

2022

PROGRAM & PROCEEDINGS of the 2022 COLLOQUIUM OF THE STONY BROOK UNIVERSITY INTELLECTUAL PROPERTY PARTNERS Female Perspectives on Entrepreneurship and Research How diverse perspectives inspire creativity, drive innovation, and encourage inclusive economic growth

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PROGRAM & PROCEEDINGS

of the

**2022 COLLOQUIUM OF THE
STONY BROOK UNIVERSITY
INTELLECTUAL PROPERTY PARTNERS**

Female Perspectives on Entrepreneurship and Research

**How diverse perspectives inspire creativity,
drive innovation, and encourage inclusive economic growth**

**January 25, 2022
4:30 – 6:00pm EST**

Virtual via Zoom



Intellectual Property Partners invites you to join us for a colloquium highlighting

FEMALE PERSPECTIVES ON ENTREPRENEURSHIP AND RESEARCH:

How diverse perspectives inspire creativity,
drive innovation and encourage inclusive economic growth

JANUARY 25, 2022 • 4:30 PM TO 6 PM EST



Moderator:
Clovia Hamilton
Assistant Professor of
Technology and Society
SUNY Korea



Elizabeth Dougherty
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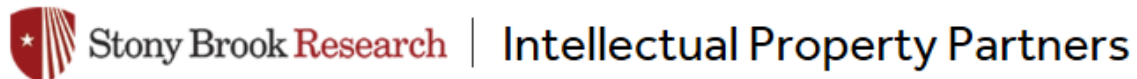


This free event will be virtual and registration is required.
For more information visit stonybrook.edu/ipp/Female-Perspectives



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**2022 COLLOQUIUM OF THE
STONY BROOK UNIVERSITY
INTELLECTUAL PROPERTY PARTNERS
Female Perspectives on Entrepreneurship and Research**

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Pamela J. Kalbfleisch	Charles R. “Chuck” Johnson Endowed Professor of Communication	University of North Dakota
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WELCOME TO THE 2022
*Colloquium
of the
Stony Brook University
Intellectual Property Partners'*

FEMALE PERSPECTIVES ON ENTREPRENEURSHIP AND RESEARCH

*By Maurie McInnis, President
Stony Brook University*

Good afternoon and welcome to today's colloquium Female Perspectives on Entrepreneurship. Today, we'll be hearing from a fascinating group of women on how diverse perspectives can and, in fact, already do lead to more creative research, more sustained innovation and more inclusive economic growth.



As President of Stony Brook University, I can say that diverse and varied perspectives are not only central to our institutional mission, but are essential to our society, as we hope to create a more inclusive, more sustainable and ultimately brighter world.

Just as we put so much energy and support behind interdisciplinary research, so too, must we put our passion behind creating a network of scholars, researchers, entrepreneurs and leaders who are willing to grow, who are willing to learn, who are willing to defend their claims, change their minds, to bait and challenge and dialogue with one another. We are in a time where our path forward as a society will be defined by our innovation and our creativity.

Diverse perspectives and collaboration between different institutions, fields and industries must become the norm.

Our panelists know this, and I am so honored to be able to learn from them today.

This afternoon we'll hear from:

- Amanda Elam, CEO and co-founder of Galaxy Diagnostics, Inc. and Research Fellow at the Diana International Research Institute at Babson College

- Elizabeth Dougherty, Eastern Regional Outreach Director for the US Patent and Trademark Office
- Pamela Kalbfleisch, Endowed Professor of Communication at the University of North Dakota
- Siri Terjesen, Professor in the Norwegian School of Economics and Associate Dean of Research and External Relations and Professor of Entrepreneurship at Florida Atlantic University
- Jennifer L. Woolley, Associate Professor of Management and Entrepreneurship at Santa Clara university,
- and our moderator, Clovia Hamilton Assistant Professor of Technology and Society at SUNY Korea

Dr. Jane Goodall once said that the greatest danger to our future is apathy. As we begin 2022 ready to tackle the most pressing challenges of our time, I am grateful for the passion and integrity of my community; for the network of women researchers and entrepreneurs that are breaking down old barriers and making a difference.

To all of our panelists today, thank you for sharing your time and your expertise. Thank you for dedicating your careers to innovation, creativity and strengthening women's voices in research and entrepreneurship. We look forward to the exciting discussions.

INTRODUCTION

By Richard Reeder,
Vice President of Research
Stony Brook University Research Foundation



Thank you for your inspiring remarks President McInnis! I'm Rich Reeder, Vice President for Research at Stony Brook University.

For those not familiar with us, we're located on Long Island about an hour east of New York City.

So, I'm happy to welcome you today to the colloquium on female perspectives on entrepreneurship and research. I think we all recognize this is a much-needed discussion that's important for the development of entrepreneurship and research throughout the world.

It's becoming more and more obvious how diversity and inclusivity have an impact on the success of research and the development of business. Here at Stony Brook, our entire research community believes creating an equitable and integrated work environment to be an essential part of the success of our innovation and culture. So, we're proud to host this meaningful discussion as we want all voices of our community to be heard.

You've already heard from President McInnis about the impressive accolades of our distinguished panelists. Thank you!

