be an active and vital part of this discovery process.
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Leading names in pharma and deal-making gathered at The Lodge at Torrey Pines in February to discuss today’s complex, but optimistic life science market at Biocom’s 10th Annual Global Life Science Partnering Conference. The opening night reception kicked the conference off and gave attendees a sneak peek of the newly unveiled Center for Novel Therapeutics. Over the span of two days, 900 1:1 partnering meetings took place and 24 of some of the most innovative life science companies presented to rooms full of investors. The sunset over Torrey Pines was as spectacular as ever for guests during Wednesday night’s reception.
INSPIRING SPACES FOR INNOVATORS
Three-Building, 186,000 SF, Class A Campus

MODERN RENOVATIONS
Fully modernized interior and exterior campus with first class amenities.

PROMINENT SIGNAGE
Opportunities include building top and monument signage.

LAB SPACE
Move-in ready spec suites, starting at 9,500 SF.

EXPANDABLE DESIGN
Designed to accommodate single and multi-tenant users.

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* Biocom Board of Directors Member
Looking to get more involved and play an active role in Biocom? Connect with industry peers on a specific area of expertise, boost network connections, plan future Biocom events, and discuss critical issues when you join one of nearly 20 committees offered through Biocom. In this edition of LifeLines, we are featuring Biocom's new Food Tech Committee and we hope to spark your interest in joining a committee where you can share your skills, knowledge, and expertise.

**BIOCOM’S FOOD TECH COMMITTEE**

This newly formed committee supports companies in the Food Tech sector by facilitating dynamic discussions on key industry trends, critical issues impacting the Food Tech community, and best practices. Committee members participate in insight-sharing and connection-building during valuable networking sessions. The committee is open to all Biocom members who work in or have an interest in the Food Tech sector.

For more information or to join, contact Cheryl Zuckerman at czuckerman@biocom.org or at (908) 692-3050.
Biocom Testing Solutions

One Medical | Screening & Testing Solution
Biocom members can sign up for the One Medical benefit for 90-days (at over a 50% discount from standard PEPM rates) and will have access to One Medical’s entire suite of convenient offices across the U.S. and 24/7 virtual care right from their app.

San Diego Drive Thru
Biocom members receive an exclusive 26% discount for drive through and discounts for business on-site testing by Mobile Xpress Clinics.
1. Schedule appointment on the DrChrono app using code MXC-ARE-Biocom
2. Drive thru test on appointment date
3. Receive results online in 24-72 hours

biocom.org/one-medical   biocom.org/testing

Accelerating life science  biocom.org
PREMIUM MEMBER SPOTLIGHTS

**Name:** Nana-Yaw Otieku  
**Title:** North America Biopharm Manager  
**Favorite movie:** The Godfather  
**Favorite book:** The Autobiography of Malcolm X  
**Favorite TV show:** Chopped  
**A quote I live by:** “It is not the size of the dog in the fight, but the size of the fight in the dog.”  
**Favorite restaurant or meal:** Italian  

What music can we find you listening to? 90’s R&B and Hip Hop  
Favorite technology, program, or app: Waze  
If you could meet one famous person, who would it be? Barack Obama  
Favorite hobbies: Soccer  
First job? Lab Engineer at Roche Molecular Systems  
What is the best part of your current job? Helping people find solutions to push discovery  
What should Biocom members know about Corning? We are way more than the Orange Cap!  
If you could have another career, what would you choose? Computer Science  
Best career tip: This industry is forever changing. What we look at as the norms now can be ancient in the blink of an eye.

**Name:** Robert Baggerly  
**Title:** Director  
**Favorite movie:** Silence of the Lambs  
**Favorite book:** Same Kind of Different as Me  
**Favorite TV show:** Yellowstone  
**A quote I live by:** “Give without remembering and always receive without forgetting.”  
**Favorite restaurant or meal:** Jake’s in Del Mar, CA  
**What music can we find you listening to?** Classic Rock and the Blues  

Favorite technology, program, or app: Siri  
If you could meet one famous person, who would it be? Leonardo da Vinci  
Favorite hobbies: Golf, hiking in our state and National Parks, and sweating it out on our Peloton  
First job? IBM Software Group  
What is the best part of your current job? Meeting interesting people in the exciting biotech world.  
What should Biocom members know about SureClinical? Our eClinical Google-cloud based software applications significantly increase productivity and ultimately help you get drugs and devices to market faster with complete compliance.  
If you could have another career, what would you choose? Run a charitable foundation that helps children and animals.  
Best career tip: Join Biocom and stay connected with your peers! Of course, the old adage “Listen more than you talk” always applies.

