

# LIFE SCIENCES LEADERS

North Carolina is home to 830 life sciences companies that directly employ 75,000 people, emerging as a leader in biotechnology, pharmaceuticals, medical devices and agricultural biotechnology. In 1984, the state's General Assembly established the North Carolina Biotechnology Center to encourage the development of the life sciences across the state.

North Carolina is ranked among the top three states for biotechnology strength, according to *Business Facilities Magazine*. North Carolina is among the world's largest and most mature life sciences clusters and is highly specialized in biomanufacturing and clinical research.

*Business North Carolina* and the N.C. Biotechnology Center recently gathered a panel of biotech experts and leaders to frame the issues around the life sciences industry. The panel was moderated by Executive Editor Chris Roush and has been edited for clarity.

*Photography by Bryan Regan*

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The discussion was sponsored by:

- N.C. Biotechnology Center
  - N.C. Central University
  - NC Life Sciences
  - Pappas Capital
  - Pitt County Economic Development
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## WHAT DO YOU SEE AS THE BIGGEST CHALLENGES IN THE LIFE SCIENCES INDUSTRY?

**JORDAN:** The biggest issue that I see is access to capital to fund some of the exciting innovations that the biopharma industry is creating. As we understand more about disease and wellness, it takes capital to get these technologies approved.

**EDGEYTON:** I agree with that. But I also say probably from our perspective, the workforce for the growing industry is a big challenge. We are facing shortages of workers in the thousands. And so we

want to make sure that the state is ready for the next generation of opportunities that are coming our way.

**BAXTER:** We think that microplastics are one of the most pressing issues today. We're as a species depositing about 1 million metric tons of plastic waste every single day. And we are also consuming too many microplastics every single week, which has been linked to things like cancer, heart disease, inflammation and fertility. And we're just really scratching the surface of all of the health issues. We think that that's an area of study that needs to be significantly more funded and addressed.

**PAPPAS:** I'm gonna flip it around because everyone talks about capital, and I agree with what Doug says in terms of manpower. But the other side of the coin in terms of capital for the market is really entrepreneurial leadership to lead and build our companies. If we have those correct people in place, I think they're going to be able to raise money. We've shown that money can come into the state if we've got the right leaders.

**SMITH:** I think one of the biggest concerns that we may have is making sure that there's enough people of diverse backgrounds that can get jobs in this industry.

## PANELISTS



**Dillon Baxter**  
CEO, founder, PlantSwitch



**Doug Edgeton**  
CEO, N.C. Biotechnology Center



**Patrick Jordan**  
CEO of Mycovia Pharmaceuticals  
and managing partner at  
NovaQuest Capital Management



**Mark Kuenzi**  
Head of PMO at FUJIFILM  
Diosynth Biotechnologies  
Holly Springs



**Bill Monteith**  
Biotech Manufacturers Forum  
director, NC Life Sciences



**Art Pappas**  
CEO, founder, Pappas Capital



**William G. Smith**  
Director of development for  
Biomufacturing Research Institute  
and Technology Enterprise,  
North Carolina Central University



**KUENZI:** In Morrisville, we've had a site there for quite some time and we are currently building one of the largest bio manufacturing facilities in the country in Holly Springs. It's going to be a \$2 billion investment (increased to \$3.2 billion investment since this discussion). And with that comes a lot of need for talent. That's one of the biggest needs we have as a company is to not just attract talent, but to grow it and sustain it in this area. We're going to need talent for years to come. And we're looking for a diverse set of talents and people that have real skills when they come into the workplace. Not just book smarts, but people that have touched the equipment and really know how to get in and work in the industry.

**MONTEITH:** Interestingly, I just finished meeting with most of our members who have manufacturing facilities in the state. The No. 1 thing I heard was our workforce – not just entry level but also mid-management level positions. Currently, there isn't a pipeline to fulfill those. Manufacturing sites have to go outside the state, which is something we would rather not be doing.

I'm going to throw one other thing in there that I haven't heard yet. The second biggest thing I heard was infrastructure – wastewater management, water availability, power reliability. North

Carolina is known for the education and industry collaboration that occurs, especially in life sciences, to work on workforces. But I think what we're suffering from right now is our success. We've grown extremely fast. Last two weeks, there were three new life sciences companies that have been announced coming into the state. Those are all drawing on the same resources. And that's something I think we need to really be focusing on as we move forward to be able to maintain our position and become one of the central biomanufacturing hubs.