And I want to share with you some of the topics that will be discussed today. These include gender equity and SBIR STTR funding; the relationship of female academics and venture capitalists; promising national programs focused on growing new tech-based ventures for women; how women can use communication to better enhance mentoring relationships; and how the US commerce department can help female academic entrepreneurs.

So, I'd also like to extend my thanks to all the panelists for sharing your unique experiences in the discussion today.

And a special thank you to Donna Tumminello, who is Associate Director and to Dr. Sean Boykevisch, Director of Stony Brook's Intellectual Property Partners; and also, to the IPP and Economic Development team for putting this event together.

Today, now I'm pleased to introduce the Moderator of today's panel Dr. Clovia Hamilton. Clovia teaches ethics, software applications and industrial operations management at SUNY Korea. She's a patent attorney and former USPTO patent examiner.

She was a tech transfer specialist at the University of Illinois Champaign Urbana and also at Old Dominion University and at the EPA National Fuel and Emissions Lab.

Clovia also served as a small business counselor at Georgia Tech and counseled more than 200 businesses on how to obtain government contracts.

She owned her own business for 10 years and her current scholarly research includes multiple publications on the topic of university tech transfer Clovia. Thank you for joining us today. And let me hand this over to you now to begin the event.

COLLOQUIUM TRANSCRIPT

Clovia Hamilton: Thank you for the introduction, we have a stellar panel of experts. So, I'm not in this alone!

Clovia Hamilton: I do want to do a little housekeeping before we get started. We will have Q&A, the question-and-answer session, section open to you. You can post questions out there. We may not get to the questions until the end of the program. We do have a number of questions and topics that we want to cover. So, we want to make sure that we get you all the nice golden nuggets of information that we have planned to deliver today. And then at the end of the session, we'll have the Q&A and then we'll have a chat session. We want you to be able to network with one another. In the chat, we encourage you to let us know who you are. Let us know your name, and your affiliation. We are going to record the presentation. We're going to have the conference proceeding. So, we're transcribing everything, and we'll publish a proceeding.

Clovia Hamilton: So far, they've been questions about whether we are recording this and, yes, we are. We will transcribe it. We will have a proceeding and we will have resources. So, the gold nuggets will be shared with you, feel free to take notes. But we will have all of that information available to you. We will also share a list of the registrants. So far, I see that we have 116 participants! That's major! That's wonderful!

Clovia Hamilton: So, I think I've shared with you all of the housekeeping information and I want to start out by giving you a little information about women businesses. According to the US Small Business Administration, there's 1.1 million women owned businesses. That's pretty impressive!

Clovia Hamilton: 99.9% of them are small (Esposito, 2019) and what we mean by small is that a small business has less than \$750,000 in revenue. So, less than or equal to \$750,000. I was a part of a program years ago called 'Count Me In', and we were trying to get a million women owned businesses to the million-dollar mark. So, there are those efforts that are going on.

Clovia Hamilton: To be a woman owned small business and the Federal Government system to be recognized as small businesses, the business has to be controlled by at least one woman. They have to be owned by 51% woman owned (US SBA Office of Government Contracting, n.d.). And what's interesting

related to university tech transfer is that way back in 2005, 15-17 years ago, Marie and Jerry Thursby at Georgia Tech published that 43% of male business faculty were disclosing inventions and working on becoming academic entrepreneurs... 43% more than women (Thursby & Thursby, 2005; Sohar; Shaw & Hess, 2018). So, that's a bit of the focus today. We want to talk about female entrepreneurship. We want to talk about some research results and what has happened since those results were published in 2005.

Clovia Hamilton: One of the things that has happened since then was that AUTM, the Association of University Tech Managers, has initiated some programs to try to encourage universities to have more women involved in disclosing inventions and becoming a part of tech transfer in tech commercialization. And we have panelists here today. They're going to one by one, introduce themselves to you and we'll start off with those introductions and then we'll go into some questions, because even though AUTM has initiated programs to try to increase women involvement, some of the things that they're doing is they're trying to collect metrics tracking the female inventors. There's a Women Inventors Committee. Next month in New Orleans at the Association University Tech Managers annual meeting. We're convening and I'm going to be a part of the Diversity, Equity and Inclusivity Committee. We're going to talk about some of the diversity initiatives.

Clovia Hamilton: So, there are some things happening. They have a toolkit out on the university tech transfer association's website that talks about things like there's the need to collect metrics; there's a need to have more a Roundtable-discussions like this; there's a need to collect feedback from women business owners; and a need for funding (AUTM Women Inventors Committee - Barriers and Best Practices Subcommittee, n.d.). So, we're going to talk about some of those topics. But we're going to dive a little bit deeper into the research that we're familiar with. I will lead by asking questions.

Clovia Hamilton: And I'll stop here to allow for introductions. We'll go one by one. Let's see, we'll start with Amanda Elam. Amanda, you want to tell everybody who you are and introduce yourself?

Amanda Elam: Sure! First of all, thank you very much for inviting me to join the conversation here today Clovia.

Amanda Elam: And I think I was already introduced as the CEO of a medical diagnostics company in North Carolina. I'm also a

research fellow at the Diana International Research Institute at Babson College which is the home of the Diana project.

Clovia Hamilton: Next up we have Jennifer Woolley. Jennifer, you want to introduce yourself?

