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## PRESENTATION

**Operator**

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**Chris Linthwaite** - *Fluidigm Corporation - President & CEO*

CEO of Fluidigm.

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**Chris Linthwaite** - *Fluidigm Corporation - President & CEO*

Thanks, Adam. Good morning everyone. I appreciate the invitation from Cowen to present and discuss Fluidigm Corporation this morning. We're going to make a few forward-looking statements. A full listing of our forward-looking statements and disclosures are listed on our website. We also include some non-GAAP information and the use of trademarks.

Fluidigm is really about three things. Our overarching goal or uber goal is about improving life through comprehensive health insights. This really manifests in three material ways. One, we're trying to discover new insights related to health and disease, our technologies are powering that discovery process.

The root -- the overarching goal is to identify meaningful biomarkers that feed into things you're hearing here completely at the conference around the explosive growth in the number of new drug development programs and the unquenchable thirst for identifying meaningful new biomarkers. And the third is to impact the accelerated development of more impactful therapies.

There are six really primary things here from an investor highlights perspective I like to call your attention to. One, we have a market leading mass cytometry franchise that's augmented by a very heavy and consumables rich portfolio. So, it's starting with instrument placements in the market leading position and differentiated technology, followed by the pull-through and drive-through of recurring revenue streams.

We're a leader in high growth, under penetrated $3 billion-plus market we called the immunome market and I'll explain that a little bit in a few slides from now which we think is a unique key hole into the unmet needs of creating composite picture of the immune system. We're well-positioned to benefit from the tailwinds in global immuno-oncology market, market that's growing in strong double digits.

We're also generating today or our researchers and customers are generating meaningful and insightful clinical new datasets, clinical research and real-world utilities being proven our platform which is driving a virtuous cycle of adoption.

We're driving utilization of these systems and starting with instrument placements and driving of recurring revenue streams in the forms of prepackaged consumables and services contracts. And we're driving operational efficiencies which ultimately will power long-term growth in the commitment to building a great world-class franchise.

We're the leading providing of indispensible tools and consumables with almost 600 employees, $117 million in annualized revenue in the past year, attractive gross margins. We're headquarter-based in San Francisco with large operations in Toronto and in Singapore. We have more than 1,000 publications on our leading technology of mass cytometry which is up more than 57% from the 2018 time period.

And we're an IT rich company and so we're developing a series of moats not just in terms of efficient workflows and full complete solutions but also intellectual property that protects our underpinnings of both of our technologies which we'll introduce in a minute.

Our insight and I think one of our driving differentiators is around immune response. We think the immunology or immunological insights are critical and needed across a whole spectrum of diseases. Some of the most obvious ones start in the cancer space and that's where probably more than 50% of the research publications that are tied to our technologies tend to cluster, areas in leukemia, lymphoma, carcinoma, et cetera.

But, you really can imagine impacting, I think it's quite obvious, to kind of expand in the chronic inflammatory diseases, autoimmune diseases, infectious disease, reproductive health. By our estimation, there's more than 300 various diseases that have an immune signature and understanding that immune signature maybe critical in the selection of treatment protocols, the patient stratification and the development of novel therapies and approaches.

And this really cuts across our entire portfolio, both DNA, RNA and protein, single cells, clusters of cells and also tissue with the tissue micro environment and tissue in contextual context.

As I mentioned earlier in the introduction, the number of immuno-oncology clinical trials that use or integrate biomarkers is growing. If you look just since 2016, you have more than a tripling of the number of those biomarkers and the use of those biomarkers in critical studies. So, this has been a massive explosion in the number and accumulative basis of growth in both the number of new drug development programs but drug development programs that are including biomarkers as a critical part of their integrated clinical study design.

Fluidigm is uniquely positioned and extremely well-positioned to participate in these large markets. Traditionally in the life sciences' tools you've been defined as either a proteomics tools company or genomics tools company. And those are both large markets, the proteomics market being more than $9 billion per annum by our estimations, the genomics tools market by comparison is roughly approximately the same and another $9 billion, both of those growing in high single digit to mid-single digit.

And the various technologies that are discussed and kind of cluster, they have traditionally clustered by their being proteomic tools or genomics tools-based companies. On the proteomics tool-based side, you heard about mass spectroscopy and flow cytometry and we've added a new technology called mass cytometry that integrates into this classic kind of vision or picture of the proteomic space.

On the genomics tools space, it's been more traditionally next-generation sequencing or qPCR or sanger-based sequencing or microarrays. They've answered questions, all of those technologies answered questions generally speaking that are either digitally PCR-oriented, that might be focused on gene expression, genotyping, et cetera, et cetera.

