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Sean George, president and chief operating officer of genetics-information company Invitae, explains how the rewards of entrepreneurship come from facing the major challenges along the way. In this insightful talk, the serial entrepreneur also underscores the necessity of a team's focus on mission to see a venture through adversity.



Transcript

Well, thanks again and thanks for having me.. This is really an honor.. In my career there are oftentimes discussions people from around the world, people I've worked with kind of scratching their head, wondering how to you know - and formal you know ambassadors and economic development agencies asking, how do we recreate Silicon Valley and while it's certainly not in its entirety but certainly a major part of that is Stanford and I think that's going to be hard to replicate, so I think they'll keep asking that question, it's an honor to be here.. I love telling this story to students, people like you, I certainly hope to inspire you, I hope not to scare you but I think maybe I'll just tell the story from my perspective and I think one of the key things I often tell people is, is whatever you read about company formation and the mythology of companies starting and whatever you hear about or read about, certainly read about in books, the real story is a lot more nuanced and is also very much dependent on your perspectives.. So, I'll tell you from my perspective what the last five years have been about and I certainly am very interested in any questions you might have when we're done.. So just perhaps some pointers, my learning where I stand today with everything that's happened and maybe to sum them up first is, if you are going to start a company, if you're going to start a new endeavor, I would offer that it's good to - generally people say it's really good to try something big and disruptive.. I think probably on paper and for a lot of reasons that makes a ton of sense and you can go a lot of different directions but I think one reason to go do something big and disruptive is because it's incredibly difficult to do and the odds of success are so low that if you are going to go do it, you might as well spend all that time and energy and sacrifice doing something that you think is really important and in hand with that I think it's got to be something that you really, really care about internally.. And I think it's hard to even express maybe my thoughts on this, it's not that you care about it, it's that you can't stop thinking about it.. It's that when you wake-up in the morning, you see something that is a missed opportunity or something somebody else is missing or you have an attachment or a passion about something that is so great that if it makes sense to kind of start an endeavor, start up a company that try to address it, you care so much about it that you just can't get it out your head and you are not going to be satisfied until you've made a go at it because again that's going to be important too.. Maybe another key learning, you'll have ups, you'll have downs, you may win, you may lose, if you want my input, the experience itself is worth it, that alone, it truly is one of those things where the journey is what matters, not necessarily the outcome, but you will - it will - you will have your highs and your lows and this is where I think that you've got to maybe balance and level and understand - on a variety of levels, luck has a lot to play with it..

Market externalities, externalities on the competitive landscape, there is a lot that has to do with whether or not you and this new venture would succeed and for two reasons I think it's important, one is a public service announcement.. There is plenty of people that start companies and have great success and then proclaim to the world what a genius they are and how they knew it all along and I summarily reject that mythology that there is kind of one creative force and one person that makes it happen, it takes a team, it takes a group of individuals to do anything worthwhile.. I also recommend that to people to make sure to understand again the downside is a very real possibility and I think if you're going to try this kind of thing, you should steel yourself for that outcome and not personalize it.. Do your best, if you've got a passion about something, do your best to build something that makes a difference but a lot can happen and if you end up failing in the process, that's how this works.. Pick yourself up, dust yourself off, go find another team to tackle another problem and go do it.. And then I think you know speaking of team, that's maybe the other key lesson that I've learned is the team you start with, the team that joins you, the team that invests in you, it is my perspective, my two cents on it are it is very much about the team that you chose to go through this with and should you at any point along the way start experiencing success and building and growing, I think in retrospect I would say, all of the energy, and we will get a little bit into, we've put a lot of energy into our team and how the

place works and even to the point where in the early days, I thought it might have been a little overkill, certainly since there was a very high likelihood of success, we wouldn't be around anymore when the money ran out.. But now looking back I actually think every ounce of energy we poured into the way we wanted to work, the way we wanted our team to work, now it's coming back and I am not only glad we put as much energy as we did, I actually wish we did more.. You can't put enough energy into your team and the way the place works.. So those are the major learnings.. I will start from the beginning..