Jennifer Woolley: Sure, thanks for having me.

Jennifer Woolley: My name, as you know, is Jennifer Woolley and I'm an Associate Professor at the Santa Clara University's Leavey School of Business and I focus on entrepreneurship - - specifically, high tech and science-based entrepreneurship and the infrastructure that is built to support those entities.

Clovia Hamilton: And then we have Pam.

Pamela Kalbfleisch: Yes, I'm Pamela Kalbfleisch. I'm the Charles "Chuck" Johnson Endowed Professor of Communication at the University of North Dakota. And I'm the author of Mentoring Enactment Theory about how people can use their communication to form, maintain, and repair mentoring relationships.

Clovia Hamilton: We've got Siri!

Siri Terjesen: It's great to be with you all! My name is Siri Terjesen, and I am the Phil Smith Professor and Associate Dean at Florida Atlantic University's College of Business in Boca Raton and also Professor to at my alma mater the Norwegian School of Economics. I'm excited to be here because I've been part of the GEM project that Amanda's going to speak about for almost the last 20 years, and this was my first choice, even for my dissertation topic as a master student. So, I am so thrilled to be with all of you today. Thank you! Very good!

Clovia Hamilton: And then we have Elizabeth Dougherty with the US Patent and Trademark Office.

Elizabeth Dougherty: Thank you, Clovia! It's such an honor and a pleasure to be on such an esteemed panel. It's lovely to be with you. Thank you Clovia and the entire team there at Stony Brook for issuing the invitation for me to be a part of this dialogue!

I'm a 30-year veteran of the US Patent and Trademark Office having started as a US patent examiner many years ago.

And I've had the pleasure of serving my agency in a variety of different roles. My current role is as Eastern Regional

Outreach Director which is really just a very long way of saying that I get to help people every day and I get to help remarkable inventors, innovators and entrepreneurs.

And it's been a real point of pride and pleasure to work with an agency that is committed to expanding the diversity of those who see themselves as inventors, innovators and entrepreneurs. And I hope I can bring some of that to the conversation today. So, again, thank you for having me and I look forward to a really robust dialogue.

Clovia Hamilton: Very good! Well, we'll get started with questions. I'm going to start with Amanda Elam.

Clovia Hamilton: Amanda is faculty at Babson College. In fact, most of us have the Diana Project in common. We met up in Kansas City a few years ago. And so, Amanda is going to briefly tell us about the Diana Project and her experience with the GEM report which is the Global Entrepreneurship Monitor report on female entrepreneurs (Elam, Hughes, et.al., 2021). So, let's get started with that Amanda.

Amanda Elam: Thank you Clovia! I'll begin with by saying that the Diana project is actually an international research consortium. It was organized in 1999 and it was really designed to bring together research scholars around the world who were studying women's entrepreneurship, which was sort of like a minority topic and not something where those scholars had other people, even in their schools, researching the same topic. So, we created a forum where people could come together, share their knowledge, and really build on each other's expertise and resources. It's been very successful!

Amanda Elam: In 2020, we created a permanent home for the Diana Project at Babson College with the establishment of the Diana International Research Institute - DIRI, as we call it, and we're expanding our mission. So, we're trying to take and the conversation that's been happening for over 20 years among researchers and we're trying to branch out to include other stakeholders. So, we want investors involved in the conversation. We want bankers and other funders involved in the conversation - we want educators and those people who are starting and growing programs to support women entrepreneurs around the world involved in the same conversation that we've all been having for a long time and benefiting from the thought leadership and the knowledge that we've created. I think that the GEM women's report is one example of what scholars really have to bring to the understanding of women's entrepreneurship and how it figures so importantly in

communities and in countries and really the very real and important contributions that women entrepreneurs are making around the world.

Amanda Elam: Our latest GEM report for women's entrepreneurship was released in November of last year. And in that report, based on the data we estimate that there are over 400 million women around the world, starting and growing businesses today. That is a sizable population and important population.

Amanda Elam: As Clovia mentioned, you know, that most of those women are running very tiny businesses. So are most of men's to be fair. Right?!

Clovia Hamilton: That's true.

Amanda Elam: It's just that when we come to looking at who's growing the biggest businesses and who's doing the most innovation and who's doing the most export, women tend to trail men. This year in the GEM women's report, we're trying to flip that narrative a little bit because year after year that's the same story. We hear this all the time. Women are trailing men, women aren't doing as much as men, ... They are growing businesses that are as big. But women are still doing those things. And, if we're going to change the stereotypes that are continually used to diminish what women are doing, we need to look at the data a different way.

And so, the important statistic for everyone will walk away with here is that one out of three women entrepreneurs starting businesses today are high aspiration. They want to grow big businesses. Right?! One out of three. So, for every country, every region every program looking to support entrepreneurs, you need to be supporting women. It's one out of three of the aspirational, big goal entrepreneurs in your consortium. Why aren't you helping them?!

Amanda Elam: And one out of two of all entrepreneurs innovative products to their marketplace are women. So, half of all entrepreneurs innovating are women.

Amanda Elam: Why aren't we supporting them better. And then, one out of three entrepreneurs who are involved in internationalization, exporting to other countries, are women.

Why aren't we are helping them?

Amanda Elam: So, with that, I'm going to stop there.

