

A periodical supplement to The Journal Record | May 2021

THE OKLAHOMA CITY INNOVATION DISTRICT

Attracting Innovators and Investment



2021



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Working Together to BUILD INNOVATION



When people interact in collaborative environments it elevates how they relate to their community and each other. In order to extend and execute our community's vision, Gardner Tanenbaum and Robinson Park Investments have partnered to create a 2.7-acre development at the OKC Innovation District.

Designed by FSB Architects and Engineers, this multi-use development features a 200,000 SF office building and 110-key boutique hotel surrounded by a pedestrian-centric layout. Bringing high-quality amenities and spaces, the facilities are targeted to advanced manufacturing, aerospace and bio-related businesses.



PUTTING HEART IN SMARTS



The Oklahoma Blood Institute is proud to lead in innovation for altruistic purposes. To further our mission and others' charitable endeavors, we have created new products and services in the software and biotechnology sectors.

INNOVATION DRIVEN PRODUCTS:



Our patented Thank the Donor® web app allows transfused patients and their families to anonymously send notes, photos, and videos of appreciation to the individuals who donated the specific blood products they receive.



Building on success of Thank the Donor®, we built ShareThanks® for other non-profits to route thank yous from their beneficiaries to their financial supporters, volunteers, employees, and other audiences.

CUTTING-EDGE SERVICES:

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The R&D Department at OBI has developed a process to capture platelets from refrigerated blood units and re-purpose them to help advance R&D of cutting-edge cell-based treatments for cancer and damaged tissue. Our innovative process will greatly increase the source of platelets needed to make these therapies, more of which are expected to enter the clinic in the coming years.



OBI developed the Bio-Linked platform to create opportunities for blood donors to participate in meaningful research. Most recently, OBI is participating in a vaccine study which could play a vital role in the development of safe and effective vaccines to Ebola and Marburg Virus Diseases. OBI stepped forward and was chosen as the clinical study site because of demonstrated reliability, comprehensive plasma collection capabilities, and a range of technical and professional staff.

To learn more about OBI's innovative products and services, call us at 877-340-8777 or visit us at obi.org.



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OKLAHOMA CITY INNOVATION DISTRICT

WHERE COLLABORATION CREATES INNOVATION

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The Innovation District in 2021: Oklahoma city's **NEXT GREAT** chapter is upon us.

As you explore this publication, it is our hope that you feel the excitement, energy and near-limitless potential of the Innovation District. Oklahoma City is steadily becoming a global force in industries we've been fostering for years, and which are now aligning around an innovation culture to drive us forward. Within these pages, we're pleased to introduce you to just a handful of the vast array of brilliant individuals and entities that make up what I think of as a wonderfully unique concentration of big thinkers and creative minds, leading on creating new companies and reimagining established industries. It's an extraordinarily exciting time for Oklahoma City.

Next Great Chapter continued on next page.

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OKLAHOMA

Innovate That

The Oklahoma City Innovation District is a thriving, 1.3 square mile ecosystem of collaboration, innovation and economic growth located in historic Northeast Oklahoma City, and home to internationally acclaimed organizations spanning Oklahoma's diverse sectors. The District is a wonderland of research and development, academia, health sciences, aerospace and unmanned systems, energy, entrepreneurship, and capital. It is a place that facilitates points of convergence in innovative technologies, cross-industry collaborations, and public-private partnerships. The Innovation District stretches beyond its physical boundaries. It reaches into Oklahoma's Innovation Pipeline with resources, programming and state-of-the-art facilities to facilitate cross-industry collaboration and position Oklahoma City to identify and scale research and commercial activities that take advantage of the city's unique

economic clusters. The Innovation District is the hub where innovators link technology application in high-growth sectors.

Another attribute that makes Oklahoma City's Innovation District particularly powerful is the sheer proximity of one institution, lab, individual or company to the others. It's a well-documented phenomenon that if we are able to concentrate creative thinkers and the ancillary services that support their vision in one place, groundbreaking things will happen. As Innovation District stewards, our role is that of the connector, and to some degree the facilitator and builder, of an innovation ecosystem. The convenor. We foster relationships and encourage the kind of collegial collaboration that will yield incredible advances.

Our initiative is to create the kind of vibrant, engaging place that will advance new industries and create new jobs for Oklahomans. Central to

our initiative is to connect and engage neighboring communities in Northeast Oklahoma City to create STEM education and workforce training pathways to the growth generated by the District.

Creative research collaborations, unique development events and high-growth businesses are all part of the emerging ecosystem within the Oklahoma City Innovation District, along with infrastructure projects including housing, walkways, roads and sidewalks and that will connect the new development to the district's vibrant and historic elements. This intentional development will encourage an ongoing sharing of ideas and will continue to enhance the quality of life for the entire community.

Innovation is the future. Innovation is our future. Let's embrace it together, Oklahoma.

— Katy Boren
President & CEO, Oklahoma City
Innovation District



**DINING
SHOPPING
SERVICES
ART**

Automobile Alley is an urban, mixed-use downtown neighborhood, but earlier in the 20th century, this district was home to more than 70 automobile dealerships.

Local cuisine and craft cocktails are served in former Studebaker and Buick showrooms. Unique goods and first-class services are offered by diverse retailers. Did we mention art? Just take a look around.

A modern vibe with historic charm, Automobile Alley and its neon lights are bright and beckoning.

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Putting **HEART** in **SMARTS**

The Oklahoma Blood Institute is proud to lead in innovation for altruistic purposes. To further our mission and others' charitable endeavors, we have created new products and services in the software and biotechnology sectors. We connect people of good intent through electronic networking and gamification platforms and we contribute to cutting-edge biologic therapies that are redefining healthcare.