I was at a company, I was a COO at a company called Navigenics, it was one of the kind of mid 1000s, direct to consumer, genetics place.. A lot of good ideas floating around then, we were basically the physician oriented stodgier less fun version of 23andme, that was our plan.. We were going to go take genetics to the masses really kind of employee health plans, doctors whatever.. It didn't work, for a lot of reasons it didn't work, business model, timing, don't need to go into it now, but it didn't work.. What I did get at the time, from my experience in the industry, I was in the tools diagnostics, technology industry leading to that knowing where kind of the microarrays and use of the time, the DNA microarrays were the beginning, the harbinger of what was to come in genetic technologies at the time a bunch of sequencing companies had been developing next generation sequencing technologies, that promised to lower the cost of access to the human genome.. And while the business that we were trying to build it just wasn't working, what I did see bouncing around from medical geneticists offices to genetics clinics, to doctors' offices, talking with genetic counselors, what I did see was the beginning of what we started.. And what I saw was, in fact there are a lot of genetic disorders, there are a lot of genetic diseases and there are a lot of people impacted by them and what struck me most is, none of the clients I was talking to were happy about the way it worked, genetic counselors, medical geneticists, cardio geneticists, cancer geneticists, even clinicians that were vaguely aware of how genetic testing worked.. Nobody was happy, things were very expensive, very, very long lead times if you ordered a test it could take up to half a year to get an answer, just really kind of almost primitive given where the technology was at the time and was going.. But even more importantly this is where kind of it really came clear to me a couple of family events, not my personal close family but kind of related family and friends and their families, couple of events in their lives had big impact on that family, devastating impact on those families and then in these clinics what I would see, not the same families but equivalent families sitting there with their kids in these clinics and after kind of knowing the situation with the genetic counselors, certainly talking with some of these families along the way, understanding, just getting a good feel for the absolute despair that they were going through, seeing in these clinics these kids, I mean I actually at the time when we started the company I'd just become a relatively new parent and I don't know if any of you - hopefully not - probably not a lot of you are parents, wait on that one, that's my other piece of advice - life advice, wait to have kids, but you know you think you know most new parents think they have a tough, they don't get to sleep, they have troubles, seeing these parents with these kids that were not developing, that were not growing, that were having serious, serious problems really put it in perspective for me, these people had problems.. I will never have problems, most likely, that these people have and I think as I kind of went through that experience that's what then stuck in my head as this is ridiculous, this is ridiculous that given where the technology is today, these people wait so long for the testing, they can't even get access to testing, the clinicians don't even tell them about the testing because it costs \$20,000 to get it and very likely won't give them an answer anyway..

That's when it kind of all started coming together.. So I kind of at that point put it together, I knew where the next generation sequencing technology was going, effectively the cost per base of the human genome was dropping off faster than Moore's law, which I think we all know what Moore's law did for computing, networking and everything that has followed.. And it was pretty clear about five years ago, this is what's going to happen in medicine, this is what's going to happen in genetics and I am going to go - we're going to go figure out how to make this work.. So we decided it was myself, a couple of other people that were working with me at the time, we kind of popped out, decided to go start a company and the idea was, hey, let's build a company that will consolidate the 3,000 to 4,000 some odd genetic disorders, the test for these 3,000 - 4,000 genetic tests, consolidate it into one highly-efficient, industrialized, platform production line to consolidate the entire genetic testing industry, drive the price to the floor and make it available to everybody, and that's what we started with and while there was no way at that time I could really know exactly where it was going, I certainly couldn't know that I would be standing here today telling you about it.. That's essentially what we are doing, so Invitae now we are basically hell bent for leather on bringing genetic testing into mainstream medical care for literally billions of people on the planet.. Anybody in a developed healthcare system can benefit from this.. I mentioned the 3,000 to 4,000 genetic disorders that I kind of became familiar with many years ago.. In fact it affects possibly up to 10% of any given population, up to 10% of the population has an inherited genetic disorder, it's just that they are so fragmented, 3,000 to 4,000 of them are spread that any one of them seems small enough, the biggest one, the biggest market - consolidated market by far is the breast cancer testing, Myriad does it, but there is a long tail of these genetic disorders and so that's what we set out to do and indeed, thankfully that's what we are still doing.. We went out to raise money, this was end of 2009, not the best year to go out and raise venture capital and in fact it turns out - we pitched to more than 110 places, firms, funds, what have you, it turns out half of them didn't have any money, you know knowing - seeing where those firms went now, half of them just didn't have any money, the crash that happened, things were rearranging, capital was getting reallocated, so it was a long haul, we pitched to more than 110, really for about a year, it was a fairly tough time actually that was the first six maybe six to nine months into it, was a first time I really faced the potential for failure like squarely in the face.. The team that we were working with, there were four of us, we were kind of self-funding it, we had some space, we got going, we actually started originally in the Tres Agaves tequila tasting room up there in San Francisco, were there for about a month and a half, one of the co-founders knew the owner, so we holed up there..