Clovia Hamilton: So, when you say why aren't we helping them, what type of evidence, do we have Amanda related to barriers or the lack of help?

Clovia Hamilton: Is this what we're hearing when we collect the data for the GEM report and that sort of thing?

Amanda Elam: Right, and I think there's really two different sets of measures that I focus on. And I'll talk about them as sort of cultural or structural measures.

Amanda Elam: I'll start with a cultural measure. This is what gets everybody excited right: stereotypes. Women face a lot of stereotypes.

Amanda Elam: I'll start by saying that women don't just face negative stereotypes. There are also a lot of very positive stereotypes for women in business. We know that women in business are really good at customer service and support.

They're really good at marketing. Right?! They're intuitive, in fact, at marketing. They have a good idea about the customer value proposition. They are actually considered gifted at organizational routines. Those routines, by the way, help the business grow and offer consistent service. They're also gifted in administrative details - really not losing sight of the details and everyday business operations.

And I think that those are really great things. But it ends up meaning that women are obvious candidates for administrative positions. Right?! and entry level; but what about advancement?

And then, so, the same negative stereotypes about women's business leadership that work against women as entrepreneurs. Right?!

Amanda Elam: Some of those [negative stereotypes] are that women are risk averse that they won't take as big a risk. Well, guess what?! On average, women outperform men in a number of different areas of business. They make better portfolio managers, on average, because they do more calculated risks.

Amanda Elam: Men are more likely to start unicorns but they're also more likely to have devastating failures and losses of hundreds of millions of dollars. Women tend to converge around

the mean as business leaders I think other negative stereotypes that face women to are things like you know.

Amanda Elam: The whole sort of public speaking charismatic leadership will anyone listen to them is anyone going to listen to them, can they really lead this organization.

Amanda Elam: And I think that that is a problem. I think it really works against it, and women are a heterogeneous population. Just like men are they come at business startup for many different reasons, with many different goals and interests and justice. There is a small group of men who make wonderful charismatic leaders and are willing to take huge business risks and grow things. There's a small group of women who are quite willing to do that again. Whether those are the best business leaders, I think I will leave the panel here to consider. But the positive and negative state as stereotypes, you know, are what really inspire us when we're making decisions about ourselves, our capabilities and where we should be spending our talents.

Amanda Elam: And as long as women are hit with these negative stereotypes, it undermines our self-confidence. And more importantly, I think what we're seeing in the venture capital and angel investing data, this actually disincentivize investors to invest. They just don't have a lot of confidence that women can pull it off and not necessarily because they don't believe women are talented but because they believe that the whole world is against them. So, why would you invest in them?

Clovia Hamilton: I experience this with my own consulting firm. I was in business, maybe five years with steady income and could not get a line of credit from a bank. And, finally, Suntrust gave me a line of credit, maybe in my fifth year. You know, after several years and I always see other businesses get funded. And the banker told me that it's very hard for her to convince leadership at the bank to fund women owned businesses and especially minority race women owned businesses. So, that's why it took so long. I would submit small business loan applications and credit line applications, and they would just get rejected. So, I lived that, you know, firsthand. I know, you know, that this is a real issue.

Amanda Elam: And Clovia that's a perfect example of where the structural characteristics come in. So, women have less in terms of personal savings. They are less likely to own a home. They are less likely to have any kind of security. They're less likely to have a, you know, a vigorous credit history

that makes them a good risk. And all of these factors really work against women in banking. The rules around who you give money to who you make loans to in banking are pretty strict. Right?! Loan officers don't have a whole lot of play. It's not high discretion. You either qualify or you don't. Digital banking seems to be removing all or any discretion that might play a role there.

Amanda Elam: But in private investments, it's all discretion and it's all about confidence in the leadership, and confidence in the market opportunity.

Amanda Elam: If most of our investors are men, guess what they are less likely to understand what a female market? So, fintech and markets that are really driven by you interested women, they're less likely to understand that. And so, it's a complex problem. As said, again, cultural and structural factors are contributing to the challenges that women entrepreneurs face around the world.

Clovia Hamilton: Wow! Just wow!

Clovia Hamilton: And that brings us to our next panelist Jennifer.

Clovia Hamilton: So, I have some questions for Jennifer Woolley. During Stony Brook's last panel discussion, academic entrepreneurs at Stony Brook mentioned taking advantage of the federal agencies SBIR funding programs. So, when I'm talking about Stony Brook's last panel, the Intellectual Property Partners, the tech transfer office at Stony Brook, had a panel discussion ahead of ours some months ago.

Clovia Hamilton: And SBIR funding was discussed. And the SBIR and STTR funding programs focus on developing innovative solutions to pressing problems. The SBIR program requires that the applicant be from a firm with fewer than 500 employees. And the STTR program requires that the applicant collaborate with university or federal labs. So, it doesn't have to be Stony Brook or any one of your universities. It can be a federal lab.

So, Jennifer you study nanotechnology and genomics. You know, very heavy and impressive fields of study. You study firms in these areas. What data exists related to gender and the SBIR and STTR programs?

Jennifer Woolley: Well, thanks for asking this. This is really exciting and really interesting area of structural support for women. I studied specifically nanotech, and I looked at nanotech because it crosses a lot of different industries and it's very science based.