**Name:** Janine Giambrone  
**Title:** Account Supervisor  
**Favorite movie:** The Godfather  
**Favorite book:** Unbroken  
**Favorite TV show:** The Crown  
**A quote I live by:** “You don’t have to do this. You get to do this.”  
**Favorite restaurant or meat:** Eggplant parmesan  
**What music can we find you listening to?** A little pop, a little rock, a little hip hop.  

If you could meet one famous person, who would it be? Oprah  
Favorite hobbies: Paddle boarding, indoor cycling  

First job? Wrapping gifts at a department store  
What is the best part of your current job? Every day is different and every client is unique which means working with new and exciting people on a regular basis.  
What should Biocom members know about Mentus? Mentus is a creative agency that focuses on Branding, Reports and Website Design for life science and biotech companies. Our approach to design is based on smart thinking, collaboration and the belief that work can be fun.  
If you could have another career, what would you choose? Coffee shop owner  
Why did you start working in the industry you’re in? With a marketing background, I thought working for an agency would be exciting so when an opportunity presented itself, I took the chance.  
Best career tip: Design is subjective so don’t take anything personally.
BIOCOM MEMBERSHIP

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AbbVie, Inc.
Ajinomoto Bio-Pharma Services
ASC Therapeutics*
Bayer
Biogen
Boundless Bio
Cidara Therapeutics, Inc.
COH Pharmaceuticals, Inc.
Eli Lilly
Erasca, Inc.
Ferring Research Institute
Gilead Sciences
Hologic
Illumina, Inc.
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JLABS
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SureClinical
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Mentus
Mintz
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64-x
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A2 Biotherapeutics
Abbott Laboratories
Abilta Bio, Inc.
Abreos Biosciences
Abwiz Bio Inc
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ACEA Therapeutics, Inc.
AcelRx Pharmaceuticals, Inc.
Acepix Biosciences
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Achelois Pharmaceuticals
ActivX Biosciences
AcuraStem
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ADARx Pharmaceuticals*
Adastra Pharmaceuticals
ADRx
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Advantara Inc
Adverum Biotechnologies
Aerie Pharmaceuticals
AFYX Therapeutics
Agena Bioscience
Agragen*.
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AivoCode*
Akeagen, Inc.
Alamar Biosciences
Alector
Algedimex
Aligos Therapeutics
Alkahest
Alkermes, Inc
Allakos Inc
Allogene Therapeutics
Alpine BioTherapeutics Corporation*
Alpine Roads, Inc.
Alistem*
Altay Therapeutics, Inc.*
ALX Oncology
AM Chemicals
Amberstone Biosciences
AMBRx
Ambs Medicines
Amgen
Amphivena Therapeutics, Inc.
Ampyx Pharmaceuticals
Antilogix Co.
AnaptysBio
AngioMine BioScience, Inc.
Animal Cell Therapies
Animal Microbiome Analytics, Inc.*
Ansun Biopharma
Antiva Biosciences
Anwita Biosciences
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Apros Therapeutics
Apitude Medical Systems
Aracari Biosciences*
Aragen Biosciences, Inc.
Aralex Bio
Aratome LLC
Arcturus Therapeutics
Arcus Biosciences
Arena Pharmaceuticals*
Armata Genomics*
Arista Therapeutics
ARS Pharmaceuticals
Arsenal Biosciences
Arthrosi Therapeutics, Inc
Asher Biotherapeutics
Ashglobe Therapeutics
Asglobe Pharma
Assembly Biosciences
Astellas Pharma
Astex Pharmaceuticals*
Atara Biotherapeutics, Inc.
Atreca Inc.*