Then we moved to the QB3 space over in Mission Bay, so we had some space, we got some of the equipment up and

running, we were getting going, confident that we were going to raise money but then after six to nine months of just no, after no, after no, after no, part of the team started shaking loose a little bit, they needed to go get a job, their spouses were like, hey, how long are you going to pursue this crazy dream, that summer right before we got a couple of these firms interested was definitely the first time, certainly in my career ever that I really stared failure in the face.. I am a fairly confident individual, no one has ever accused me of a lack thereof.. But boy, that experience there, that was trying and that's by the way, that's why I think you should do it, I think you should do it just for that experience, it's been invaluable to me, just facing that failure in the face, pulling these three people along, invaluable, invaluable and really actually frankly prepares you for the next phases of company formation.. So we pitched 110, 115 no's, got a couple interested and finally one of the firms that we had been talking to, we got the A round and got going.. I think at the time the idea seemed stupid, the pitch was kind of, hey, this technology curve is happening, there is this big unmet need, we're going to build this engine, this sequencing engine that's going to be able to deliver clinical reports better, faster, cheaper than anybody, consolidate the industry, we're going to go for 50% gross margins, this is going to be an execution play, no intellectual property barrier to entry, at the time the FDA was rattling sabers about sequencing and LDTs, at the time the gene patents were fully in effect and there was a patent thicket hovering over every one of these ideas.. The idea of building a biotech company with a long term aspiration of getting to 50% gross margins was completely foreign to any investor in the space and then of course when you are raising money as I hope a lot of you will try to go do, the thing you get asked all the time is what's your differential advantage and if the answer is, because we know what we're doing and we're going to work harder than anybody else is not a compelling argument to somebody who has got a very, very high cost of capital.. It's understandable, it took a while, but we did eventually get some investors that I think, frankly I think they were at the end of their fund and they just took a flier on the idea they thought these guys seem crazy enough, we'll just give it to them and see what happens, so we got going.. We started hiring the team, started getting going, and one of the very early things that I mean obviously has led to a lot the success we've had, constantly seeking out people that had been through before, people who had done it before, in the fund-raising process I mean look I was COO of the company, I've run large business units, global business units of technology companies, it still was an incredible help to run the pitch by four or five people that I knew that had raised money before, who had been VCs before, started companies before.. A month, month and a half of that preparation was invaluable, that's one thing I'd say right from the get go, get people who have done this before, run it by, run it by and run it by and drill it with them.. Really test your assumptions..

Then you know once we got funded, it was time to start filling out the board and I started reaching out to people I knew, people in the space and I was really interested in getting Randy Scott.. Randy Scott had founded Incyte, took them public.. Randy Scott had founded Genomic Health, took them public, very, very early player, big player in personalized medicine and I just kept calling him and calling him and calling him and trying everybody I knew that knew him, finally got in his calendar shortly after we raised the first round, went to talk him about joining the board and you know here was a person who after really spending a year and a half talking to just about everybody in the industry, experts on the medical technology, investor side alike, basically saying it was a horrible idea.. Within 30 seconds of time with Randy I can see his facial expression like he's clear, he gets it and then he starts talking about, oh, and then this, and then this and it was clear that I had found my board member, so we kind of got going there.. Got Randy on the board, had another board member come in kind of an experienced hand in the diagnostic space and I think this is where not just in the company formation but early days along the way, having experienced people, people who have done it before, people that challenge you on what you're doing, how you're doing it is invaluable and this is where I can't say enough where I think there - again I hear the mythology, myth around companies, and again, my perspective is quite different.. You have an idea what you want to do, you are the drive - at the time I was the driving force of getting this to happen, but there is no way that we would have made it happen without these individuals banging on the idea, testing the idea, testing assumptions, bringing in their network to test the assumptions further, do channel checks, build models et cetera.. Invaluable, invaluable.. Some other things we definitely fought on, the price point for example is one of them, one of the early kind of founding concepts was we are going to make this as low price as possible and we know one day in the future, we'll catch up on the COGS.. And again anybody with any experience in the diagnostic industry will tell you it is really hard to run a low margin business in diagnostics.. And we battled on that, we battled on that and that was one thing where I said, you know where I think, I did, we did stick to the founding purpose of the company and even though there was a lot of early - not fighting but debate about it, one thing that kind of strikes me which is another really important thing is these individuals shared the same passion that I and the team did, these individuals had the same values as I and the team did, ultimately when it came down to what is our real model, what are the actual moves we're going to make by way of pricing our offering, it is absolutely essential that all of the people involved share the values, share the core mission, so that kind of goes back to if I can impart one thing on you really having that core mission, the core, what it is you are trying to accomplish in view and having everybody on the same page on that makes these things possible..