Jennifer Woolley: I actually looked at who was getting these SBIR the small business, innovation, research grants and the STTR two years for tech transfer specifically and 59% of companies obtained an SBIR and STTR grant. 59%! And over half of those went on to phase two, which is more commercialization of those initial funding innovations. Now, when I broke this down by gender...

Jennifer Woolley: backing up a second - - Amanda talked about how we often take women entrepreneurs are women, academics and women as homogeneous group. And it's so great, to be able to parse some of this apart a little bit. So, just starting with women on founding teams, I found that 65% of founding teams, with women obtained STTR grants. This means it's higher than average - - significantly higher than average. Now, we don't know how many of these firms actually applied versus the amount that didn't apply. But still, it's a significant amount.

Now what's more interesting is when I considered the companies that had women who worked at universities, such as professors or research scientist postdocs students, 77% of these firms with academic women on their founding teams obtained SBIR or STTR grants. Now I'm going to back this up a second because I get excited to get very excited about this!!

Jennifer Woolley: If I flip that and I look at medical and its male academics, only 52% of the firms with male academics on their founding teams obtained SBIR. That's 77% versus 52%.

Jennifer Woolley: Now there's a considerable difference. So, when we say there's a stereotype that academic women aren't being innovative or aren't being entrepreneurial, that's just wrong. We have data that shows that they're actually making huge contributions in terms of innovative research.

Clovia Hamilton: That is amazing! I didn't know this. Do you think there's a problem of messaging? You know, we are not widely hearing these statistics?

Jennifer Woolley: You know, I am the keeper of the statistics now. There isn't a lot of information that gets shared about

these wonderful statistics. I mean it's not like we're on the headline news. So, it's a slow process to get the word out.

But as we grow our community and have more of these panels, people will start to learn. And just as a related concept, we've actually grown a huge percentage of the population of just scientists in general. And we're almost at parity in the sciences for PhD students.

Jennifer Woolley: So, again being very innovative and these PhD students are becoming entrepreneurs and working for very innovative companies is very cool!

Clovia Hamilton: Very cool! So, there are a variety of ways that an entrepreneur can exit a business. What have you learned about the exit or firm outcomes by the women entrepreneurs about exiting?

Jennifer Woolley: Sure! So, in general, in terms of just closing your company, there's not a lot of difference between male and female founded firms. Unfortunately, firms with women professors are much more likely to close. But those with female research scientists are much less likely to close.

So, if we pull apart, that the heterogeneity of these groups, a little bit further, we can start to look at the motivations and the backgrounds to get a little bit more information about how innovative these companies are and how their career trajectories actually influence where they're taking their companies.

Jennifer Woolley: And, interestingly, women as research scientists are creating a huge number of companies and they're actually much, much, much - - like 11 times more likely to have a company that's acquired, than other firms.

Jennifer Woolley: And it's twice as likely for male research scientists. But 11 times for women research scientists. That's amazing to create a company that is valued and is acquired by another company who sees the value in that company.

Clovia Hamilton: So, would you say that that's the goal? To get acquired in order to, you know, profit from that that by this that sale and growth of your business? Would that be the end goal?

Jennifer Woolley: Well, I live in Silicon Valley. I'm a little jaded. But around here, and I think a lot of places, we all know that there aren't that many companies that go IPO and

there's a handful that become unicorns that are billion-dollar companies.

Jennifer Woolley: But if you're actually thinking about how you can exit in a profitable way, there aren't that many options. And an acquisition is one of the best, if not the best way, to exit a company and move on and do something else.

Clovia Hamilton: Right!

Jennifer Woolley: Well, if that's what they want.

Clovia Hamilton: What can you tell us specifically about the academics? I love that they're 77% academic women. I didn't know that statistic and that's amazing to me!

Clovia Hamilton: But what can you tell us about the women? For example, the sort of things we hear in the hallways and tech transfer and among faculty is that the barriers specific to women would be things like pregnancies, raising our children, families, and even tenure and promotion, you know - - if being involved in tech transfer and academic entrepreneurship is not valued and doesn't count towards tenure, then that would be discouraged. But to hear that the number is as high as 77%, you know, the numbers as high as 77% that's encouraging! But what type of barriers can you share with us along those lines? You know, just anecdotally.

Jennifer Woolley: Well, I think there's a lot of anecdotes out there. So, I want to be careful.

Clovia: Right!

Jennifer Woolley: I think it comes back to the types of careers that people are choosing. When I looked at career trajectories, I found that when looking at founding teams, women professors - - or you're more likely to be a research scientist than a professor if you were founding a company, and it was the reverse for men.

Jennifer Woolley: And that could be career trajectories it could be mentorship it could be motivations. There are a lot of different things. It could be the sheer numbers. So, I think there's a lot of things that are - - well, there is a need to do research, obviously.

But also, there's a big shift going on right now as we're paying attention to working from home; paying attention to the different roles that people are taking in parenthood; and the

different motivations that people have in starting companies. And, as we see more and more women in academia or outside of academia becoming involved, barriers are breaking down. And, as we see more people to emulate, this becomes a more attractive career path and more possible recruitment path overall.

[Note: See (Woolley, 2017, 2019a, 2019b, 2021)]

Clovia Hamilton: Right! So, what would the takeaway be?

