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FLDM.OQ - Fluidigm Corp at Cantor Fitzgerald Global Healthcare Conference (Virtual)

EVENT DATE/TIME: SEPTEMBER 16, 2020 / 8:00PM GMT

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PRESENTATION

Kyle Mikson - *Cantor Healthcare - Analyst*

Hi, welcome to the Cantor Virtual Global Healthcare Conference. I'm Kyle Mikson. I cover life science tools and diagnostic stocks at Cantor and we're pleased to have Fluidigm here with us today.

Fluidigm creates, manufactures and markets technologies and tools for life sciences' research including prep and analytical instruments for mass cytometry, PCR, library prep, single-cell genomics and consumables. The company is playing a large role in COVID-19 testing effort which I'm sure we'd like to hear much more about in a few moments.

From Fluidigm, we have Chris Linthwaite, the company's President and CEO. If you have a question for Chris, please e-mail to me at kyle.mikson@cantor.com and I'll relay it to Chris at the end of this presentation. So, thanks for being here, Chris. I'll hand over the floor to you.

Chris Linthwaite - *Fluidigm Corporation - President & CEO*

Thank you, Kyle, and I want to thank Cantor for the invitation to present at your Healthcare Conference.

So here we go, so the Fluidigm -- hopefully you can all see the slides that I have up, right now it's Fluidigm Corporation lead slide.

First, I am joining you today from San Francisco. The second slide here is this presentation will include some forward-looking statements and also there's discussion and disclaimers or a safe harbor statements related to non-GAAP financial information and the like. And for a full list of all of our safe harbor statements and such, we'll refer you to the Investor Relations portion of our website, it's fluidigm.com.

So, the goal for Fluidigm is really to improve life through comprehensive health insights and we're looking at three different dimensions to health insights. One is the discovery of new insights related to health and disease. The second is identifying meaningful biomarkers from this analysis and deploying those and utilizing those, we're accelerating the development of more impactful therapeutics.

From a business perspective, the key investment highlights, we're providing leading solutions for high throughput infectious disease detection, a market that we today believe is a $4 billion plus, which is the SARS-CoV-2 diagnostics market.

Second, Fluidigm is a leader in high-growth and underpenetrated $3 billion plus immunome market which I'll discuss a little bit later in the presentation.

We're very well-positioned to benefit from the tailwinds in COVID-19 testing, infectious disease writ large and immuno-oncology market that leverage many of the same tools that are being deployed for SARS-CoV-2.

We're demonstrating clinical -- through supporting massive numbers or amounts of clinical research around the world, we're really driving utilization and utility of that information which is creating virtuous cycle of publications and then deployment of those insights into practice.

Our business model drives utilization and consumables pull-through, so we have an instruments placement model with the focus on accelerating and sustaining durable revenue pull-through in recurring revenue streams. In addition, we've been focusing over the last few years on incremental operational efficiencies that will underpin and support our long-term revenue growth and create a virtuous cycle or reduced cash consumption and ultimately expanding earnings per share.

The company itself is almost 20 years old. It's more than 550 employees worldwide. In 2019, we generated almost 117 -- around $117 million in annual revenue. Our margin profile is attractive on both the GAAP and a non-GAAP basis.

We have three principal locations with our headquarters in South San Francisco. Our manufacturing operations occur both in South San Francisco to a lesser extent and the majority of our operations occur in a combination of our Singaporean operations, and a large facility that's been one of our fastest growing that's out in the suburbs of Toronto in Canada.

Our mass cytometry publications had been on a continuous acceleration for a number of years and we just surpassed the 1,000 number of publications. And it's an IP-rich with more than 670 issued or pending patents worldwide.

At its core, Fluidigm is harnessing the power of two proprietary technologies. On the one hand is our CyTOF technology, which is a novel combination of the advantages of flow cytometry and mass spectroscopy and I'll talk about the way we're deploying that in both the suspension-based analysis at a single cell level as well as in the issue -- in the context of tissue and understanding high complexity image analysis for tissue in its contextual or native state.

The second is microfluidics and our proprietary microfluidics technology has a number of very durable benefits that are applicable to many different questions but the COVID one has been probably the one that's got the most heat and light in the near term. At its core, we do miniaturization of reaction volumes and drive a tremendous number of reactions and ultimately a number of tests and answers that we can derive from the single experiment on a -- an automated platform.

Most of the heat and light in the near term, certainly since February has been focused on COVID and the market opportunities related to COVID or SARS-CoV-2. Today, diagnostic and surveillance has been the dominant narrative. We generated as a requirement for high-throughput a tremendous high-throughput testing which requires in our perspective millions of tests a day to be deployed worldwide.