Our patented Thank the Donor® web app allows transfused patients and their families to anonymously send notes, photos, and videos of appreciation to the individuals who donated the specific blood products they receive. This provides authentic, one-way content that harnesses the Attitude of Gratitude™ to inspire increased donations. Building on success licensing this technology to dozens of other blood banks, our Strategic Software Solutions department created a similar platform, Share Thanks®, for other non-profits to route thank you messages from their beneficiaries to their financial supporters, volunteers, employees, and other audiences. This summer, we will chase these inventions with

a crowdsourced gamification utility designed to add entertainment features to websites and communication streams.

Not surprisingly given decades collecting the world's first cellular therapy (red blood cells), we are dedicating people and resources to the genetic and immunologic treatment revolutions underway with regenerative medicine, tumor "vaccines," personalized care, and other translational sciences. In partnership with both domestic and international biotech companies, we are collecting and purifying the source materials being re-engineered into cures unimaginable just a few years ago. We rejoice in helping bring Oklahomans earlier access to experimental and emerging care options.

INNOVATION at the Intersection of HEALTH & ENERGY Technology

A conversation that began at the launch party for the Oklahoma City Innovation District led to a novel collaboration between the healthcare sector and an energy technology company. The result, an advanced surgical visualization device now being used in craniofacial reconstruction surgeries, embodies the purpose of the district—to convene people from Oklahoma's diverse sectors to share their expertise and, together, create something new.

Representatives from Baker Hughes and the University of Oklahoma Health Sciences Center started talking that day in 2018 and soon began collaborating on a prototype device. The work leveraged augmented reality/mixed reality technology that Baker Hughes developed to create 3D reconstructions of rock specimens from computed tomography (CT) scans. Such visualization is highly valuable to geologists and oil and gas companies as they determine where to drill oil wells. That capability caught the attention of Christian El Amm, M.D., a plastic and

reconstructive surgeon at OU Health, who envisioned a headset/visor that he could wear during surgery that would allow him to both see his patient as well as 3D data that was superimposed on the patient, such as CT scans and reconstruction steps he prepared for the procedure.

"This collaboration exemplifies what we do in the Innovation District," said the district's CEO and President, Katy Boren. "We convene and introduce people across industries who normally would not know each other, and we provide them an opportunity to

advance their discussions. From those conversations, new inventions are created, new companies are started, new patents are earned, and it grows jobs and our economy. That's what we do every day—create interactions that allow innovations to spark and grow."

The Baker Hughes/OU Health Sciences Center collaboration has indeed flourished. Baker Hughes had advanced the technology to achieve mixed reality, which allows the person wearing the headset to see what is around him, as well as 3D images that appear as if they were part of real life. The technology became a virtual field visit for the oil and gas industry, providing extensive information about rock, like how porous it was.

"There were obvious analogies to the healthcare sector," said Jeff Potts, Advanced Analytics Leader for Baker Hughes. "We talked at length with Dr. El Amm and others from the OU Health Sciences Center and began a collaboration agreement. There were several key challenges that we needed to solve to move forward with a prototype that could be used in a surgical setting."

During the year-long collaboration, the team created solutions for those challenges which, until that time, were unsolved. Using artificial intelligence techniques, they "taught" the device how to recognize features of a human face, which was necessary to be able to superimpose 3D models on the patient in real time. The team also enhanced the accuracy of that process in order to meet the precision needed for surgery, and they enabled the device to track the surgeon's instruments in real time.



DR. CHRISTIAN EL AMM, MD, OU HEALTH

Health & Energy continued on page 22.



Helping All Oklahomans At Every Stage Of Life

At OU Health, we cherish milestones. We're healing more people, discovering new treatments, educating Oklahoma's doctors, treating the everyday and solving the complex - all so you can celebrate life's moments.

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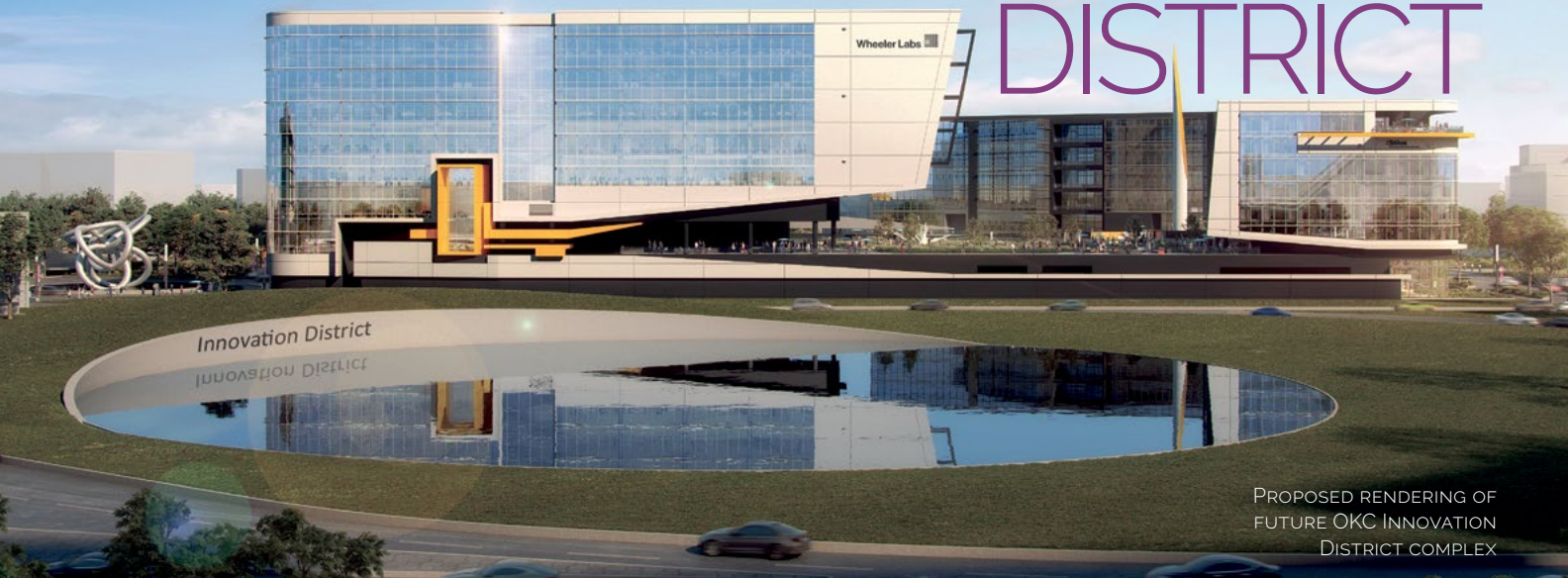
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BUILDING the INNOVATION DISTRICT