Jennifer Woolley: There's hope!

Clovia Hamilton: There's hope and there's a need. There's a gap. This is an exciting gap that we need to collect more metrics! This is what the Association of University Tech Managers are trying to do with their women's initiative.

Clovia Hamilton: This is what the Diana Project is trying to do. This is what we're all trying to do is to collect more metrics. We need to collect more data to fill this gap and like you said, be careful about these anecdotal barriers and reasons. We need to focus on real research, you know!

Clovia Hamilton: And that brings us next to Siri!

Clovia Hamilton: Siri, the National Science Foundation, what we call the NSF, administers the I-corps Program.

Clovia Hamilton: And I-corps is an initiative to transition NSF funded research from the lab to a product into the marketplace. So, this is tech transfer and tech commercialization (NSF, n.d.).

Clovia Hamilton: And the I-corps sites act as a training ground for faculty for postdocs, graduate, and undergraduate students to learn how to increase the impact of their research by exploring nice commercial potentials (NSF, n.d.).

Clovia Hamilton: And Siri studied all this wonderful data. And the first few years, Siri shared with me, that a while back, it didn't have any gender data. I didn't realize that. So, that was a shock. I'm being shocked all over the place! I've got a lot of reading to do (laughing). But what have you learned about the women ventures, now that we have gender data?

Siri Terjesen: Thank you so much, Clovia! Thank you everyone! You know that is a shock! Right?! To go into research project,

at the time in 2018, but even now and find that this is a major government expenditure and you've got all kinds of data and how the team felt about each other; and the members. But, there wasn't data on gender.

Siri Terjesen: But luckily, we have actually, to Jennifer's point earlier, some anecdotal evidence which we can share, and of course we're looking at the data.

Siri Terjesen: And one of the distinct pleasures both at American University my prior institution and here at Florida Atlantic University has been the principal investigator of those sites. So, working closely..

Siri Terjesen: And I want to say that I-corps is a truly bipartisan effort, and it spans the entire country. So, anyone who is at a R1 or R2 institution or nearby can take advantage of this. It's supported by all legislators.

Siri Terjesen: And it's just trying to increase the supply of ventures really to get to where Jennifer was with the SBIR and STTR and other funding.

Siri Terjesen: So, it runs at 70 universities across the country. Fields between 10 and 40 teams a year. And then there are national efforts, where people can go in. But, on average, it takes about seven weeks of training, has 100 different customer interviews, and has a team of about three people.

Siri Terjesen: And the latest data absolutely include women! And these women are serving. They could be the entrepreneurial team lead. They can be an I-corps team lead or a technical mentor. And they're participating!

And, of course, that's to the points that Jennifer raised earlier because women are increasingly not only the PhD students in these programs that at parity with men, but they are the faculty in these programs. And if we go to lower levels than the PhD, the masters and the undergrads, then pretty much women now outnumber men at most universities.

Whether or not that's in the sciences in the US, Korea might be different, this has been the case for several years now, at most, universities. There are some exceptions.

Siri Terjesen: So, this is exciting because now, a professor can go into the classroom and recruit students. They can say 'hey, you know I feel like that this is same project that you did. Did you ever think about really commercializing that?'

One exercise that I had in my class was actually to go to the USPTO and look up patents and ask the students to think about whether they might want to commercialize those. And there are, as you probably know, databases, where the US Government just tries to promote the patents that are available for commercialization within the US. So, that's a perfect training ground even for those students who haven't invented something themselves. Wonderful opportunity with many, many, many more women!

Siri Terjesen: There's a little bit of, you know, what we would call it like a nice natural experiment in the data because the NSF has tried to target programs to women and minorities increasingly. So, those numbers are up.

Siri Terjesen: But we definitely see this. And let me give you a couple of anecdotal examples. I have a former student, Arena King from American University who was an undergrad. And she founded a company called Search a Care, which is an intubation tube. She worked on that with the NSF I-corps. And then, as soon as she finished her undergrad - - no! masters - - she went to MIT to do her PhD.

Siri Terjesen: And another student, I was talking with her yesterday, Samantha Hepworth worked with a male student on a venture that was drones to scan coastal erosion. It's a lot easier to do it by drone than it is to go out to the coast to look at the soil erosion. And she's now running an entrepreneurship program and applying it to masters' programs.

Siri Terjesen: And another one that the NSF I-corps promotes is the 2014 three ladies at Carnegie Mellon University who founded a venture that tracks human trafficking. And then they were successful in getting SBIR funding to take that company Traffic Jam to the next level.

So, another piece that we know from research - - and I know Pamela is going to cover this - - is that women want different mentors and have different relationships and the NSF I-corps allows that. It's not just one person out there that you imitate. But you're looking for multiple mentors for your venture. And then you're getting advice from a hundred customers which would include men and women.

Siri Terjesen: And then you really joined this social networking fabric. So, I think it's a truly exciting program. I encourage anyone who's at a university to look at it; and

anyone who wants to provide mentoring support, to think about working with their university that's local as a mentor.