That is the only way we got past those early days kind of testing things out, technology risk, market risk, trying to get clients, all the debates about pricing and offering, the fact that these individuals had so much experience and could really push us as well as the fact that they shared the vision really excited us in the early phases of the company, the first two years or so, first two rounds of financing, essential for it.. Now the thing is, so while when we started I think a lot of people thought it wasn't such a great idea, things started moving pretty quickly, so when you went to the medical conferences and the clinical conferences, instead of every talk being about how next generation sequencing was 10 years away, 15 years away, you know kind of the typical technology cycles in our space would seem about two years into it, it would seem that they were actually moving a lot faster.. Exceptions by the clinical community, the prices actually - many of the investors we talked to just looked at our price model and said, you are crazy, costs are not going to come down that fast and indeed actually they were coming

down faster.. So people were just shocked, even I who had been in the industry a while and kind of I think of myself as perhaps an overly optimistic, technology zealot, even I was shocked how fast these things were coming down.. And so things really started to move in the industry and really kind of turned our out of left field, crazy moonshot of an idea into something that all of a sudden everybody started thinking, actually that's not such a bad idea and then you've got all of the industry incumbents thinking that way and you've got all of the 120 investors that you talked 2.5 years ago, thinking, oh yes, that's a great idea, let's do it and so people started surrounding around the space and this was a period of time where we had to start making some decisions and they were really, really tough decisions and I think it's - the way I think about it, the way I would tell you from my perspective is, this is kind of the classic big piece small pie, small piece big pie kind of thing that a lot of - most entrepreneurs face at some point in time in financing, it's also one of control, right? So you know, I am running this shop, I hand selected the team, we are making progress and then at some point, again the market starts shifting, everything moves, we knock off the technology risk, we prove it can be done, externalities seem to be going in our favor, FDA basically goes away for a while at the change of the administrations, the gene patent thicket that was pretty much assumed to be something that would block our kind of model forever showed signs for cracking, the first case started popping up through the federal court, through the district courts, that was challenging patents, subject matter patentability for gene sequences itself and in that period of time a lot of people started getting interested in the space, a lot of people started getting interested in us, it became clear to us it was turning into an execution play and at that point then you've got these industry veterans around the table, you are looking at, in our kind of business model what matters when it starts turning into an execution play, essentially it turns into a foot race and you start coming to realization that you need a lot more capital than you thought you did.. Again, if you really want to go for what it is we wanted to do, if we really wanted to go after all of the families that are currently not able to get this information for their kids, for themselves, we were going to have to spend a lot more money and so that started going into decision making mode where there were a couple of companies that we had been kind of partnering with that then all of a sudden threw over acquisition offers.. In that you're kind of making the decision, well gosh we could probably raise maybe another \$10 million round on our own, but really if we want this to happen, we want it to happen at scale, maybe we should tuck into a larger company and just see this through.. That's trying as in, you've spent the last - you've basically sacrificed the last two and half years of your life getting to that point and now the best options in front of you seem to be the ones that remove your control, it's not why you started the company but again, if for us, it was very much look, what matters most is that, what we're doing sees the light of day and has impact on the market.. And so we seriously entertained a lot of that, for a while we entertained those bids, did the diligence, had the conversations, soul searching times to be sure and then what happened then Randy who was on our board, again I think got so excited about it all, he kind of said, okay, yes we could raise a small round and kind of go it alone but we're just not going to make it, it's just, he amongst most knows you need a lot of capital to make changes in these spaces.. The acquisition offers well, yes, that's probably - barring our internal round the best way is to go ahead and be acquired, make it happen but even then, then you run the risk that you just get subsumed by a big company and everything that you've tried to build doesn't actually - get out there..

And so he suggested, hey, how about this instead, I'll lead the C round, I'll bring in a bunch of investors and we'll fund this thing and we'll do it right.. We'll go for the long shot, we'll go for the big win, we'll go all the way and this is going to take \$300 million and so let's do that.. And you know, turns out, that's the way we went, that was certainly the right call, for his pains, of course he was going to be CEO instead of me and that's where it all came in, it's like okay, which door do you go through, what are your personal incentives, it all kind of came back to again, if you wanted to - if I wanted to get this done, this team who had joined me wanted to get this done, this was definitely the best way to do it.. It meant taking a smaller piece of a bigger pie.. It meant giving up control of the company.. It meant a lot of things that you at the time were tough.. But honestly, I mean looking back there was no other way to do this, there was no other way to do this; that was the right way to go.. And I think that's where on that point in particular, today I talk to a lot of entrepreneurs that are in that tweener phase of the company, they've got some funding, they're getting going, they're making the decisions, and they know they need the money but that means losing control, they know they need a partner but it means partnering - I would say that is a key point, if you're going to start a company that is going to be a key challenge as you start to succeed.. Again if you want my advice, the best thing to do is do what's right for the mission.. Remove yourself from the equation, that's the best way to succeed..