PROPOSED RENDERING OF
FUTURE OKC INNOVATION
DISTRICT COMPLEX

There is a dedicated, visionary group of people hard at work, quietly crafting the prequel to Oklahoma's next great saga. With a unique view of the dazzling future taking shape in and around Oklahoma City's Innovation District, they have joined forces to forge a bold future just east of downtown. Momentum is building, too, and in the coming months and years, this group's labor will bring a critical mass of new industry to our state.

Mark Beffort and Megan Gelmer are part of the ownership group overseeing the design and construction of a complex that will anchor Oklahoma City's blossoming Innovation District. Their company, Robinson Park, has teamed up with Richard Tanenbaum's company, Gardner Tanenbaum Holdings, Oklahoma City's FSB Architects & Engineers and Lingo Construction to create a pair of massive mixed-use buildings which will house laboratories, production facilities, multiuse spaces, public spaces, a hotel, retail and restaurants and outdoor space designed to further foster community and collaboration. The project will be built in two phases.

It is envisioned that the eventual centerpiece of the 2.7-acre development will be the space anchoring the two large buildings, called Innovation Hall. The design strategy and philosophy behind the complex are a crystallization of those identified for the entire 1,400-acre Innovation District. "The best innovation districts in the world have rich, entrepreneurial cultures, are powerful, sustaining economic engines for their communities, and have critical quality of place, manifest in vibrant and connected mixed-use communities. This is the vision represented in our plan," says Katy Boren, president and CEO of the

Oklahoma City Innovation District.

Innovation Hall, a central place where activities to grow Oklahoma City's innovation economy can be facilitated is intentionally located at the nexus of the two larger buildings, which in turn are adjacent to two university-led research institutions belonging to the University of Oklahoma and Oklahoma State University.

Another key piece of the project is the 108-key Stiles Hotel, with amenities, conference spaces, restaurants and retail. The entire project will be inviting, an open-air, pedestrian-friendly complex. "We are designing to pursue Platinum LEED

certification, and we're hopeful we'll achieve it," Beffort says.

Phase I of the project will cost about \$175 million and the entities housed within will have an economic impact on Oklahoma unlike any we've seen. Our state has long dominated in oil and gas extraction and technology, now it is poised to become a hub for scientific research and discovery, biomedical manufacturing, entrepreneurship, defense, the entertainment industry and the technologies needed for all of them. A study completed by the Brookings Institution in 2017 identified Oklahoma City as being uniquely poised to leverage existing advantages in health, technology and other sectors, vaulting ahead of its peers, provided our city's public and private leadership take bold action. That's what this development is.

"We believe this project will change the fabric of this part of Oklahoma City, the same way the Devon Tower accomplished that in downtown. Projects like these bring high-quality

amenities and spaces. When people interact in collaborative and clustered environments, it elevates how they relate to their community and to each other," Beffort says. The buildings he and his partners are creating are designed with a singular intention: collaboration. These are spaces where ideas and technologies will grow and flow, where industries previously prohibited by distance, geography or philosophy will cross paths and cross-pollinate.

Arriving at the buildings' final design was no easy feat. FSB Architects & Engineers had to marry several sets of criteria from distinctly unique user groups to create a space that was functional for all. Scientific labs, one tenant group, will need things like special climate controls and air filtration abilities. Manufacturing tenants need those things, too, plus freight elevators and loading docks.

The development's first tenant, Wheeler Labs, has been instrumental in the design process. "Christian

Kanady and the Wheeler folks have given us excellent input," Beffort says. "FSB presented ideas, which were fine-tuned during a seven-month planning period." The results, he says, will be unlike anything in Oklahoma. In fact, he says, the renderings look like something you'd see in global communities like London.