[Note: See Darnihamedani, & Terjesen (2020); Audretsch, Siegel & Terjesen (2020); and Brieger, Bara, Criaco & Terjesen (2020)]

Clovia Hamilton: I think there are several AUTM member tech transfer offices that make use of students. And you know part of my PhD research was to look at Historically Black Colleges and Universities. The Minority Serving Institutions aren't as actively involved in university tech management (Hamilton, 2016, 2017, 2018, 2020). So, that's one of my lifelong dreams, is to see those numbers increase. And some of the Historically Black Colleges and Universities, their leadership realized that it's important to nab the students early on.

Clovia Hamilton: You know let's look at the student projects. Let's look at the student business plans. Let's look at, you know, pay close attention to their ideas and that sort of thing. And some other Historically Black Colleges and Universities are under resourced. So, they look at students as an opportunity to increase their capacity for evaluating technologies that are developed at their universities. So, I think this is an area that we cannot ignore. You know, we focus so much on practitioners and on professors. We need to also include our students in this equation.

Clovia Hamilton: So, you mentioned mentoring! And that's a nice segue to Pam! Pam is going to talk to us about mentoring and communications. And so, Pam, you study women business owners and their mentoring relationships.

You know, we all have mentors, and I think we take them for granted often. And we don't really study or reflect on, you know, ... we know when they go bad.

So, I love that you research this formally.

Clovia Hamilton: You know I had my own consulting firm for 14 years and I relied heavily on mentors. And as an academic, I'm a tenure track professor. I rely heavily on mentors still to this day. I think a lot of us do because we need help with navigating, you know, these waters. So, my question for you - - I have a couple questions for you, and the first is is it hard for women to find mentors. Do you think is harder for women and men?

Pamela Kalbfleisch: Actually, women have wonderful skills at finding mentors and finding relationships. So, women are natural relationship builders and can form many, many ties quite quickly.

Pamela Kalbfleisch: One of the problems that women have is that they don't necessarily recognize when they're being mentored, especially if their mentor is a woman.

Pamela Kalbfleisch: So, when women have mentoring relationships, the communication in those relationships is very similar to the communication in women's friendships. So, there is more intimacy in the interactions. There is more closeness. And they sound a lot like they're talking to their dear friend (Kalbfleisch & Keyton, 1995).

Pamela Kalbfleisch: And, in a way, they are talking to a dear friend. But it's a dear friend that's helping them; that's providing tangential, tangible aid in securing money, in securing connections; and in getting their name mentioned in the right circles.

Pamela Kalbfleisch: And they very often don't see them as mentors because they are used to seeing a more male oriented mentoring model where it's more hierarchical. There's more distance.

Pamela Kalbfleisch: And in the women's mentoring relationships, they are much closer relationships and they're much more interactive like friendships.

Pamela Kalbfleisch: And so often what happens is women sit there in a room and their proteges are there and they're very proud of their proteges and then the proteges will say "you know, I've never had a mentor I would really appreciate having a mentor. I've had to do this all alone and I haven't had a mentor".

Pamela Kalbfleisch: And they have mentors. They just don't recognize that they have mentors. And it's sad for the mentors to not be recognized. But it's also sad that the women aren't realizing that they actually do have mentors.

Pamela Kalbfleisch: So, I think if you asked women about mentoring, they'll say, "no, I don't have mentors. It's hard to find a mentor. There aren't women in positions to help". But actually, there are women in positions to help and who are interested in helping (Kalbfleisch, 2000).

Pamela Kalbfleisch: But the communication is going to be much more informal than you would expect with men.

Clovia Hamilton: I'm just reflecting on my own career. I've been out here 35 years as an engineer, and as a lawyer. And I am 'always', you know, always or perhaps 'often' the only female. So, if you are the only female or if there are so few females in your circle professional circles, then the mentors are going to be male.

Clovia Hamilton: So, I can relate. And I can also relate to how important it is for us all to reflect on our relationship with one another with women and to ask, you know, when we have been helped and mentor and guided.

Clovia Hamilton: I could sit here today right now this moment and say I think men have helped me more than women. I can honestly say that now, if I were to actually gather metrics and look at things close more closely, the numbers might shift to mostly women (cf Neumeyer, Santos, Caetano & Kalbfleisch, 2018).

Clovia Hamilton: In my situation you know, scientists and engineers and researchers, we would probably say that men help us more in our careers. But again, that's anecdotal. But it's very important that we give credit where credit is due. So, if there are women who are mentoring and we want to encourage more of that, then we absolutely need to recognize it.

And what can you share with us in terms of communicating with one another?

Pamela Kalbfleisch: So, I have actually helped women in engineering programs. I've helped connect women with other female engineers that are more advanced. And one of the problems is figuring out what they can talk about because, especially in a formalized mentoring program, people spend a lot of time trying to perfectly match a mentor with a protegee.

Pamela Kalbfleisch: And the bulk of the time in the mentoring programs are just matching these people, then they have a beginning event of some sort, and the people are matched.

Pamela Kalbfleisch: And they might meet and have lunch and maybe a coffee and then it's pretty much over. And the problem is they don't have a context for that relationship to go on.

Clovia: Right!