aTyr Pharma
Audentes Therapeutics
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Autobahn Therapeutics, Inc.*
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Bionova Scientific
BioTheryx
Bird Rock Bio
BJ Bioscience
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Blade Therapeutics
BlueNalu, Inc.
Bolt Biotherapeutics
Bolt Threads
BraneQuest
BridgeBio Pharm
BridGene Biosciences, Inc.
Bright Biologics*
Brightseed
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Burning Rock Dx*
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Cairn Biosciences
Calcimedica
Calidri Biotherapeutics
Calithera Biosciences
Calyx
Canventa Life Sciences
Capsida
Cardea
Cardero Therapeutics*
Cardiff Oncology
Caribou Biosciences
Cerma, Inc*
CEL Analytical
CeleCor Therapeutics
Cell Care Therapeutics
Cellares Corporation
CollectGen, LLC*
Colerase
CellFE Inc.*
Cellibre
Cellics Therapeutics
Cello Therapeutics, Inc.
CellSeed, Inc.
Celprogen, Inc.
Center for Aquaculture Technologies
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Channel Medsystems
Checkerspot, Inc.
Chemocentryx Inc
ChemPartner
Chugui Pharmaceutical Co., Ltd
Cibus
Cinder Biological, Inc.*
Circle Pharma, Inc.
Cirius Therapeutics
Cleave Therapeutics, Inc.
Climax Foods*
Clinomics USA
Coagulant Therapeutics
CODA Biotherapeutics
Coherus BioSciences
Conatus Pharmaceuticals
Corbion Biotech
Corvus Pharmaceuticals
Cosmo Pharmaceuticals*
Cradle Genomics
Cinetix Pharmaceuticals, Inc.
CS Bay Therapeutics
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<th>Company Name</th>
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<td>BioLytix, Inc.</td>
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<td>Biotela, Inc.</td>
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<td>Biota Therapeutics, Inc.</td>
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<td>BioVista, Inc.</td>
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* New Members from October 2019–August 2020
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Nurix
Nusano
Nutcracker Therapeutics
OBDURO Biotechnologies, Inc.*
OBI Pharma USA, Inc.
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VetStem
ViaCyte
ViewPoint Therapeutics
Vigil Dx
Viking Therapeutics
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Viracta Therapeutics
Viscient Biosciences
Visgenx
Visolis Biotechnology
Viva Biotech*
Vividion Therapeutics, Inc.
Wild Type
Wildcat Discovery Technologies
X-37 Service Co., Inc.*
Xcell Biosciences
Xencor
Xeris Pharmaceuticals, Inc.
XOStep
YourDNA
YuFlu
Zai Laboratory
ZebraSci

CR0

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ABL Inc.
Absorption Systems
Abzena
Accelagen
Accelerated Enrollment Solutions
Accenture Accelerated RD
Access Biologicals LLC
AMRI
AnaBios Corporation
Applied StemCell
Athena, Inc.
Avantgen
Avism Pharma
Avomeen

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Behavioral Pharma
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BioQual Solutions Inc.
Biosery Corporation
Cardinal Health Regulatory Sciences
Cassia, LLC
Catalent
Cato Research
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CILcare
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Clinipace*
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Diagnostics, Inc
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HY Medical Technologies
Infinite Chemical Analysis Lab
Inscripta, Inc
Integrium Clinical Research
Invicro, LLC
iQ Biosciences*
ixCells Biotechnologies
JOINN Laboratories
KB Pure Essentials
KCAS Bioanalytical and Biomarkers
LakePharma
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MicroConstants
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Norac Additives LLC
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Pacific BioLabs*
PharmaDirections
PharmaLegacy
Pharmatest Services
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Premier Research Group
ProSciento
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Qoolabs, Inc.
Quadrants Scientific
Quotient Sciences
Rapid Norovirus
ReachBio Research Labs
Reveal Biosciences
Robarts Clinical Trials, Inc.
SciQuus Oncology
Simbec-Orion Group
StemExpress LLC
Stris Research
TCR Medical Corporation
Telos Pharmaceuticals
Tenova Pharmaceuticals Inc.
Tiga Research
Toxikon
Translational Drug Development (TD2)*
Triligent International
Trumbi Inc.
Virapur
Viva Biotech
VOL-CRO (Vanderbilt Ophthalmic Contract Research Organization)
Wax-It Histology Services Inc.
Zyagen

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Cambrex Corp.*
Chime Biologies Limited*
Citogene, Inc.
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Grand River Aseptic Manufacturing
In SYS, LLC
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Norac Pharma
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PCI Pharma Services
Polypeptide Group
PrimaPharma, Inc.
Providien
Recro Gainesville
Shamir Insight
STI Pharmaceutical, US LLC
Stason Pharmaceuticals
Surface Optics Corporation
Vascio, Inc.
Vista Biologicaals Corp.
WuXi Biologics
YuFlu, Inc.*