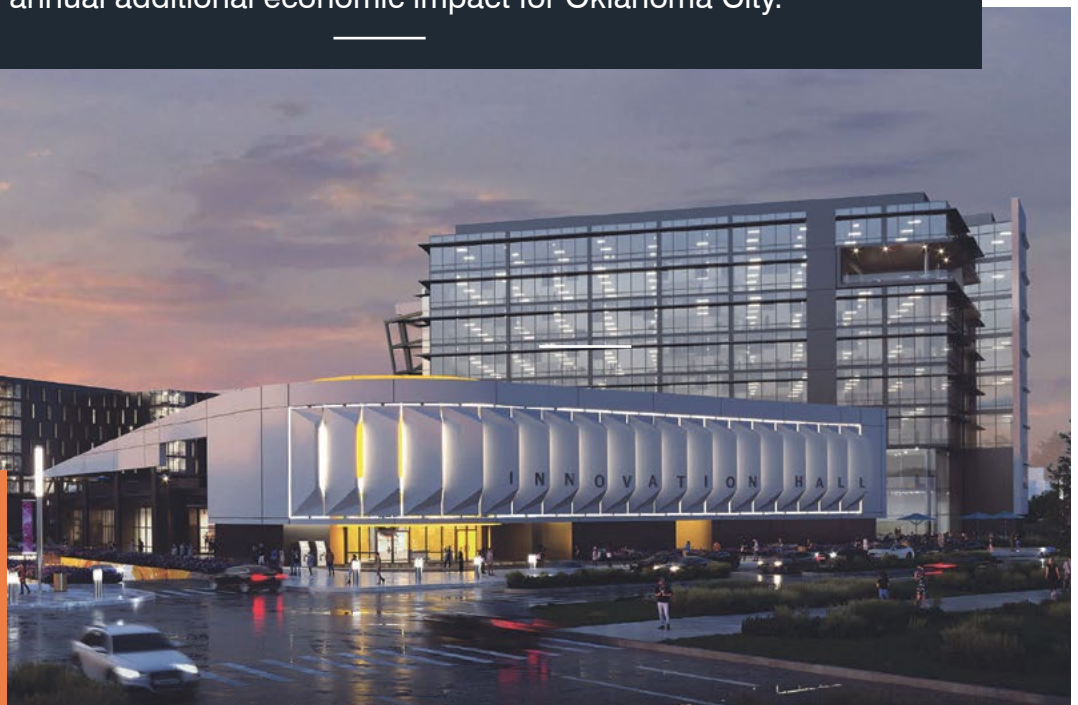
Each 200,000sf building will be eight stories tall with two levels of underground parking, and additional parking on the first and second floors. The first floor will house laboratories and pharmaceutical manufacturing. An area Beffort calls The Hive, an innovation hub and incubator for the medical community, will occupy the third floor. Floors four and five will be more labs, and floors six and seven will house general office space.

"We see this as a 50+ year development," Beffort says. Groundbreaking is slated for February 2022, and the building is projected to open, leased at 95% of capacity, some 23 months later, on Jan. 1, 2024.

Supporting development of the *Innovation District* to add \$1.2 billion in annual additional economic impact for Oklahoma City.

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Northeast OKC RENAISSANCE and ETHICAL Development

Dr. Quintin Hughes Sr. is the board president and a founding member of Northeast OKC Renaissance, Inc. (NEOKCR) and its precursor, the Northeast Renaissance Steering Committee (NERSC). The groups were formed around the same purpose, to help shepherd positive growth and development in Northeast Oklahoma City, historically home to the city's Black community. It's an area that's experienced a growing spate of development and investments in recent years and is the home of the Innovation District.



In 2014, the Alliance for Economic Development of Oklahoma City established the NERSC, an ad hoc group of community members, whose purpose was to represent the Northeast Oklahoma City community, serving as its voice while evaluating or vetting development ideas proposed for the area.

Through the work of then-Councilman John Pettis, the Alliance and others, the area had been designated a tax increment financing (TIF) district, dubbed the Northeast Renaissance Tax Increment District, which meant that a powerful economic tool was being deployed to promote development in Northeast Oklahoma City, an area that had been economically distressed and underserved for decades. It was and remains vitally important that the rich history and culture of the district not be lost or diluted in the name of progress.

“Our role was to vet development projects and provide feedback,” Hughes says. “We didn’t have authority for approval, but we wanted our activity to catalyze ethical development. It’s about ensuring that the people in the community being revitalized are key beneficiaries of those developments. The Innovation District will be an economic driver broadly for the state but it’s also a driver for our community.”

Hughes is a resident of Northeast Oklahoma City, and a business owner there. He recently opened Kindred Spirits, a craft cocktail and

soulful tapas bar, in the heart of the district. His role on the board of the Oklahoma City Black Chamber of Commerce was a springboard for him to become more deeply involved in the development efforts of the area.

Two years after its inception, the NERSC formalized its presence, becoming the nonprofit organization we know today as NEOKCR. It is a volunteer organization, with a 15-member board of directors made up of community leaders and organizers, academics, business owners and residents. Innovation District President & CEO Katy Boren is actively involved with NEOKCR, which Hughes says helps to give her a more inclusive, accurate perspective.

“One of the things she did early on was apply to be part of our board. So she’s in the room, a part of the internal discussion, and is trying to understand the community context and be able to curate her lens through which to see things, to help make decisions and bring along and work with the right people along the way, so that’s a critical piece,” he says. “She’s gotten to work in support of our organization’s capacity building efforts. She’s helped quite a bit with us identifying and securing sponsorships that help not only grow the event but build the capacity of our organization.”

NEOKCR hosts an annual block party event, ONE OKC, slated for 12-4PM, May 15 in Washington Park. It’s a free, outdoor event with food trucks, visual and performing arts, pop-up

vendors and a community mural and wellness and educational activities for families.

Its real estate and small business development program, PlaceKeepers, is designed to help overcome generations of intentional suppression by equipping Black residents and stakeholders with the training and mentoring needed to become real estate developers, business owners and job creators. Partners in the four-week training workshops are the Black Chamber of Commerce, Urban Land Institute OKC Chapter, The Mine Fellowship and Blackspace Oklahoma. Participants will come away with a foundational and localized understanding of real estate development. PlaceKeepers also offers mentor/co-developer pairings and networking opportunities to connect aspiring and experienced area developers.

“We look to the Innovation District to be a partner, to celebrate and sustain the efforts of Black-owned and locally owned business. Most of the Innovation District east of I-35 is within the boundaries of Northeast Oklahoma City, and some core parts of that like NE 2nd and NE 4th Streets are vibrant parts of history. So what happens in the Innovation District directly affects them. There’s a synergy around it all, so it’s necessary for us all to be on the same page,” Hughes says.



A Biotech Hub in the **Oklahoma City** **INNOVATION** District? Why, yes!