I've seen people get all tied up in what their percent ownership it is, it's my vision, my company, we're going to do it my way, that's a tough path to continue.. For everything that we read about in the public media how that's the - obviously the one or two of those, the unicorns that make it out and that's the case, that's all we ever read about but I can assure you the thousands of other companies, most of which die on the vine that is not the way it works.. You've got to be willing to sacrifice your own personal ambitions and desires for the mission at hand.. So at that point in time we raised a good size C-round certainly more than we'd ever raised in A and B, things started working, we started adding more teammates and this is where again, this is where the team comes into play, you want to bring in people that then can keep moving the company through the next phases, right, and they're going to be different people than the people you started the company with, they're going to have different skill sets, they're going to come from different backgrounds and in a tight knit kind of no safety net environment like a startup company, they're going to seem like they're from a different planet to you and much of your team but it's essential, it's essential that as the company scales and grows you add these people, and that's what we did, we started getting ready to - we'd proven commercial success, again the technology risk was peeled off a while back, we had started proving commercial success and now it was time to start building an organization that could really go out and go after it, so there was a period of rapid company building, a lot of different skill sets showing up.. The other thing that happened - starts happening at that time, so now we have access to more and more capital, more and more capital is coming in, which then

starts opening up the decision set, so kind of up until then every month was basically a race against dying as a company, we have nine more months of cash, we need to prove this, this and this, we have six more months of cash, and we have three more months of cash, we have no more cash, our bridge loan takes us four more weeks, six more weeks, eight more weeks, then all of a sudden you've got more money than you ever thought you'd have, you've got a bigger team around you, and now the questions get a lot harder in terms of okay now how do you create value for the next round of investment or do we need to get going - thinking about going public, can we get to breakeven before then, and in that period of time, with many more voices around the table, it can get a bit crazy and indeed in that middle kind of maybe this was about two years ago in our company's history, there were a lot of ideas about a lot of different directions to go, should we go this way, more direct to consumer, should we go absolutely hardcore traditional clinical, should we go somewhere in between, should we just skip the U.S.. in it's crazy third-party reimbursement system and go outside of the county.. Let's go to Latin America, let's go somewhere where there is actually a market for this information instead of this bizarre, I call it the, the regulo-insuro-industrial complex that kind of - it distorts markets in this country for diagnostics in these technologies - we can talk about it later if you have questions, but maybe we should do that instead.. And those again, those are tough times because now you're burning on a monthly basis what you used to spend a year, you've got a lot more people coming in, the culture that you're trying to build from day one gets challenged consistently and there was a period - starting about this time, this stat has continued with us, even today at our company, at Invitae today, more than half the company has shown up in the last six months, right? So of a company we've been around for five years and more than half of our head count is here six months ago and that started about in this period of time, about two, two and a half years ago and what we're trying to do, we're trying to build a different culture, I'll talk a little bit more about it, we're trying to build a different place, a different way of working, and of course when you are growing that fast with all these new ideas and all these new people coming in, that comes under serious, serious pressure and that's - so all that's coming together at that time and again to get through that time I just keep - as I think back on it - it keeps coming back to the people around you.. You've excellent, smart, passionate people around you, you have very experienced hands around the table both working with you on the management front and on the investor front, so we started bringing in these blue chip investors that had been in the space for a while, that had seen a lot, they were long term investors.. They really got us through that time and got us to the point where then it was time to think about, we'd now achieved enough commercial success and by the way the markets were hot enough, I mean I think in the down market really tough, but we could actually see, hey, we can start raising more and more money, we could even think about getting to public markets to really continue to accelerate, continue to lower the prices, continue to make this happen, and in the back and forth of all this, that's what we decided to do, we started gearing up to do it, right before that kind of at the end of that period, we went out to raise kind of our last private round or the way it works today, there is this - since the Jobs Act there is a lot more action from what traditionally have been called mezzanine investors or early IPO inventors, they're also now investing in kind of basically the last private round of public companies..

So we began talking to those firms which I would say, that really started focusing our attention on what is our story going to be as we go out to access the public markets, and again, our team helped us, the team we had added, we couldn't have done it without them, no way.. The investors that we had added along the way, we couldn't have made it happen without them.. Interesting little story, we actually went out, did the kind of the non-deal road show, we were out raising the private round, we had the bankers involved, we actually had - at one point we were going out to raise \$50 million or so, had a lead, we're about to close it and then literally on a Friday afternoon the banker called and said sorry guys, lead fell through, big, big, big mutual fund X is starting to wonder what's going on, huge hedge firm Y wants to know where are we, are we going to close soon, very quickly what looked like a pretty good - like let's raise \$50 million, it was all coming together, fell apart in a matter of minutes.. That was harrowing to say the least.. That's a period of you're burning a ton, it's not like back at the first - early rounds when you're burning a couple of \$100k month.. You've a financing fall out then and maybe everybody sours on the story and all of a sudden you're like going back to the company, firing 100 people, not good, not good at all, but the team rallied, again we've got pros around the table, the team rallied and we ended up actually turning it into a major, major win.. Very quickly we found another lead which is actually even better than the first lead we had and instead of raising a \$50 million round we ended up closing \$120 million D round and I think that's one of those things kind of as I think about that financing itself kind of is a lot of the experience, that's a financial effort but I think same thing has happened on the technology side as we've been working on different ways to look at this sequence information, get it into the clinic, different ways to run the pipeline, a lot of the failures that we've had very, very quickly it got turned into wins that were even bigger than the failure we experienced and I think that's part of the programming that I would suggest you're going to need to have, you're going to face a lot of adversity, you're going to have a lot of downs with your ups and you and the team around you, your natural reaction needs to be, okay, now what do we do, how do we fix it, how do we get going, how do we preserve.. And again I keep coming back to in my mind, every single one of those kind of circumstances that we hit along the way, that is possible when everybody is on the same page and everybody is passionate about the mission, and everybody can suspend what it means for them, oh my God, we're about the bail out of our D round, what's going to happen, what's going to happen to me, what's going to happen next, all these relationships are going to fall apart.. Instead everybody was dead set focused on, no, no, no, no, no, this we need to make happen.. Our clients are loving us, the patients are getting the results, it was like we are going to make this happen, we're going to make it happen, we're going to pull it out..