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Acutus Medical
Adagio Medical
Adigica Health, Inc.
Aethlon Medical
AG Scientific
Alpha-Tec Systems
AtHeaDx
Ampron
Amydis Diagnostics
Ancora Heart
ANKON Medical Technologies, Inc.
AnX Robotics Corp
Apostle, Inc
Aries Pharmaceuticals, Inc.
Astute Medical
AVACEN Medical
Avita Medical*
Avive Solutions
Banyan Biomarkers
BD
BillonToOne
BioAmp Diagnostics*
Biocept
BioFluidica
Biological Dynamics
Biomerica
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Biotheranostics, Inc.
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Compellon Corporation
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Cue Health
CureMatch Inc.
CVAC Systems
Cyteligen Inc.
Cytovale, Inc*
Dare Bioscience
Dentsply Sirona
DermTech International
Diagnostics For The Real World
dorsaVi USA
Drawbridge Health
Earl, Inc.
Echelon Diagnostics*
Elixir Medical Corporation
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EpicGenetics
Epigenomics
ET Healthcare Inc.
Evolve Biosystems
Fallbrook Engineering
Fluxergy
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Fresca Medical, Inc.
Gattaco
Genalyte
GlySens Incorporated
Hancock Jaffe Laboratories
Hawkeye Bio, Inc.*
Hitachi Chemical Co. America, Ltd.
Ichor Medical Systems
Imagion Biosystems
Immunomic, Inc.
ImpediMed, Inc.
Imprimed Inc
Inari Medical
Inceptus Medical LLC
Infammatix
INova Diagnostics, Inc.
Intake
InvivoScribe Technologies, Inc.
IONpath
IRRAS USA
January, Inc.
Karius
KetoMedical
KFX Medical Inc.
Kurin, Inc.
Lucid Circuit, Inc.*
Lumina Corporation
LuminaDx
MARX Diagnostics (Trinity)
Marine Essence Biosciences
Mass Spec Lab
Matregetax*
MDRejuvena, Inc.
MedGenome
Metronom Health, Inc.
MicroVention, Inc.
Millennium Health
Minerva Surgical, Inc.
Mira Dx
Monarch Labs
Nano Imaging Services
NeuroStructures
NextGen Jane*
NucleusHealth
NuFACE
NX T Biomedical*
Organovo
OrthoAlign, Inc.
Palette Life Sciences
Patient Safe Solutions
PetDx*
Precision NanoSystems
Prelude Corporation

* New Members from October 2019–August 2020
Keck Graduate Institute Of Applied Life Sciences
Kobe Biomedical Innovation Cluster Magnify
MiraCosta College Biotech Program
Point Loma Nazarene University
Rady School Of Management, UCSD
San Diego Community College District
San Diego Supercomputer Center (UCSD)
SDSU, Graduate & Research Affairs
UC San Diego Extension
UC San Diego Research Affairs
UCLA Technology Development Group
UCSD, Department of Bioengineering
University of California, Irvine - Office of Research
University of California, Riverside
University of San Francisco, Biotech Masters
USC Mesh Academy
USC Stevens Center for Innovation
USD, University of San Diego
Western University of Health Sciences

RESEARCH INSTITUTION

Applied Biomedical Science Institute
Aspen Neuroscience
CA Institute for Regenerative Medicine
Cedars Sinai Medical Center Office of Technology Transfer
Chan Zuckerberg Biohub
City of Hope
CureScience Institute*
GMTO Corporation
House Ear Institute
Human BioMolecular Research Institute
Huntingdon Medical Research Institutes
Institute for Biomedical Sciences
Institute for Myeloma and Bone Cancer Research
Institute of Quantitative Systems Pharmacology (IQSP)
J. Craig Venter Institute
Kaiser Permanente
La Jolla Institute for Immunology
Larta Institute
LifeNet Health
Lowy Medical Research Institute
Molecular Medicine Research Institute (MMRI)
PRISM
Rady Children’s Institute for Genomic Medicine
Salk Institute For Biological Studies
San Diego Biomedical Research Institute
Sanford Burnham Prebys Medical Discovery Institute
Scripps Health
Scripps Research
SRI International
The Lundquist Institute

TRADE ASSOCIATIONS/ NON-PROFITS

American Cancer Society
Asia Bay Area Council
Bio-Link Depot*
CONNECT
Consulate Of Canada
East Bay Economic Development Alliance
greater Folsom Partnership*
Greater Sacramento Economic Council*
Hayward Chamber of Commerce
IDA Ireland
Lawrence Family Jewish Community Center JACOBS FAMILY CAMPUS
Life Science Innovation Network Japan, Inc. (Link-J)
Los Angeles Area Chamber of Commerce
Los Angeles EDC
Pasadena Bio Collaborative Incubator
PhRMA
San Diego Blood Bank
San Diego County Water Authority
San Diego Regional Chamber of Commerce
San Diego Regional Economic Development Corp.
University of San Francisco Biotech Masters*