The story of Oklahomans coming together for the greater good in the face of catastrophe is nothing new. We've long been known for coming together in the face of hardship. We prevailed in the face of the Oklahoma City Bombing and, a generation before that, the Dust Bowl. We've helped each other through scores of tornadoes, ice storms and drought. In 2020, Oklahomans, along with the rest of the world, began to grapple with a new, unsparingly deadly foe, the COVID-19 pandemic.



Christian Kanady, Echo Investment Capital's founder and fifth-generation Oklahoman, explains "The pandemic, as horrible as it's been, is really the accelerator that inserted this oil and gas executive into the medical community. We started a nonprofit called the START Coalition right around a year ago."

The START Coalition is a working group comprised of teams of researchers from Oklahoma Medical Research Foundation, OU Health Sciences Center and other experts from Harvard, Stanford, Duke and Purdue who came together to pioneer innovative and implementable solutions to combat the COVID-19 pandemic in advance of the vaccine rollout. The START Coalition leveraged the interdisciplinary expertise of top medical researchers, national leaders in healthcare, government, business and technology, and it also sparked more curiosity for Kanady, who lauds Oklahoma City's medical research community for their willingness to hear him out.

He initiated conversations with Tulsa native Jason R Sanders, MD, MBA and senior vice president and provost of OU's Health Sciences Center, and Steve Prescott, Oklahoma Medical Research Foundation president, both key assets within the Innovation District, and was pleasantly surprised. "Not only did they not shoot the guy who did not even have an undergrad biology degree, but they also embraced the willingness of the corporate sector to try to partner with the medical ecosystem on how to band together to push back the disease," Kanady says.

Kanady, inquisitive by nature, began to ask more questions and connect

the dots. He learned that Oklahoma City's Innovation District was home to much of the infrastructure needed to create a biotech hub, one that could rival any on either coast or anywhere in the country. "Within the context of those conversations, regarding what was going on with COVID, I started to pay attention to words like Alexion," he says.



"WE HAVE NATURAL INFRASTRUCTURE THAT'S HERE AND AN INNOVATION DISTRICT THAT IS SETTING THE TABLE FOR THESE KINDS OF NEXT-LEVEL COLLABORATIONS AND INNOVATIONS."

—KATY BOREN, INNOVATION DISTRICT PRESIDENT AND CEO

"Largely on the corporate side of our city when you say Alexion, someone says 'God bless you,' like you've sneezed. The reality is Alexion is a company that sold to AstraZeneca for almost \$40 billion in the fourth quarter of last year. The molecule behind that company was 100% originated and designed here in Oklahoma City. It came from OU Health Sciences Center and OMRF in the core of the Innovation District. But it left because we couldn't scale it from a capital or from a workforce standpoint," Kanady says.

With the right investments, Oklahoma can move out of a middleman role and into something far greater. Oklahoma City's Innovation District is home to Stephenson Cancer Center, which leads the country in Phase I cancer trials. It's home to OU Medicine, the Health Sciences Center, Oklahoma Medical Research Foundation, Oklahoma Blood Institute and ultimately Wheeler Labs, and other key entities and components for biotech research.


"We have natural

infrastructure that's here and an Innovation District that is setting the table for these kinds of next-level collaborations and innovations," says Innovation District President and CEO Katy Boren. It is Kanady's bold thinking, honed by the oil and gas business, that allows him to see parallels between that industry and


drill exploratory oil and gas wells, yet they dominated the oil and gas industry. That was through owning all of the refineries and railroads. It was all about infrastructure. So, when you bring together investment and people in our city, magic happens, in this case, in healthcare.

biotech others may not yet," Kanady explains. "A little-known fact about John Rockefeller and Standard Oil is that for the first 40 years of their existence, they didn't


"I believe that we can build ourselves into a biotech hub, and not just for a year or five years. I think we can dominate for the next 30 or 40 years," Kanady concludes.



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Wheeler Labs:

From
SLICK
to **McCOOL**

Dr. Jesse McCool, who came to Oklahoma City from the East Coast in 2013, never met Tom Slick, the legendary 'King of the Wildcatters,' who led the world in oilfield technology more than a century ago, but the two men are inexorably linked by history, a shared pursuit of bold technology and perhaps a knack for being in the right place at the right time. It was Slick's 1912 gusher, the Wheeler No. 1 well, the beginning of a string of wildly successful wells, that made Slick a millionaire and inspired the name Wheeler Labs.

Co-founded by McCool in August 2020, Wheeler hit the ground running, but not in the direction he'd planned. COVID-19 rerouted the company's first 45 days, during which time, in true wildcatter fashion, McCool's Wheeler leveraged its intellectual resources to develop a mail-order at-home test for COVID-19 that is then mailed to a lab, with results in the hands of the customer in a matter of days.

"Our first mission was to come to the aid of our community," McCool says. "We were able to leverage more than 100 years of biotech expertise and we leapt into action."

But that was just the firm's opening foray. When McCool talks about the vision he and his team have for harnessing the collection of assets unique to Oklahoma City's Innovation District, it's immediately clear that the game is about to change.

McCool, who previously led Oklahoma's largest biologics manufacturing company, is a Ph.D. scientist and business leader with a track record of starting labs and building teams to take on complex biotech endeavors. He moved to Oklahoma to help build out the emerging biotech industry in Oklahoma City. Before co-founding Wheeler Labs, McCool served in various technical and leadership roles in several biotech companies, including Lonza Pharma & Biotech, a global leader in GMP biologics contract manufacturing.

Think of Wheeler Labs as an incredibly sophisticated test kitchen with the potential to help cure or eradicate diseases. Scientists at Wheeler will take the drug 'recipes' developed by big pharmaceutical companies

and make enough of them to run clinical trials, which in many cases can easily be carried out by other Innovation District entities, like Stephenson Cancer Center, within blocks of Wheeler Labs.