We've identified that the intersection of the need from a multi-omics perspective to see in the [gene] context of DNA, RNA and protein to be able -- that really combines the -- it's an intersection of a new market that's really the -- that's we called the imunnome market. This market segment is about $3 billion per annum, growing about 14% per annum, sorry about $3 billion growing to 14% per annum.

And it really can be addressed by a number of different technologies, includes questions related to gene expression, questions related to digital PCR, multiplex tissue imaging, mass cytometry flow-based analysis and a portion of that is flow cytometry-based. But really, this is now beginning to address the multi-omics component as these are some of the fastest growing applications at the intersection of proteomics tools and genomics tools, and Fluidigm is centered right in the middle of that.

So from our perspective, the immunome being a multibillion dollar opportunity, for us it's about a 3.6 or -- today our addressable segment of that $3 billion immunome market is about a billion dollars from a Fluidigm-based solution selling. That's growing, we believe over the next decade at about 18% clip, which will lead to a full or new addressable market of greater than $6 billion by the end of the decade from a Fluidigm perspective and what we can participate in the immunome market.

Our technologies are also applicable to questions outside of the immunome, agriculture, biosciences being one example. And so the total addressable market for the Fluidigm is about $3.6 billion but it sits in other application areas outside of the immunome. But the immunome as we believe is

one of the -- is the fastest growing segment that we can serve, so our overall addressable market is going to grow to greater than $10 billion for our full portfolio.

We harnessed two core technologies to drive solutions and it gets a little confusing because on both of these technologies, we can do genomics and we can do proteomics on both of them. But, the core technology that we unlocked into the left is really what we called the CyTOF-based technology. So, it's a hybridization of flow cytometry and time-of-flight, so it's a classic compendial sites -- flow cytometry and then mass spec-based detection.

Our insight is in the ability to identify specific using rare earth metals and using the time-of-flight engines that had come in to mass spec instruments to answer biological questions. And so we can assign specific channels, so we can eliminate what used to be a limitation or is a limitation tied to immuno or tied to fluorescence.

So, flow cytometry is limited by the number of visible light channels, by the dye selection and the abundance of the signal the proteins are looking to measure. We've come up with a system that neutralizes the need to see abundancy and we assign specific unique metals to channels and we can measure those using the atomic mass and the periodic table to then give you a spectral picture of those and detect up to 50 and we have a headroom up to 130 different measurements simultaneously.

We use this in a suspension-based version of this technology, one that really competes directly with flow cytometry. We specialized in the measurement of greater than 20 parameters which is an extremely complicated experiment in the flow cytometry space.

And we have a lot of headroom that continues to drive more simultaneous measurements in parallel, with the high level reproducibility and a highly accurate ability to look from a quantitative perspective at the amount of that signal that sits inside the tissue or the question, the biological sample of measurement. On the other end -- and that technology is primarily used for protein-based detection but we also have the ability to enable RNA-based detection on that platform.

On the other end of that spectrum is our microfluidics technology and that's really the core of Fluidigm and the birth of the name of Fluidigm. This is the miniaturization of reaction volumes. Primarily it was used initially in the genomics space, so it allowed a highly automated reproducible to match. The technology is a chip and on that chip we allow exquisite levels of mixing. So, we can reduce reagent components or reagent content by over 90% as compared to traditional real-time PCR experiments.

And we can take many different samples, so 48 samples or 96 different samples and ask up 96 different questions simultaneously. So, it provides a rich level of multiplexing, of information and a high amount of throughput. We deployed that in a real-time PCR solution and we also have a library prep solution that sits in front of next-generation sequencing that allows to prepare your samples and then be introduced into the sequencers.

And so this whole combination is really that's a cheaper, better, faster approach versus a bleeding edge technology that's unlocking tremendous and new insights, and that's our multi-omics solution. So, I forgot to mention also on the microfluidic side through a partnership with a company named Olink which is privately held, we've unlocked the capability to proteomic biomarker discovery on that platform also. So, what used to be traditionally a genomics place -- a purely genomics-based platform is now being used also to do proteomic biomarker detection.

So, across the spectrum if you start with tissues and it's the tissue micro environment, we offered the Hyperion Imaging System. We were the first to market with an ability to deeply interrogate tumor and tissue micro environments with 37 markers simultaneously on a single slide. We can look in tissue and context or we can look at cells that had been disassociated or separated or in the case of blood that are circulating the body.

And we can look at unique phenotyping and function at more than 50 markers simultaneously in a single tube using the Helios, which is the core detection system when mated with an imaging module becomes the Hyperion Imaging System. So, we're uniquely position to look at suspension and imaging. You have a detector and then you can expand that core suspension-based detector and adding imaging module.