And I think of the D round financing falling through, a bunch of technology foul-ups along the way that we had, every single one of those, again it's kind of back to when you're facing that failure and then the team rallies around it and the team always rallies around it for the right reasons, not only do I suggest to you that is absolutely critical in building a business that hopefully again I wouldn't say we're a going concern yet but looking good so far, you want to build a business to that point

you're going to have to have that and again it comes back to kind of this is why I am encouraging you to do it, those experiences pulling through with a team for something that is absolutely important that the world needs.. Even if you don't succeed, even if it does end up in failure, that alone is worth it from my perspective.. And I can honestly look back and I think I can be honest to myself, even in the darkest times along the way the last five years, every time we were in a downtime I still could come in the work and remind myself, I would do this again.. If we don't close the bridge round, if we don't close the C round, if - what just - what just came out of the lab yesterday, if that ends up tanking us, I would do it again.. Every single one of those times I could always - I think, I mean it's hard when you are there but I think honestly looking into myself, I kept coming back with I would still do it again, even if we fail, crash and burn the next week, I would do it again and I could tell you now, even if along the way, it's easy to say now, we've gone public and we're kind of making a go at it, but I can, I can honestly say, I would do it again even if every time along the way there was a chance for failure, even if it happened, I would totally do it again.. Let's see, so then - so along the way we were having commercial success, this was really kind of we had only been commercial for about nine months, almost a year at that time, we had brought in a Chief Commercial Officer, really built the team up, but still a really small effort, but we were making great traction, so we decided after the D round to immediately go and load up again and access the public markets and this I think kind of all along the way I had been receiving from the very, very beginning with no money and no space all the way up until that point in time, I'd received plenty of advice from a lot of people about fund raising and what I would offer to you is the following, I think kind of there are two flavors of advice for entrepreneurs on fund raising and one I think if I may vastly over generalize, one comes from fairly wealthy people that don't have to work and think very deep thoughts about the optimal way to raise money and build companies and the other comes from people that aren't independently wealthy and have to use other people's money and just want to get something done.. And I would say that the levels of advice go something like, on this side it's kind of like the big piece small pie is better, you want to optimize every stage of value creation and only take so much dilution along the way and if you have cash make sure to increase the value before you raise more cash and on the other side is the simple advice of take as much money as you can when you can because you never know what's going to happen tomorrow.. And I just got to tell you, again one man's perspective, that is the voice to listen to and even right after the D round we had just raised \$120 million and the very next question was, hey, I think we can get to the public market, let's do it, let's do it right now while we can because this is going to take a lot of money and if we want to ensure success that's what we're going to do and so we did, so we got geared up, we went into - in our industry there is big conference at the beginning of the year, the JPMorgan Biotech Healthcare conference, kind of went into that having just announced okay, we're going to go do it, kicked off the road shows and then - the great thing about the road shows is that we had just raised \$120 million, so we'd been out talking all these firms and a lot of them had just come in and then we got some more interested, closed the IPO in mid-February and took the company public.. Came back the team at the company had a big party and I'll admit it was entirely surreal the whole thing.. On the one hand it's been the longest five years of my life, I think I've aged 20 in those five years..