Its leadership team is comprised of scientists, drug manufacturing experts, novel drug developers and operations experts from around the country. There's a Wheeler Labs outpost in Lexington, Mass., a strategic decision based on the density of global pharmaceutical companies there, which "becomes the top of the funnel," for Wheeler, McCool says.

"So our big picture is about leveraging the assets that are already here: Oklahoma's low-cost advantage, the biomedical ecosystem that already exists, with places like OMRF, OU Medical Center, Oklahoma Blood Institute and Stephenson Cancer Center. That's a lot of assets already here, coupled with the critical mass of biotech companies that are also here," he says. Add to that the trained work force companies like Wheeler can make use of, and Oklahoma City's Innovation District has created a new vertical around biomanufacturing.

The idea in drug innovation and manufacturing is to save as much time as possible in the pre-production and clinical trials phases in order for each potential drug or treatment to either quickly fail or prove itself worthy of moving on to the next phase.

Since only about eight percent of ideas for drugs make it to the commercial product a doctor would prescribe, those that fail need to fail fast. The more

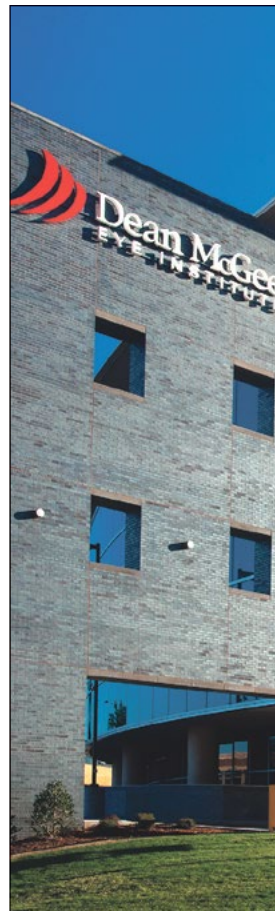
time a company can trim out of the concept through clinical trials phase, the less those potential fails cost, and the faster the successes reach the people they're intended to help.

Biopharmaceuticals, the type of drugs Wheeler is involved in developing, are the leading growth category in medicines. Familiar examples of biopharmaceuticals are the Pfizer, Moderna and Johnson & Johnson COVID-19 vaccinations. Old-fashioned drugs like aspirin or ibuprofen are categorized as 'small molecule drugs,' and are less sophisticated or targeted than biologics, which now make up thirty to forty percent of available drugs. "Biologics based drugs are highly specific, precision

medications with low side effects," McCool says.

Wheeler is steadily moving through its three-phase growth plan and will move from its current location in the iconic Zig building into a massive anchor space in Oklahoma City's Innovation District. He and his leadership team and colleagues aim to make life better for people around the world, while simultaneously transforming Oklahoma City into a hub for biomanufacturing.

Fostering the creation of entities like Wheeler Labs is precisely what Oklahoma City's Innovation District was engineered to do. As Wheeler grows, so does the number of excellent jobs it creates for Oklahomans.



Since the Dean McGee Eye Institute was dedicated more than 45 years ago, it has become one of America's largest and most respected centers for medical and surgical eye care. Many of the Institute's physicians and scientists are national leaders in their fields.

In affiliation with the University of Oklahoma College of Medicine, the Eye Institute's vision research program ranks among the top in the country with respect to funding from both the National Institutes of Health and Research to Prevent Blindness. Its dedication to training future generations is reflected in its highly competitive residency and fellowship programs, which attract talented young physicians from across the nation.

Headquartered in a 148,000-square-foot, state-of-the-art facility on the Oklahoma Health Center campus, the Institute continues to build on its world-class achievements in fulfillment of its mission to serve all Oklahomans and the global community through excellence and leadership in patient care, education, and vision research.



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Prairie Surf Media: INNOVATING Entertainment

“Oklahomans are ready for innovation. Prairie Surf is working in a thoughtful and sustainable way to help create a new industry, with good jobs in multiple fields. We’re working in stages, with longevity in mind,” Prairie Surf Media Co-CEO Rachel Cannon says emphatically.



She means that literally, as in the five soundstages available for use now at Prairie Surf, but also figuratively. The company is working, in a strategic and stepwise manner, with the Oklahoma legislature to create incentives appropriate for enticing TV production; Oklahoma City Mayor David Holt and the Oklahoma City Council; and investors and dealmakers from television studios and streaming companies including HBO, Amazon and Netflix.

At the same time, Prairie Surf is working to help establish standardized entertainment industry curriculum for Oklahoma's career and technology centers to train a work force for our state's new categories of jobs like set construction, film production or editing. This will create a deeper crew base of trained Oklahomans for the burgeoning industry to draw from. "We've been watching our best and brightest leave Oklahoma for generations," Co-CEO Matt Payne says. "We want to reverse that trend."

"We're creating an industry for Oklahoma and Oklahomans," Cannon says, "not transplanting Hollywood here."

Last March, MAPS3 made Prairie Surf Media's proof-of-concept location, its test lab, so to speak, possible. Initially they were drawn to the area in and around the Innovation District because of the exciting growth taking place and because Prairie Surf has natural synergies with technology innovators and entrepreneurs. Then Oklahoma City built its new Convention Center and suddenly there was the old one...empty. "We knew we had the technology infrastructure in place, but we needed soundstages. And because of the collaborative climate in Oklahoma City, nine months after we identified the former Cox Convention Center as a plausible home for five soundstages, the keys were in our hands," Payne says.

The next phase for Prairie Surf will be to build more infrastructure, and the Innovation District is where the

Prairie Surf continued on next page...



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technology needed for our burgeoning entertainment industry is emerging, so that's where *Prairie Surf* will build.

"Editing, visual effects, animation... all of that is high tech. It's all right here," Payne says. "From an education perspective we've been exporting a huge number of our most brilliant students for decades, and we need them here. Sharp sharpens sharp," he says, and Cannon agrees.