These markets are requiring flexible and efficient solutions, the ability to look at multiple different marker combinations and to drive with high reliability and with the robust supply chain and with high availability of product to test at massive numbers for diagnostics and surveillance purposes.

As we look to the future, there's a need and we're really in that wave, it's just beginning now today which is to integrate newer pathogens to look at things like pan-respiratory panels and other syndromic panels and to broaden durably in the screening and screening and surveillance of much larger numbers. In the early days, it was around diagnostics. Diagnostics continues to be a very important portion of the market but you're seeing both the broadening and the number of pathogens, potentially a number of questions that need to be answered. And the second is to increase the asymptomatic screening and surveillance programs which are critical to return to work, return to school and other elements of getting our global economy back on its feet.

The second portion around COVID-19 as it relates to Fluidigm in particular is around immune profiling. And so today, characterizing immune response, conducting longitudinal studies of the population that had been exposed to SARS-CoV-2 is critical. There's a need to stratify population response to identify new biomarkers for therapeutic intervention as well as to accelerate vaccine and therapy development and to have the associated data on those patient populations that are part of the clinical trials.

And so, immune profiling is really critical to all three of these questions and it's getting tremendous utilization today as we're dealing with the global pandemic. In the future, we envisioned the need for more tools and toolkits related to future pathogen outbreaks and really building it up preloaded kits and value packages that are ready to be deployed for future pathogen questions and population characterization of immune response for the infected populations.

Let's spend a few minutes discussing SARS-CoV-2 in the U.S. testing instance. There's been -- the market research is all across the board but from the Fluidigm perspective, the symptomatic testing, which is one portion of the overall market is at least a $3 billion market today, in 2020. It's a market that's really been created overnight since the outbreak began in the U.S. in the February, March time period.

We've bifurcated the market into two buckets, the needs for high-throughput. So, in our definition that's greater than 750 tests per day per site and then lower throughput. And so the Fluidigm value proposition which I'll step into in a few minutes is really focused on the 750 tests or greater per day that best utilizes the incredible throughput per system of our platform. And we'll talk about our testing but essentially -- and that's in the next slide or another two slides from now.

The second is asymptomatic testing, which is a market that's really just emerging. We think the market potential for that is between 1 and 10 million tests per day and their market research and statements that kind of across the spectrum but there are some that are quoting 3 to 5, others as much as 10 million tests per day, that are required really to compartmentalize and understand the underlying prevalence rates in the population.

And they're critical for the issues du jour, which is -- and we used in the bottom left hand quadrant of the right half portion of the slide you're looking at, is the needs of private industry for athletic and professional associations for tourism, travel, the academic, so which would be broadly the K-12 market and the university and colleges systems, all are looking to try to deploy asymptomatic testing or screening programs today which are generating potentially massive numbers of samples that need to be processed in high volume with rapid turnaround times.

The majority of that business is largely we think are going to be focused in the large reference labs, in the small and medium-size clinical labs as well as the academic labs that sit adjacent to -- with university hospital systems. And so it's a virtuous cycle of demand generation that's occurring and really needs right now from the group in the bottom left and how to service those needs. We think the majority of that business is going into kind of that top quadrant at the large reference labs, small, medium-size clinical labs and academic labs today. And our business motions and commercial activities reflect that thesis.

The current customer -- the kind of one distribution of COVID diagnostics [big] testing for the U.S. by institution type is reflected here. So, this is just kind of a different way to show that more than half in our estimation of the testing done in the United States today is occurring in

commercial reference labs of all sorts of sizes.

The second largest segment is occurring the academic medical centers. Most of those academic medical centers are medical centers are adjacent to large land grant universities and large research communities as well as urban population centers. And the balance of the testing for the diagnostics purposes that's occurring on premises is occurring in these community hospitals and healthcare networks and public health labs. So, this is a rough approximation from our point of view of the distribution today of symptomatic testing volume.

I like to transition a little bit to talking about the Fluidigm technology in our integrated fluidic circuits which are really the core technology that's driving our value proposition and SARS-CoV-2 testing. So, I have both the schematic and the slide, I think it well presents and I'll show it -- I'll talk it through in a second but here is, if you can see on the camera, is an example of one of our chips.

Our chips are approximately the size of the -- same size of the 384-well plate. So, they're very consistent with liquid handling and robotic solutions that had been optimized for microtiter plates but we created a tremendous amount of density and information and testing that can occur on a similar form factor. So, starting in the outside is where we -- we have inlets that you can add today. So, we have a number of these chipsets. The workhorse today for COVID testing is the Advanta Dx 192.24 IFC.