So, you can look at dual mode, you can look at both suspension-based questions or you can look at imaging-based questions or you can have lockdown instruments to do specialize in one or the other. We also offer single-cell analysis on our C1 platform. C1 platform is the first mover in

the single-cell genomics market space. We offer more than 25 different applications or questions of DNA, RNA and protein that you can ask of a single cell.

And finally, we couple in bulk free what we see combinations of cells and mixtures. We can use the sample prep technology in the Juno platform or real-time platform on the Biomark to efficiently detect a genomic and proteomic biomarkers at high scale.

In the early days in 2011 when the company went public, we're really in the early adopter phase of this technology. Hyperion which we are placing most exclusively as the leading academic medical centers and the leading researchers around the world who were really testing the limits of this technology and how -- with the limits from an analytical methods and the characterization of those methods.

Overtime, we have proven the robustness of that technology. We've seen the steady transition from those early adopters into core labs, meaning servicing a whole organization or entity through a single group in a core. So, now we're seeing the birth of fixed content, of new applications that can be repeatedly done by researchers without having to do the basic science to invent those panels or identify those marker sets.

Our job is then to create those datasets, working with the research community, to develop a quick way to look at repeatable questions over and over again and open up the next segments of addressable market who want to do -- don't want to do heavy lifting to develop that first initial discovery information.

And that's really led to a birth of the expansion of the addressable market for us, that's led to an expansion to the National Cancer Centers with the NCI-designated Cancer Centers, it's moved now into consortia and moving closer now into biopharmaceutical and CRO adoption. And so we're just on the beginning of that next transition and the more routine use.

As we've shown in the robustness and the reproducibility, as the clinical studies have grown to prove the importance of using our technology, we're seeing an expansion of our addressable market to include now contract research organizations who serviced the biopharma community and we're also seeing biopharmaceutical companies beginning to make commitments to this technology and bringing it as an in-house to supplement their outsourcing services that they do with the cancer centers and they do with the CROs.

So as we progress steadily through this value chain, we're driving both instrument placements and the now recurring revenue streams on our instrument platforms, we're building a larger body of knowledge in the terms of clinical trials data as well as publications, and all this we think can lead towards more routine use or integration into clinical trials.

We're in a fraction of the clinical trials today. It probably should be at 75 at the end of the year and with an approachable addressable market of thousands of clinical trials that we could participate in for patient segmentation and stratification at the phase 1, phase 2 and beyond. And we believe we can also convert some tests that are currently done in flow cytometry and that are done in the lab as routine testing and begin to put those onto our platform.

Because, we can do the same experiments in a third of a time or quarter of a time that a flow cytometry experiment that looks at many different questions simultaneously, the time it takes and we can do it at a better price.

So, we continue to move closer to the clinic. We've announced that we've got greater than penetration of 50% in the cancer centers in the United States and Europe. We've also have meaningful penetration in Japan and very rapid growth in -- on Mainland China.

We're seeing very prestigious publications come out that are showing the intersection of really of utility and insights into disease states, things like breast cancer in this article that was in nature published at the back half of the last year. So, this has been a series of steady, drumbeat and it's now been increasing quite significantly. Now crossing as I said before, 57% growth in terms of publications just over the past year and we're seeing clinical trials more than doubled over the course of 2019, our participation of clinical trials in the past year.

So, we have a roadmap of penetration that we want to drive in these clinical centers. We've begun a steady migration into contract research organizations. We announced most recently a partnership with Covance. We have other CROs in the various geographies that service these customers and we believe that this is a recipe for long-term sustained success for this portfolio.

So beyond just instrument placements and the core technology which I have highlighted at the very beginning is we have new applications to drive recurring revenue stream. So as we get these instrument placements as a system as a simple business model, we're now launching additional content, questions that can be answered very quickly, reproducibly.

And so you can order that in kitted format. We've offered six -- so we've already launched six new products over the last year, 18 months on both, our cytometry portfolio as well as our microfluidics portfolio. In addition, software is quite critical. So, we both done organic software development, we've done also partnerships with a number of industry-leading partners to interpret this data.

So, the collection of the data needs to go into postsecondary analysis and having an entire ecosystem of instrument placements, of fixed content to run experiments and then informatics solutions to interpret is critical for serving the total needs of this customer segment. These broader workflows and kind of moving more expansively across the entire workflow is what differentiates technology single-point solutions from people who were want to be built to last, to people that want to be positioned to do routine testing for the long run.