All of it is possible because of the people power, services, technology, investors and infrastructure that make up the Innovation District.

Payne and Cannon met a couple of decades ago in film school at the University of Oklahoma. After graduation, each moved to the West Coast to pursue successful careers, Cannon as an actress and Payne as a screenwriter.

Cannon's acting career in Los Angeles included work on such iconic television series as "Big Bang Theory,"

"Two and a Half Men," and "Mad Men." For six years she played Diedre on the hit comedy series "Fresh Off the Boat." She moved back to her home state in 2019, and her first call was to her old film school buddy Matt Payne, who had returned four years earlier.

"LA was exciting," says Payne, "But it was also enormously stifling, expensive and competitive." While in Hollywood, Payne had a successful writing career. He wrote episodic television on such hit series as CBS' "Vegas" and "Defenders," and TNT's "Memphis Beat," and was part of the production team on Fox's "24" and CBS' "Without A Trace." But he realized he could tell stories from anywhere, so he and his wife returned to Oklahoma City a few years ago, so their daughters could be with family and benefit from all the good Oklahoma has to offer.

"Oklahoma City had recalibrated itself, starting with MAPS1. The food scene was booming and we'd gotten the Thunder. I was going to move out of film, but we had the deadCenter

Film Festival and OCCC's excellent film program," Payne says.

Payne and Cannon began to strategize. They knew the potential was here. "Streaming has changed the entertainment industry. There is a huge need for content," she says. "Content" in this context means shows more than it means movies. The need for content has grown by 700% since 2013, but the available soundstage space for production has only grown by about 15%. And a high-level executive Payne and Cannon spoke with recently said that volume will quadruple in the next four years. Do the math if you must but suffice it to say that Oklahoma City is harnessing a massive opportunity. Recent economic impact numbers support their optimism.

Innovation is contagious. Oklahomans have always been bold, tenacious and creative, and when you create a district and fill it with bold, tenacious, creative people, ideas once thought wild suddenly start to seem logical, possible...even inevitable.

Since the official collaboration ended, Dr. El Amm has continued to develop the device, with significant input from Mohammad Abdul Mukit, Ph.D., a graduate fellow in electrical and computer engineering on the OU-Tulsa campus. Notably, they have programmed the device to respond to voice commands. That allows the surgeon to keep his focus on the patient rather than turning away to look at a computer screen or clicking a mouse. They also developed "markerless tracking," which allows the CT scan or other images to be superimposed using artificial intelligence instead of cumbersome markers to guide the way. Dr. El Amm compares the headset to what a fighter pilot wears—both need ready access to a lot of complex information, especially if they must make a split-second decision.

Dr. El Amm has begun using the device during surgical cases to

enhance the safety and efficiency of complex reconstructions. Many of his patients come to him for craniofacial reconstruction after a traumatic injury; others have congenital deformities. Thus far, he has used the device during surgery on a patient who was born without his right ear. The system took a mirror image of the patient's left ear, then the device overlaid it on the right side, allowing Dr. El Amm to precisely attach a reconstructed ear. In the past, he would cut a template of the ear and aim for precision using the naked eye.

In another surgical case, which required an 18-step reconstruction of the face, the device overlaid the patient's CT scan on top of his real bones. "Each one of those bones needed to be cut and moved in a precise direction," he said. "The device allowed us to see the bones individually, then it displayed each of the cuts and each of the movements, which allowed the surgeon to verify that he had gone through all those steps. It's basically walking through the

steps of surgery in virtual reality."

The OU Office of Technology Commercialization is pursuing intellectual property protection for the invention. In addition, Dr. El Amm has begun partnering with his colleagues in neurosurgery, orthopedic surgery and OB-GYN to develop further applications. The future is promising for a groundbreaking device that was launched from a conversation and a desire to collaborate.

"This was a highly complex and challenging project, which made it exciting for everyone involved," Potts said. "We solved technical problems that no one else has, and we've done it right here in Oklahoma City. Our partnership was mutually beneficial, and it was only possible because the Innovation District provided the forum where we could discuss and collaborate."



The power of **DISCOVERY.**

In the heart of the OKC Innovation District, OSU DISCOVERY is a nexus for collaboration.

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Whether it's a daytime meeting or evening event, our staff is here to serve OKC's Innovation District.

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Oklahoma:
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of
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The United States has been a global leader in aerospace technology since the Wright Brothers took to the skies in 1903. Oklahoma's aviation prowess was arguably cemented just 30 years later when Wiley Post made history with the first solo flight around the world. Less than a decade after that, the first 1,400+ acres now occupied by Tinker Air Force Base were donated to make that facility possible. Today there are more than 290 aerospace firms in the area producing some \$11.6 billion in goods and services locally.



The next frontier in aerospace has arrived and again Oklahoma is on the leading edge. One such technology is autonomous system technology, also commonly known as unmanned aircraft or drones. In March, the Oklahoma City Innovation District convened some 50 innovation experts at its annual Symposium, virtually, and the message was clear: Oklahoma is well-positioned to lead in the advancement of autonomous systems technologies, starting in the aerospace industry.

"Autonomous system technologies have so much impact on our culture and have the chance to make Oklahoma a better technology state, from aerospace to energy

and biotechnology," Dr. Kristian Olivero, the Technical Director for the Oklahoma City Air Logistics Complex at Tinker Air Force Base, said. "Oklahoma and the Innovation District are helping make these autonomous systems a resource that makes Oklahoma a great center of technology for our nation."