### HOW DO WE GET THOSE TALENTED WORKERS INTO NORTH CAROLINA AND INTERESTED IN THE INDUSTRY? HOW DO WE TRAIN THEM?

**KUENZI:** One of the things that's a real advantage for us here is that we have a university and community college system

that really works together. It's not in separate silos. There are a lot of programs that are available. But that's not all that we really need. If you get a bunch of engineers that come out that have never touched things like a bioreactor, it's going to be difficult for them to come in and really contribute in a meaningful way. We have things like the NC Biotech Center; we have things that also give people some real practical experience. But I think we're just beginning, and so how do we continue to expand and increase the collaboration among those programs to really make this a place that people want to come and work? It's a real wake up call for us to say hey, we need to grab this and continue to work on talent in this area.

**JORDAN:** We start in a position of strength. And I love that stat of really coming up on Boston and San Francisco and San Diego – that North Carolina is holding its own now and No. 4 in the life sciences market. It seems like there needs to be maybe more from that strong educational system as to that next step of how do you help people get to the job. It seems to me that's the divider.

**SMITH:** We have the programs to expand the processing training to six other campuses across North Carolina – five HBCUs and UNC Pembroke –

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to train people on how to get these entry-level jobs. So how do you get that to other HBCUs across the state to train these people who would never have thought they would get jobs in this industry? And it's all targeted to one or two counties, but people in these other counties live in the poorest counties in the state. To put someone in a job in the life sciences industry with a salary starting at \$55,000 or \$60,000, think about the economic impact you're going to have in someone's life and the change it has for North Carolina as well.

**PAPPAS:** There are two challenges. I think I agree with everything that's been said. And I think what's been attractive to some of the larger companies coming in, including the ones that just announced, was the workforce we have here and the education, the technical education coming out of the community colleges. But it's the leadership aspect that we really don't have in place in the community. My sense is in the community colleges, that's part of the need. It's not just the entry-level positions. It's who's going to supervise and grow and do the recruiting and the development of staff.

**MONTEITH:** So I'm part of NCBioImpact as well, which basically is a coalition of the academic institutions that are providing a lot of this training. We're trying to rebrand to hit some of the points that you were just talking about. There's an awareness problem. A lot of the people don't realize a lot of these programs are in existence. And to be honest, I'm not sure that we've done a good job on the technical side or the leadership side. And I think we need to be able to put together this awareness program and let people, especially other HBCUs in the state, be aware of what's going on. This is a statewide issue that we need to be focusing on.

**EDGETON:** Right now we have a need for about 12,500 trained workers. We also need people in the higher ranks who can actually run the organization because almost every one of those positions is recruited from outside the state. There are about 600,000 students in our community college system, and about 4,300 people a year graduate with a master's or Ph.D. in the hard sciences, and another 4,500 or so with a master's or higher in engineering. Attracting those people to the workforce will be really great, but they haven't touched the equipment. So we have to have these intermediate steps to get those folks ready to go.



**DILLON, WHAT'S BEEN YOUR EXPERIENCE IN GETTING EMPLOYEES THAT FULFILL YOUR NEEDS?**

**BAXTER:** We're still a young organization growing quickly. We're hiring on pace about a new employee a week and these are typically fairly key hires for us, kind of upper level. We've had great success finding industry professionals in the plastics industry here. It seems to be a very attractive place for people who want to work that don't currently live here and we've been able to get some really good talent to want to relocate here. So I think we haven't really seen too many issues. We're still young and fairly small. So it's been overall good so far, and I think there's a lot of attraction to moving to the Raleigh-Durham area.

**JORDAN:** One thing we should do is think about upskilling people over a career. If the university becomes something that says, 'Well, you've got your entry-level job, you've been there a few years, we want to promote people and bring them up in the industry.' If they had opportunities to learn leadership skills or project management skills, these things that partner with their technical abilities, we can bring them up quicker through the ranks and keep them here so they don't go take another job elsewhere.

**MONTEITH:** For the manufacturing side, we need the talent that's coming out of the two-year colleges, the four-year universities and the graduate schools. But another big thing I heard were trades. We need mechanics trained at the vocational programs. So the high school levels are also very important to be thinking about as well.