And that's why we continue to make this steady drumbeat of investments to expand the broader workflows. An example of that is an acquisition of a technology that was built and invented in Oslo, in Norway and was announced just recently. So this -- what the logic for this transaction is pretty straightforward. We see a huge opportunity of unmet need for doing fully automated walkway sample prep product that supports the higher throughput applications.

If you think about that waterfall slide that I showed earlier, you can see as we're moving closer and closer to routine testing, there's a need for it. One of the pain points is preparing your samples to be introduced into these detectors. It's the same problem that happens in flow cytometry, it's a problem in mass cytometry.

So, we saw a unique opportunity to drive complementary to develop an automated sample prep solution that's well matched for many of our high-volume content plays and to sell that through existing Fluidigm products, our existing channels. It feeds into the install base of 292 of our existing systems. In addition, we have the potential now also to position this technology. It has the capability to do flow cytometry-based sample prep as well as mass cytometry-based sample prep.

For us, the obvious long-hanging fruit is the focus on mass cytometry but we have a significant amount of addressable market outside of that is in the flow cytometry space. I think we paid a reasonable purchase price for it, it will be accretive to earnings starting next year. It's being used by more than 10 customers around the world and we're going to have a full scale launch of the Fluidigm branded version of this in 2020. It's a $1.3 billion total market for sample preparation.

And for a flow cytometry and mass cytometry, this represents a market expansion opportunity for us and a $225 million serviceable market by the solution. And as I mentioned before, it's actually exquisitely well matched for what happens to be the fastest -- one of the fastest growing consumables in our portfolio. Last year, we're awarded the most innovative new cell biology product in the life sciences industry for creating, what we called, the Maxpar Direct Immune Profiling Assay.

So, taking a backbone -- a series of questions that develop the immune repertoire, it gives you a basic immune phenotyping signature. We've identified these 37 populations of lymphocytes, monocytes, dendritic cells and granulocytes. Put those together into pre-titrated and pre-configured format and a dried down format where you just add blood and you can have an answer in five minutes.

So, we fully automated the workflow, so we've taken our instrument analytical platform, developed a kit to answer an immune system-related question and now -- and we have an informatics solution to interpret that information. And now we're adding sample prep in front of it to help extend the -- expand the automation and workflow related to this product.

Analogous to this is another market opportunity we've seen for the microfluidics portion of our portfolio. In the third quarter of 2019, we announced the Advanta RNA-Seq Next-Generation Sequencing Library Prep Kit. This is matched to our Juno platform, which we launched in 2015 and this is a content play that looks at the -- what we see is a large unmet need, a market segment that is growing at over $300 million per annum which is the library prep portion of next-generation sequencing for RNA-Seq.

RNA-Seq is one of the fastest growing applications in next-generation sequencing. Sample volumes are growing in the high teens to 20% per year and this has been a number's game. So as you're having more and more samples to process, there's a need for automated sample prep that sits in front of the sequencers. This portion sample prep is the bigger and bigger pain points as sequencing cost continue to produce.

Sample prep is becoming a larger portion of that experiment, requires hours and hours of hands on labor content. It takes 6-1/2 to 7 hours of manual intervention under the current approach and so we introduced the first automated box and consumable reagent strategy that reduces by about 70% the amount of labor content and reagent cost that go into that experiment. So, we think we're really well-poised to combine both robust kits and an automated instrument solution to feed into this demand the research community.

So operational, we talked largely about innovation and we are an innovation-driven company with a very clear idea of how to develop and deploy new products into commercial channels to meet big unmet needs including those unmet needs in the immune space or immune monitoring space. We are matching that with operational improvements, ways that we can scale our enterprise. We continue to move from -- distribute in some areas where we're distributor-led to being more direct relationships.

We've been developing business continuity plans and robustness, investing in ISO 13485, design entry files and planning for the future in which this will be distilled down to more clinical-based practice. And looking to continue to bend our own cost curve as we know that there will need for this technology to begin -- to continue to reduce the price points and increase the accessibility of this technology to bigger and bigger addressable markets. So, we think this is a natural gearing that will drive leverage for the company for years and years to come.

So at the end, our long-term recurring revenue streams are really tied to very simple, we've been driving an instrument placement strategy with a clear idea about disease areas that we think we can service. We've been developing fixed content strategies for repeat consumables that are very lucrative on the platform, so we continue to monetize that install base. And then we're coupling that with a service arm that will drive recurring revenue streams that altogether deliver long-term growth potential for the portfolio in the double digits.

And with that, I'm going to go ahead and wrap up and I think we'll move to the other room for questions now.

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**Adam Wieschhaus** - *Cowen and Company - Analyst*

That's right.

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**Chris Linthwaite** - *Fluidigm Corporation - President & CEO*

Okay. Thank you.

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