KEY PROVIDERS

Covington & Burling LLP
DFA Pifer
Innovative Advancement
Longfellow Real Estate Partners
Perkins Coie
Qualcomm
San Diego Gas & Electric
Wintech Solutions*

PROVIDERS

2Connect
Accelea Canada Ltd.
ACIwiro*
Acuity Strategic Partners, LLC
AER Travel
AMN Healthcare
AmbersandPeople
Argo Consulting*
Automated Engineering Services (AES)
Avitek
BAM Architecture Studio
Bank of America
BCS365
Bench International
Biomedical Manufacturing Network
BioPharma365*
BioSurplus
Biotix
Bonnieville Labs
Boston Consulting Group (BCG)*
BPM
Brandwood CKC*
Buchanan Ingersoll & Rooney
Burger Construction
C3 Risk & Insurance Services
Caliber Associates
California Commercial Security
Caltrol
CBRE
Chubb Group of Insurance Companies
Cision/PR Newswire
Cisterna Development
City Wide Maintenance
CM Plus Corporation
CMTC
Cryoport Systems
Cymer Inc.
Delawie
Dentons
DPI Direct
eClinical Solutions*
EDF Renewables*
EHS Analytical Solutions, Inc.*
Enhanced Voice and Data Networks*
Everything Data

ACADEMIA

Arizona Commerce Authority*
City of Berkeley Office of Economic Development
City of South San Francisco
City of Yokohama
Greater Folsom Partnership*
Hong Kong Trade Development Council
Osaka Prefectural Government
Scottish Development International
UK's Department for International Trade

GOVERNMENT AGENCY

Biocom LifeLines Summer 2020
New Members from October 2019–August 2020

- Ferguson Pape Baldwin Architects
- Fisher & Phillips
- Fjord Ventures
- Fluidigm Corporation
- Four Seasons Hotels Westlake Village*
- Full Spectrum Analytics
- Gilding Eagle Global Health
- Global Source Ventures
- Grande Colonial
- Gunderson Dettmer Stough Villeneuve
- Franklin & Hachigian
- Halloran Consulting Group
- Hanson Lab Furniture*
- Hart Team Private Banking/Merrill Lynch*
- Healthpeak Life Science Properties
- HED Design*
- Heritage Global Partners
- Hull Associates
- Hyatt Regency La Jolla at Aventine
- ICS, an AmerisourceBergen Company
- ID Studios Interior Design + Strategic Planning, Inc.*
- Integrated Computer Solutions
- IPS-Integrated Project Services
- J.T. MacMillan Photography
- Jones Lang LaSalle
- JP Morgan Chase
- Kaneka Corporation
- Kataoka-SS America Corp.*
- Knobbe, Martens, Olson & Bear
- Kurtz Mechanical
- Lab Launch
- Leverage Concierge
- Local Capital Group*
- LPA Design Studios
- Mayer Hoffman McCann
- MBC Biolabs*
- McDermott, Will & Emery
- Medscape Education
- Merrill Corporation*
- Merrill Lynch Bank of America
- Mispri Biotech Services Corp.*
- Morrison & Foerster
- My Green Lab
- Nixon Peabody
- Oakland Genomics Center*
- Occupational Services
- Orion International Patent Office
- Oxford Finance LLC

* New Members from October 2019–August 2020

- Pacific Western Bank
- Panasonic Corporation
- Prevoz Construction
- Procopio, Cory, Hargreaves & Savitch
- Project Management Advisors
- Providien*
- Prudential Cleanroom Services
- Q-Bay Center (Hangzhou Overseas Center Management LLC)*
- Resilient
- Retirement DNA
- Richter Financial Studio
- San Diego Employers Association
- Sanyo Chemical Industries
- Savills
- Sayya Solutions
- Sequoia Consulting Group
- ShangPharma Innovation
- Sharp Business Systems
- Sheppard Mullin Richter & Hampton
- Siemens Industry
- Silicon Valley Bank
- Slone Partners
- Sofinnova Ventures
- The Leadership Edge
- The Production Board*
- The University of Tokyo Edge Capital Partners Co., Ltd.
- Transwestern
- TUV SUD America Inc.
- Underwater Kinetics
- UniFirst
- University Lab Partners
- Veolia
- Ware Malcomb
- Wareham Development*
- WattIQ*
- Xilitrix North America
- Xontogeny*
- Zef Scientific
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Industrial Biotech Workshops
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Regulatory Affairs Essentials
Regulatory Affairs for Medical Devices