**LET'S SHIFT GEARS FOR A MINUTE. FOR PEOPLE WHO LOOK AT INVESTING IN THESE COMPANIES, WHAT DO YOU LOOK FOR WHEN YOU'RE DECIDING WHERE TO INVEST?**

**JORDAN:** The cost of developing a drug has only gone up and the complexity of doing so has also gone up. So inevitably, it puts pressure on these biopharma companies to raise money in equity markets that have not been all that friendly of late, especially coming out of

the 2021 peak for biotechs. And debt has gotten expensive and restrictive. When we look at companies, you want a strong leader and a strong team that is executing on a good business plan. The second piece is technology. And then third is an execution mindset that this is a company that can navigate the difficult pathway to get to approval. That takes capital because it's a long process even when you're at the final stages.

**PAPPAS:** My view was the other side of that coin, and that is if we have a good leader that's here building a business, he or she should be able to get capital. When I look at our portfolio companies, a third of our portfolio is in this region. A third is on the West Coast, the other third's in the Northeast. We've been able to syndicate with outside investors coming

in as long as we have a good leader running that operation. Our business is such that we need the capital to take it into the manufacturing side to develop it.



**EDGETON:** Prior to the pandemic, everybody felt like they had to be near the VC or the VC needed to be near them. But now people are much more open to being located in other places. We set a goal of attracting \$4 billion of outside

capital coming into the state in 2020. And we're about \$3.5 billion into that.

## **DILLON, HOW HARD WAS IT FOR YOU TO RAISE CAPITAL AND TO GET INVESTORS?**

**BAXTER:** There was a bit of a dry spell in early stage financing a little over a year ago. And that was a difficult time period. And then we found some pretty good momentum after that. So we recently closed on an \$8 million bridge round and we're about to close on another \$15 million. I will say, we've been in North Carolina for about 10 months now. I haven't had one discussion with any early stage investors in North Carolina. So all of that capital has come from outside. It's interesting because I've met quite a few really promising startups. But it doesn't



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seem like the match is there for early stage capital in North Carolina. If you're a good entrepreneur with a good company, you'll be able to attract capital from wherever. But there needs to be more of it here. I think that's underdeveloped.

**KUENZI:** One of the things we see at Fujifilm is that it sometimes takes so long to get the capacity that you need. You either have to build facilities, or you have to try and arrange and fit yourself into a company that is a contract manufacturer. We see the future as something that's very modular and agile so that we can have buildings that are easily replicable and can be partnered with a customer to bring them up to speed. On the backside of that, not everybody has a big billion dollar blockbuster but they need manufacturing capabilities.

**PAPPAS:** I'm sure you see it as a business opportunity also because a lot of our early stage companies go to Korea to Samsung to do that kind of work. And we'd love to be doing it here in the United States.

**HOW MUCH IS THE INDUSTRY DOING IN TERMS OF MENTORING? I HEAR A COMMON THEME HERE THAT WE'VE GOT SOME GOOD STARTUPS THAT HAVE GOOD IDEAS, BUT THESE PEOPLE ARE IN THE HARD SCIENCES AND MAY NOT KNOW HOW TO RUN A COMPANY.**

**JORDAN:** My impression is that mentoring is more individualized, that it's on the back of an enterprising entrepreneur to go find it. I don't think that's the right way for us to build enduring business. It would be great to set up more of this as part of the ecosystem where there is a group of people. I'd be delighted to share the things that I've learned.



**MONTEITH:** My last three companies were all startups. You have a great scientific idea and you have a number of scientists forming a company and the operational parts of that are missing. They don't necessarily mentor versus looking to hire it in. So they try to find people with the experience and the levels of knowledge that are needed to fill those roles versus sort of mentoring within. That's what we did at StrideBio.



**EDGETON:** Each of the universities has executive and residence-type programs, but a lot of people don't know that they exist. We have an entrepreneur in residence here at NC Biotech. We have three former CEOs of small startups that are here to help companies in our portfolio. But it's small.

**BAXTER:** One thing that has been particularly effective that I've participated in is NYU's Endless Frontier Labs program. That's essentially an accelerator for deep tech startups. They did a fantastic job of bringing in not only experienced founders and CEOs but also experienced investors. So you got both the mentorship and the access to capital in one fell swoop. I think that's something that could easily be replicated with the strength of the universities that we have here. I don't see any reason why there shouldn't be a program that mimics that format. I met great people through it.