That means you can take inlets for 192 individual samples and titrate or reference up to 24 different pathogens simultaneously. That's the power of this technology and so as you can see, you start with the assays on the outside and those get added in, pipetted in.

On the interior of this chip is where you introduce the patient samples and then we use an automated loading device that takes those wells from the outside and then mixes them at nanoliter scale which is the blown out schematic that's shown here below in the callout box into the core center of the chip.

So, it's in a 3 -- approximately 2-centimeter square -- 2-centimeter square -- rectangle or -- yes, rectangle on the core of the chip. So, that's really where all the action occurs and all the mixing occurs but then it's moved into a reader and I'll show that here in just another minute which describes the entire workflow.

So, the total system solution from a Fluidigm perspective is a Juno preparatory system, which is where the loading occurs, the migration of the outer assays with the patient samples that goes into that interior microfluidics chamber. After the mixing and loading is completed, then it moves on to the Biomark HD real-time PCR system, which is really the detection platform.

And so we'll talk about it later on but about every 30 minutes, you can generate answers off of the Biomark HD as you continuously transition chips processing throughout the day. The core kit that we sell has a reagent kit components, all included in one package and then they're integrated or added on to the physical cartridge which is a proprietary technology.

Fluidigm is working -- really building a hub-and-spoke-based model. So at the hub is you have our IFC technology and we have multiple configurations of these chips. We offer them in the 48.48, 96.96, 192.24. We have others for cancer, oncology, applications that are called 8.8, all of it goes down to what's the batching, the number of samples that you want to process and what are the number of questions you want to ask or answer.

And initially in the first hours of the outbreak, we focused on the laboratory developed test markets. So, we were providing the core components and then the end research or the CLIA lab, high-complexity lab was then developing emergency use authorization submissions and then filing those with the FDA. We continue to support that business. That was the -- and that is the -- it continued to be adopted and utilized.

We did it for nasopharyngeal which was the gold standard at the time of the early period of the outbreak but we felt it would be very important to augment this menu with a preformatted Fluidigm branded kit solution, and that was our Fluidigm extraction. And we focused on where we thought the future was going to be in -- using saliva as a ubiquitous substrate and eliminating the extraction-based chemistries and approaches that were facing significant supply chain bottlenecks and also driving more efficiency.

And we're very successful in that -- in that trial development and technology development and that's being broadly commercialized since our emergency use authorization was issued in August, I think on August 26th of last month.

In addition, we're developing pan-respiratory panels and we're also creating novel tests which include a multiplex barcoded solution that will drive incremental density of tests on the same chip without any physical software upgrades nor a change in major chemistry nor a change in the automation or the instrumentation.

And with that, delivering the promise on that and a part of this had been funded by RADx, a grant, which we'll talk about here another moment. There's the key part of -- we're continuing to build out spokes on the wheel around this hub of our technology.

We've been working with U.S. government organizations including the Department of Human and Health Services, the FDA, the NIH and the RADx program, the Department of Defense with their ECHO program as well as public health agencies at the state level and the local level to make this technology available to the U.S. population.

Some of this has been in the public domain which includes also a very important grant from the RADx program. We were in the first class of RADx awardees. We're awarded a $37 million grant. We just recently announced the successful achievement of the first milestone related to that award which occurred at the very beginning of August.

And you can see some of the things that are occurring in the more public -- outside of our traditional trade journals that had been talking about the developments and the advancements of our technology and how it's being deployed. There's two elements to the $37 million grant. One is the majority of the funds are going towards a very significant increase in manufacturing capacity. We anticipate exiting the first quarter with the ability to support more than a million tests per day, testing capacity on PCR.

In addition, a portion of the funds are going towards funding the barcoding technology which will increase beyond our industry leading 6,000 tests per system. We'll have a potential to expand beyond -- as much as 25,000 or greater tests per system per day.

Okay, I've seem to over-advanced, so give me a second. So, what is our Advanta SARS-CoV-2, our real-time PCR assay? So, I'm not going to spend a lot of time in the interest of time but the total instrument run time is less than three hours from end to end, using any ubiquitous saliva collection sterile device, you don't -- do not need proprietary vial transport mediums or any other buffers.

We go through heat and activation, we go to a one-step amplification. We prepare and load on -- using our Juno or controller systems, then go to detection and then feed into LIMS, reporting systems and apps that then give the results back either to the lab or the individuals.