On the other hand it just seems like yesterday we were like literally in that Tres Agaves tequila tasting room this could possibly work, maybe not, how long do you have, I don't know, how long do you have, well let's keep trying, let's see if we can go.. It really has been surreal and again I think reflecting on it - and the first thing I would tell you too is right now it's actually the way we viewed it's kind of just the beginning, we were making a great ramp commercially, our value proposition is really selling.. Again, it's kind of like, hey, you're currently ordering and paying for these genetic tests that are very expensive and slow, why not come to us and have them be very, very fast and better and much, much cheaper.. It's an easy sell mostly, but it's really early days, it's a big market, it's a complex market, like I mentioned the payer system's difficult, there's a lot of challenges ahead of us, but it would seem certainly from my part, from my perspective, where we are now is maybe a - I wouldn't label it success but it's kind of like - for me it's all of the people that came and joined, all of the people that took massive career risk on what we were trying to do, minimally it looks good on their resume now, hey, that company went public, I think that's great.. Minimally it is some kind of like, hey, okay, this is working well enough, where there's enough people interested, they're willing to invest in the idea.. And what I think is most interesting is, in these big funds, these big hedge funds, these investors, what was really satisfying to me and this again comes back to this concept that I'd love for you to take away about the mission, the best thing was, so there was one woman that runs this massive, massive fund, very big important fund in Boston and to come in and be prepared for the pitch and the questions everything and to basically have her kind of go you guys have made my day.. I have been looking for something in healthcare like this for years and I don't know why anybody gets it, if the technology is falling the prices are falling off the map, why isn't the care getting cheaper, why isn't it getting better, why aren't patients getting this? And it's kind of like to have someone like that in your corner which by the way a lot of our investors are exactly the same way, again, it makes it all worth it, it makes it all better and you know I think we are generally at the point now where even if we do fail, prices in the industry have come down since we came on the scene.. Turnaround times have come down since we came on the scene.. There is no question anymore whether or not people will do genetic panels or gene tests or whatever, no, that question is now settled.. It is now a race, people anybody who needs a genetic test will get one much, much faster and I think - not just because of us, again, there are a lot of industry participants that are taking part in this, but in a large part because we stuck it out there and said this is the way the future is going to be, these things are going to be cheap and available, the margins are going to be low and it's going to be a real consumer market for this kind of thing..

In a sense we have succeeded, no matter what happens at this point and of course now the game is to make it successful going forward.. So maybe one last thing and then we can go to questions, I think the point that I mentioned is, obviously I've been kind of pointing out this mission the burning desire to do something has got to be front and center, again for all the sacrifices you're going to make to make it happen and for all the chances of failure you've got to have it mean something and

then even in the success, I can assure you the success has nothing to do with money or going public or anything, the success is like I mentioned the people you're interacting with are saying, this is awesome, this is an idea, thank you for make it happening, we now are kind of doing some work with some advocacy groups and we just recently had - one of these advocacy group heads, her family has been affected and to sit down and have her just kind of pour out her heart and say I can't believe this and this and this and we need this and we need this and it's just a crime, that this doesn't happen and just to say, we got it, we're doing it, yes, next year, yes the price - that is where the success really feels like success.. None of the other stuff feels any different than when I was at my old job or when we were starting or when it was clear it was possible we're going to fail, it's what you're doing that matters the most, the team that you build is what matters the most, and then I had mentioned that we - that I felt it was really important to pay attention to how you're building the team and how you're running it.. So this is kind of, well I think it's interesting.. So we started the company and again it was a bunch of technology people and we were really excited and excitable and going to change the world.. The other thing is kind of across my mind we had all worked at many places, I'd run fairly large units at companies before and it kind of came, hey, while we're out trying to do this, why don't we also try to create a company that we actually like working at, why don't we try to build a company where people enjoy coming to work every day and build a company where maybe if we do possibly one day have success and grow to be a 10,000 person company it actually is not your typical big, slow company, let's try to do that.. And it was kind of a personal desire that a lot of the - all of the co-founders shared to do that.. It was also a rational desire I think as I sat back at the time and certainly as I think today, in observation about the world kind of lately, technology cycles are getting really, really, really fast, workforces are getting very, very distributed, competition is popping up, I think it's going to be hard to recreate Silicon Valley, but boy, there is a lot of global talent pouring into basically think of it as entrepreneurial capacity on just about any industry you can think of and I can see it happening and so kind of one of the other ideas is not only like why not build a place that's really great to work at that we would like to work at that people don't run around basically afraid of their bosses all the time, why don't we build a company that can actually innovate at scale because I actually think this is going to be important, if we're going to have to stay on these technology cycles, if we're going to have to stay bleeding edge and access global talent, it's going to have to work differently than most companies work today.. So we tried some things early on, we didn't had an org chart until 120 people, we didn't have any titles at all, we still don't have titles, we now have SEC mandated titles, but internally we don't have titles that convey rank or entitlement or whatever; they are very functional, practical titles.. We built a - one of the first things that I did when we got the A round, this was maybe when Randy joined the board, we built the board, we built this little survey system where the team would basically do 360 reviews of each other and especially me and then that would get published to the board and kind of the team could basically either with their name attached or anonymously, you rate me and how we were doing and where we were going, was it working..