Oklahoma's unique mix of research capabilities, existing aviation and defense entities and efforts like the establishment of the Innovation District are already succeeding in bringing other categories of new aerospace business to Oklahoma City. For example, San Diego based Kratos Defense & Security Solutions is manufacturing its unmanned aerial vehicle, the Valkyrie, in Oklahoma City. Recently Kratos announced it won a \$37.8 million contract to provide the Valkyrie to the U.S. Air Force. Skydweller Aero, a U.S. Spanish aerospace company, announced in July 2020 that its United States headquarters will be in Oklahoma City. Skydweller Aero develops renewably powered aircraft for defense and commercial industries. The company's plans include 120 aerospace engineering and field technician jobs in the metro.

The Choctaw Nation of Oklahoma has emerged as a national leader in responsibly promoting emerging autonomous system technologies, specifically aviation technologies, and James Grimsley, the Executive Director of Advanced Technology Initiatives with the Choctaw Nation of

Oklahoma, believes the value of this year's Innovation District Symposium is high as we all look forward to seeing our region prosper. "We are on the cusp of revolutionary change in transportation technology," Grimsley said. "These changes can translate to significant economic opportunities, as well as safety and health benefits for our society. But many technical and policy challenges remain to be solved before society can fully benefit from these technology advancements."

Innovation experts believe Oklahoma can make use of its density of technology, aviation and research entities to broker key research agreements that will bring aerospace and defense industry to Oklahoma.

That's exactly the kind of collaborative, forward thinking being fostered at the recent Innovation District Symposium. "We have an opportunity in front of us to leverage Oklahoma's aerospace industry strength and workforce to create a cluster that attracts innovators from all over the world to build their products and grow businesses in this community, Symposium speaker, Peter Shannon, Founder & Managing Director of Radius Capital, said. "When we do that, we will put Oklahoma on the front wave of innovation across an entire spectrum of key technologies that will drive our society for the coming decades as we build digital systems that weave into the physical and make autonomous systems successful."

INNOVATION and REINVENTION in ENERGY, OIL & GAS

Large, legacy industries are in transition. Innovation technologies in applied artificial intelligence and machine learning, process automation and business intelligence and analytics, and large-scale data are at the forefront of the reinvention of the energy and oil and gas sectors.

Baker Hughes, a leading energy technology company, operates its Energy Innovation Center in the core of the Oklahoma City Innovation District. Baker Hughes is developing innovative techniques in oil and gas production to supply more efficient and environmentally friendly energy. “We are passionate about decarbonization, technological innovation and keep challenging our company and customers alike to think differently about sustainability and the future of our industry,” says Maki Ikeda, director of the Energy Innovation Center in Oklahoma City.

Transformational mergers in the industry landscape also are occurring. Devon Energy Corporation recently completed a merger of equals with Tulsa, OK based WPX Energy in January. The combined company retained the Devon Energy name and is headquartered in the Devon Tower in downtown Oklahoma City. The strategic combination creates one of the largest unconventional oil producers in the U.S. with an enterprise value of approximately \$12 billion.

Entrepreneurs are disrupting and reinventing technology, process management and data analytics in the oil and gas business, as well, increasing efficiencies and boosting the bottom line for companies. With thousands of new horizontal wells, hundreds of thousands of landowners and millions of acres to keep track of, the complexity of the data in the oil and gas industry has grown exponentially, especially since 2000. However, the software solutions to meet that complexity have not grown. Fundamental questions like “how much

money did we make last week?” or “how many barrels of oil did we produce yesterday?” cannot be answered in real-time. That’s where Zeno Technologies is able to provide answers to those questions and many more.

Zeno is a result of the partnership between West-Coast venture capital firm, SVC and Oklahoma City’s Echo Energy. Acknowledging that there had to be a better way to make capital allocation decisions, they formed Zeno to turn predictive modelling on its head. Zeno’s platform enables oil and gas companies to quickly and accurately make decisions based on real-time information from multiple sources. Based in Austin, the company has plans to expand to Oklahoma City’s Innovation District to better service local oil and gas companies seeking to implement Zeno’s tools.

Sealy Laidlaw, Zeno Technologies CEO, explains. “Right now, what happens is you have a reservoir engineer putting together a lot of data, based on information gathered from different sources at different points in time. They are then consolidating their data sets and combining it with data from the accounting team, the operations team, the land team, the finance teams and so forth to then present to executive management and decide whether to make an investment or not. I think the challenge right now is that a lot of the data lives in different silos, it lives in different locations, everyone is working within their own system, and the systems don’t always talk with each other.”

While there are some technologies currently in the oil and gas marketplace that allow for some predictive modelling, they’re unwieldy and outdated, offering



users a fiercely inefficient set of “rows and columns of data that are just spit out in PDFs which have to be manually collected and then manipulated into a presentation format, just to answer questions like how much do we have or what should we do with our dollars,” Laidlaw says. Say, upon running one scenario, you want to ask a slightly different question and rerun the query. No can do. You then have to go back and run the whole thing again from the top.

Joel Carusone, Chief Technology Officer at Zeno, says that the benefits of the company’s technology go beyond capital allocation decisions. There’s an environmental gain. “There is an ecological benefit because when projects are not financially viable, those resources stay in the ground. They’re not extracted if the data doesn’t support the decision.”

Innovations in technology often lead to additional societal and economic benefits beyond their initial contributions. This data driven approach amounts to less but better, more precise, eco-friendly and profitable drilling, and also aids in stemming the boom-bust cycle sometimes experienced by the oil and gas industry, as Carusone explains, “If you are able to actually do the right analysis to decide whether or not to proceed with a project, the likelihood of success goes up because you’re using better data, you’re making better decisions and so I think the boom-bust can be smoothed out. We can’t control commodity prices, but we can be more efficient in capital allocations, which helps maintain long-term viability.”

It’s this kind of bold thinking and technology, applied intelligently, that can flip the thinking of, or bring innovation to, a whole economic sector. Legacy oil and gas companies and energy tech entrepreneurs in Oklahoma City are working smart and innovating technologies to redefine an established industry.

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