So again in summary, no need for viral RNA extraction kits. It's a modular approach that can support at up to 6,000 samples per -- in controls per day per platform. You get a 192 samples per batch in less than three hours of instrument time. And once you're up and running, you're getting answers approximately every 30 minutes. That's all done through saliva collection in a convenient and stress-free and pain-free approach. And in addition our approach is about 120 hours, room temperature stable, so it doesn't require any special refrigeration or buffers.

Our deployment model, we'll give you a couple of examples of how we're taking this technology to market. So, we had an opportunity to share with public health officials around the United States and university systems around the United States a few weeks ago three basic models in how the Fluidigm technology is going to market.

So now, what we kind of coined, in connecting the community against COVID-19, one of the core -- one of the first options, the ways you experience our technology is activating academic labs to provide community testing capabilities. So, what that means is there -- providing both for their own university community and then extending their capabilities into the greater community around them.

We have two examples of that in the public domain, one is the University of Oklahoma and the University of Oklahoma Medical System, which started by providing testing services to their university campus. And then it's expanded in their healthcare system and then it's expanded then into eastern half of Oklahoma and supporting state initiatives.

Washington University in St. Louis has done the same. This is started by deploying for their own on campus needs, extending into their hospital system and now working with the state of Missouri and the Public Health Department of Missouri to make this accessible to the entire population and state of Missouri and the greater region.

We used a COVID advisory team to discuss these local needs, creates a plan with them together, connects the resources, conducts the training for that community and then supports implementation with the goal to have you up and running within as little as two weeks.

The second approach -- slide seems to have a delay. Okay, the second approach is the matching testing requirements, so with the growing network of CLIA labs that we put in place. So, using a string of pearls approach, we've been supporting small, medium and large CLIA labs across the United States.

And as we build and -- as we drive adoption of our technology into those regional labs and national labs, then we work with institutions that are tasked with implementing these programs to connect them to the testing houses. So, we work in partnership with the testing houses to deploy a personalized testing programs and schemes for everything from professional sports agencies to academic medical centers, K-12 testing, return to workforce-based programs.

The third model that we're deploying is standing up novel labs with new testing capabilities and in some cases it's a combination of both. So, a certain amount of volume will go out to regional testing labs and another portion is setting up De Novo labs inside their organizations and standing up those. So, we have all three use cases in place and our funnel and actually our customer-based now reflects all three of these deployment models.

Shifting gears a little bit from COVID-based testing, we're also advancing COVID-19 research through immune profile and there's really four elements to that I touched on at the beginning. So, it's immune profiling and immune monitoring. The second is developing patient stratification schemes, so understanding the differential response and the durability of response for patients' immune response for those patients that had been infected by COVID-19. The third is supporting therapy development and also a fourth is assessing the studies of vaccine efficacy in the context of the immune response.

The technologies that are being deployed for that are our CyTOF-based technology which provides the highest resolution profiling of cellular phenotypes and functions available in the market today. There's two different ways to experience this technology. The left is our Helios platform, which is our suspension-based version. It's a -- largely is used in using PBMCs or blood-based sample collection, and looking at over 50-plus markers, all simultaneous from a single tube.

The second is our Hyperion imaging platform which allows you to deeply interrogate the tumors and the tissue microenvironment of infected tissue in the COVID example with up to 37 markers, all concurrently on a single slide at 1 micron resolution. So, both of these technologies are quite proven and robust and they're being used in both basic research as well as now in translational and clinical research around the world.

It looks like a double click, so the first is how -- one of the key ways -- so moving beyond the core capabilities of the instrument was to -- a year ago, we spent about two years integrating and building single tube-based experiments that allow the standardization of assessing large populations across many different sites. So, providing a one standard way to measure many of the key things, CD4, CD3, lymphocytes, monocytes, natural killer cells, et cetera, they're some of the most common components of a backbone immune profiling -- of the immune profiling of our human immune system. We've taken those 37 populations.

We put them into a single tube and we offer them in dried down or lyophilized format and using our optimized Pathsetter informatics platform, we're delivering information at 5 minutes of data analysis, things that used to take months years ago. And we were given the award for most innovative new cell biology product in 2019 and this product has been workhorse in doing COVID-based population assessments.

The Maxpar Direct panels, we have also released additional panels. Panels that can then go beyond a broad immune profiling to allow you to go deep and how vertically do greater assessments of leukocyte-based populations, to look at intracellular cytokine expression and also to perform in-depth T-cell profiling.