And that system has actually evolved over time and now we actually have it in full play.. We don't have peer reviews at the end of the years.. Anybody who is a manager we really want them just focusing on executing and mentoring and getting things done and we have a separate group which is our talent ops group and we have this system that we've built that is essentially like a statistical, inter-personal, basically a performance evaluation survey that's completely 360.. We gather many, many, many data points throughout the year and are especially interested in how I am doing, how Randy is doing, how the leads are doing.. And so it's completely upside-down of kind of how most companies do personnel reviews, who is doing what, who gets paid what, who gets opportunities, who doesn't? We've implemented a lot of unusual features into the way we operate to preserve some of that early, early kind of nimble, the ability to be nimble, the ability to challenge, the ability to chase ideas and I think like I said, we spent a lot of time on it in the early days and I felt at the time this is probably too much and now though that we're getting to 250 people, with half the company hasn't been here more than six months, I am really, really glad we spent as much time doing that because I've actually really been delighted to see some of the core cultural elements that certainly I like about our company and we think are going to be important for the company.. Have not only survived, they are starting to bake in and people are really starting to grab on to them as one of the major reasons they like to work here.. And honestly if we hadn't paid as much attention to it early on, it wouldn't have happened, we would've faced what I talked to many, many entrepreneurs about many, many founders about is that the tragedy of seeing this great thing and as you achieve success, it starts getting away from you, which again to an extent it will and that's good, but then seeing the culture go and seeing bureaucracy set in and the fire go away, for me, again I would - as you are starting a company I exhort you to pay a lot of attention to the type of people you're bringing in and how you intend to operate and manage those people over time.. So that's kind of a view from start to finish, that's my personal perspective of what has gone on at Invitae the last five years.. Let's do a Q&A.. Yes, I mean like I said, I'd love to grab questions from anybody..

Oftentimes your questions are much more interesting than what I have to say, so.. Yes.. Did you in the last five years did you have any big pivots or was it just a linear execution? No, we knew what we were doing from day one.. Yes, of course, yes, and I think this is universal and anybody I've talked to that has done this, you pivot at some point.. Early on it was very much - in a large part because of capital constraints, it was going to be kind of a B2B type play.. We were going to build the technology engine and then basically offer it as a B2B play to LabCorp and Quest and Myriad and these other players and enable them to lower the prices and expand the menus.. When Randy started getting involved, when the market started shifting our direction, it became clear, this is happening fast and it's going to be much more of a foot race, that's when we decided - one major pivot was, okay, we're going to go all the way to the clinician, all the way to the patient, build a brand in the space and build the whole thing soup to nuts which of course is going to take 10 times more capital than the B2B play, but that was a major pivot and that's also what increased the complexity of the company, increased the size of the company.. That was a major pivot.. In that period I mentioned about two and a half years ago, we were seriously considering going full blown kind of I wouldn't say non-medical but really pushing the bounds of the - kind of our position, our relationship vis-a-vis the

current medical establishment, two and a half years ago, we were really kind of debating which way to go and we were pretty close or I think seriously entertaining maybe we needed to go around it, started gearing up to do so but then kind of quickly pivoted back and said no let's stick to our guns, the only way this is going to be impactful for those families and those kids in those waiting rooms in any time in the near future is to get the medical community going on it, serve their needs as well as the patient's needs and get going.. So kind of I'd say those are the two major big kind of one certain pivot and one that was an almost pivot that we quickly pivoted back..

Yes, absolutely.. It sounds like one of the key factors in your success was the grit you have and the determination, so my question is, is that based on just your natural innate ability or is it - do you have techniques to kind of keep going after maybe so many no's that you initially got.. Could you repeat the question? Sorry, I think the question was kind of like, sounds like it takes a lot of grit and determination, are you just insane or was that some kind of choice you made along the way, is that the basic.. I think those that work with me probably think it's a little of the former, but I am not sure.. I think a lot of things in life come down to choice and will, so you - if you really want to do it and you decide you're going to do it then it's just a matter of sheer will and yes, to do it you're going to be - your will, will be tested, actually the whole fund raising process, someone mentioned it to me at the time and now it makes total sense, it's a bizarre way that people go about raising money but someone once said actually it's a pretty good test for the next - the years to come and actually now it totally makes sense to me.. Getting kicked in the teeth all the time, being told it's a bad idea, getting strung along by VCs that have no interest in investing you at all, that's actually a pretty good testing ground, if you can do that for a year or so, you just might be able to then build a company and grow it.. Yes, inborn or learned I don't know, but I prefer to think of it as, if you find something that you really care about and you choose to go try to address it, try to make that difference, yes, you've got to make some choices, you will have to make sacrifices, I am also not a believer in you can have it all, you want to go do something like build a company, you better simplify your life because you aren't going to have a whole lot of time, you better figure out what's important, focus on that and then make it happen and yes, you're going to have to work through a lot to see it through and face a lot of self-doubt and face a lot of challenges.. But again, that's kind of the awesome thing about it, that's - you don't often get an opportunity to really do that.. Yes, okay.. Sean, thank you so much...