**PAPPAS:** UNC does a great job with one of those programs. Duke does as well, and N.C. State does it on the veterinary side. But I wouldn't underestimate the power of what the Council for Entrepreneurial Development has done to our area and helping not just life sciences. The coaching that I observe that goes on in areas is akin to mentoring in a major way.

**EDGETON:** We've got a program right now going on, and we have the ability to provide funding and coaching and library

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sciences for early stage companies where our regional offices are located right now. That's another type of thing where you get the mentoring.

**IS THERE AN AREA OF LIFE SCIENCES OR BIOTECH THAT THE STATE IS KIND OF LAGGING BEHIND ON OR MAYBE NEEDS MORE ATTENTION TO GROW?**

**PAPPAS:** If you kind of look to the future, and you see what is going on with artificial intelligence, the next wave of AI is going to be quantum computing. Maryland is putting in place a huge quantum computing center to deal with the future. If you want to leapfrog that kind of technology, that is what we should address.



**WHAT'S ONE THING THAT YOU'RE EXCITED ABOUT IN TERMS OF THE INDUSTRY AND WHERE IT'S HEADED IN THE NEXT FIVE TO 10 YEARS?**

**MONTEITH:** The thing I'm excited about the most is the technology that someone just mentioned, that hasn't really got into the approval realms yet such as cell and gene therapy. That type of thing is going to become the wave of the future

for medicine. And it hasn't really hit the mainstream yet.

**KUENZI:** I think there's a lot of opportunity and transformational things that need to be done on the backside. What can we do to shorten the time to get it to the market? What can we do to make it easier for patients to get this regionally? How can we respond to changes in a different way from the manufacturing side?

**SMITH:** I'm excited about the partnerships we're creating with the industry. We do something where we bring in different companies in the industry to meet with our students to learn about their company and talk about the opportunities for advancement. I'm also excited about the educational things we're doing with K-12 folks to talk about life sciences. I think that will pay us big



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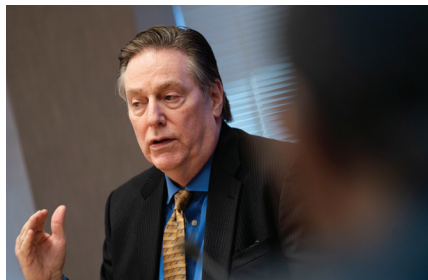
dividends with getting employees for the companies. And also, I'm excited about the point that hopefully one day all this growth won't be in the Research Triangle Park. It'd be in rural North Carolina in Tier 1 or 2 Two counties.

**PAPPAS:** I'm most excited about that transformation in the state. We haven't even talked about marine biology and what's happening on the coast, and we haven't talked about the agricultural side. We're going to see some profound development that's going to bring all sorts of different opportunities into rural areas.

**BAXTER:** I'm particularly excited to see the advancement of clean technology. I view clean tech as preventative maintenance for human beings. Let's address a lot of these environmental

issues before they start impacting us personally. I think we're about to see an inflection point of the scaling of that technology. If you look at most major corporate commitments, they typically have timelines of 2025 to 2030. There needs to be a pretty massive scale up in the supply chain in order to help them honor those commitments.

**EDGETON:** I'm also excited right now with some of the programs for people in all stages of their career finding a career in life



sciences in North Carolina. I think there's opportunities and lifetimes across our state, not just here in RTP but across the state.

**JORDAN:** Maybe from another vantage is the proliferation of small companies that make it. We look at R&D approvals in the last several years. Most of them are coming from companies that are outside of the large pharmaceutical top 20 companies. Oftentimes it's their first drug. The more that happens, the more it starts to carve a path to market that'll create more leaders that know how to build small and take it to the finish line. But it'll also create a kind of knock-on effect for other jobs because these small companies will look to outsource their manufacturing and find suppliers that can meet their needs on a nimble basis. That can create more growth and sustain this great trajectory that North Carolina is on. ■

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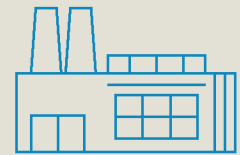
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