If you look at the wheels that we presented in here, the unique and the powerful portion of the mass cytometry technologies, you can identify and dedicate channels for different questions. And so unlike things like flow cytometry which required constant re-optimization when you add new markers, we allow plug and play by reserving specific channels for analysis.

And so we have provided both a large vertical or horizontal backbone panel as well as now providing out of the box vertical panels to allow deeper interrogation. We also provide the capabilities to do customized versions of that. Part of the way you do customized assessment is through our Therapeutic Insight Services group which we announced a number of -- two quarters ago. And in this case, you work with our Therapeutic Insights Services teams to design solutions for your project. We can either provide you recommended panels that you can then configure yourself or you can send those samples to us and we can conduct the services on your behalf and provide you data back as a -- as a service.

We also use it as a technology incubator to assess new technologies and how they might be integrated into our technology stack.

Apologies, there's quite a lag on my side for advancing the slides, okay. So, immune response overall is a kind of critical -- we think is a critical capability that goes far beyond SARS-CoV-2. Infectious disease, trauma and other is one category but immune response really cuts across at the core of understanding hundreds of other diseases including cancer, chronic inflammatory conditions, autoimmune disorders and even things such as reproductive health.

And so, this immune response tool really we see broad exposure to many -- to research and clinical applications across many different disease states. And all of this kind of feeds and makes us very well-positioned for what we call the immunome market. The immunome market is a combination of things. It can be answered through proteomics tools and classic genomics tools.

And in our -- we're really creating a new market segment, what we think the immunome market is about $3 billion market on its own which is at the intersection of proteomics tools and genomics tools. And it's growing at greater than 14% per annum and it really -- and we have multiple technologies in our imaging core or imaging capabilities as well as our mass cytometry suspension-based platforms that are -- we're very, very well-positioned to participate and ultimately take incremental market share in this fast growing immunome market.

So if you step back, we're essentially continuing to titrate outward at our core, an instrument-based technology. We've presented both our Helios platform, our Hyperion platform and our Biomark-Juno platform. We've been layering in proprietary content and tools. I gave you an example of a few of those here on the slide.

We continue to sign new partnerships and develop organic programs for software, for data analysis. And increasingly as we've evolved as a company, we're providing more and more complete workflows that allow customers to buy a total package solution that's from sample all the way to answer back out.

In parallel from a business model, we continue to drive operational efficiencies, so at our back, at our core is innovation and instrument placements and then we're driving recurring revenue streams through new content strategies and partnerships. We've been making a continuous journey of driving incremental operational expense improvements and reducing our cost of goods.

So in summary, the Fluidigm value proposition in my -- in our perspective is our instrument-based -- instrument placements will drive significant revenue on a quarterly basis. The really long-term growth potential, it starts with instrument placements is driving this long-term tails of consumables and services.

And so from our perspective, Fluidigm is extremely well-positioned to participate both in infectious disease market and the diagnostics market writ large as well as to provide a durable impact in immune profiling across hundreds and hundreds of diseases and we're very, very well-positioned for long-term growth for years to come.

Thank you very much again. I appreciate this opportunity to present.

QUESTIONS AND ANSWERS

Kyle Mikson - *Cantor Healthcare - Analyst*

Chris, thanks for the great overview. We do have only 30 seconds left or so but I do want to ask one question about the immunome market that you referenced at the end there. So, I'm just curious like what other, I guess, companies tools or diagnostics companies that kind of participate in that market?

So, you mentioned it was the integration of proteomics and genomics, so what other companies in that space are kind of competing with you? And obviously, you have more advanced [reading] instrumentation company rather than the Dx company, so just interesting if you can kind of like give more color there.

Chris Linthwaite - *Fluidigm Corporation - President & CEO*

Yes, the immunome market is really at the intersection of multiple technologies, so looking at proteomics and genomics, so the classic competitors. There's very few that are -- so I think Fluidigm has uniquely positioned itself to -- whether it's genomics space question. So using our microfluidics platform actually does genomics as well as proteomic analysis. We're almost a category breaker but we're not a true -- we're not an only proteomics company, we're not only a genomics company.

Our technologies is actually straddle the ability to do genomic-based analysis and proteomic-based technology, even on our mass cytometry, you can also do RNA analysis. So, we really defined a new category, so there is no one company in our space that competes exactly the same way we do.

Kyle Mikson - *Cantor Healthcare - Analyst*

Okay, that's fair and that makes sense. I guess we'll leave it there but again, thanks a lot for making it to the conference and hopefully, we'll see you next year. Thanks a lot.

Chris Linthwaite - *Fluidigm Corporation - President & CEO*

Thank you, Kyle. I appreciate it again.