Pamela Kalbfleisch: So, having some sort of task to work on together is incredibly helpful in building a mentoring relationship. That's one of the ways you can start a mentoring relationship is offering to help somebody because we are all overworked. We are all committed maximally and by offering to help, that's something very tangible. And most people can see something that you could do that would be helpful. And it provides an interaction and provides a reason to have communication. So, you have something beyond just your commonalities. You have some project you're working on together. And so, about offering to help... amazingly, people enjoy being around people who are positive. That sounds really like a no brainer. But it's amazing how hard it is for people to be positive sometimes. And positivity is related to relational satisfaction and it's the strongest form of communication relating to satisfaction. That's in all sorts of relationships! But in mentoring relationships as well, I mean, you have so much time. You can help so many people.

Pamela Kalbfleisch: If people are positive about working with you and positive about what you're interested in it's much more fun to work with people who are positive than people who are negative. And so, being positive, helping with tasks, introducing mentors and proteges to networks, helping to connect them, providing assurances that you'll be there in the future, and being open about what you're thinking, what you're feeling, and how things actually are going. So those are some other things you can do (Kalbfleisch 2002, 2007).

Clovia Hamilton: The Association of University Tech Managers, as I mentioned earlier, they have this tool kit that they're working on for how to you know help female inventors and academic entrepreneurs. And I could totally see the need for more information on best practices for mentoring and to include these gold nuggets, the positivity in networking and the sharing of resources, how to go about matchmaking ... I think all of those types of things..

Clovia Hamilton: I can say you know I've been in tech transfer for many years since the 1990s and we really haven't had much of that available. So, you know, again, this is another gap area where I think we need to fill it with more research data and research results on best practices. So, you know I appreciate you, Pam! You know I think we absolutely need more of this type of support.

Pam: Yeah!

Clovia Hamilton: And we're down to a half hour more in our program! We want to have enough time for Q&A, and for a bit of networking, and chatting at the very end. But, last but not least, we still have some more questions.

Clovia Hamilton: I absolutely want to get to Elizabeth Dougherty with the US Patent and Trademark Office. We have the Patent and Trademark Office in common. Yet, we did not know each other, before this event.

Elizabeth Dougherty: Once a colleague, always a colleague.

Clovia Hamilton: That's right! And about 30 years ago I was a patent examiner in Alexandria. I think you guys have moved from Alexandria. Where are you now? No, we were in Crystal City.

Elizabeth Dougherty: Correct! So, we've been an Alexandria for about 15 years now.

Elizabeth Dougherty: What a lovely campus style setting we welcome when the buildings are open to the public! We welcome everyone to come and visit! We love to have the public in our facility!

Clovia Hamilton: It's such a cool experience! I've been trying to encourage our campus and other campuses to have formal programs for students so that students can be encouraged to become patent agents, patent attorneys, and patent examiners. I think universities are ideal for that. I know Georgia Tech has a formal program and I would love to see other universities do that sort of thing. But you have a lot of golden nuggets for our audience. So, the US Patent and Trademark Office is a part of the US Department of Commerce and under Gina Raimondo's leadership there's a rebranding going on about the National Council for Expanding Innovation and the Council for Inclusive Innovation (US Patent and Trademark Office, 2022). So, can you tell us a bit about that?

Elizabeth Dougherty: I'd be happy to. I'm thrilled, in fact, to share and to shine a light on this remarkable program.

Elizabeth Dougherty: So, as Clovia suggests, this initiative was previously called the National Council for Expanding American Innovation or NCEAI.

Elizabeth Dougherty: And it has in fact been rebranded as the Council for Inclusive Innovation, and that was due to a number of factors. One of which was the alphabet soup was getting a

little bit confusing. There is the National Advisory Council on Innovation and Entrepreneurship, which shared all of the same letters. So, I think that might have been causing a bit of confusion.

Elizabeth Dougherty: And because we've also transitioned this initiative from the past administration to the current administration under Secretary Raimondo's strong leadership, we are thrilled to rebrand it in a very clear and concise way again as a Council for Inclusive Innovation. And I am excited and thrilled to report that just today the Secretary of Commerce and the Deputy Secretary of Commerce met with both officials from the US Patent and Trademark Office and all of the members of the Council of Inclusive Innovation to endorse and support the efforts of the Council!

The Council is rolling forward with not only seven initiatives which touch on a wide variety of ways in which we can increase participation in innovation, entrepreneurship and invention, but we have also announced our national strategy which is being backed by industry, government and academia with a wide array of opportunities.

Elizabeth Dougherty: Now we have not actually posted that national strategy because, again, it was just rolled out to the Secretary today. But it will be posted very shortly on our website on an interactive platform because we're looking to have the public and all to participate by either taking advantage of the initiatives and programs that are going to be offered or by just offering their feedback and thoughts as to what the Council and what the members of the USPTO are doing to move this initiative forward.

Elizabeth Dougherty: So, it's really an all-hands-on deck effort in using the entire innovation ecosystem. We all have a role to play in this. Because it's a multi-faceted problem, the lack of diversity in invention, innovation and entrepreneurship, we have to tackle it from so many different fronts. So again, we have rebranded; but I think for a lot of all the right reasons. But you can find us, as the Council for Inclusive Innovation or as we like to say, "CI squared".

Clovia Hamilton: What a cool program to know about! Because if we want to be a part of the solution, I love that it's interactive and we can have a say in a public hearing sort of way. We can get out there and have a say as to what we think the reasons are for any lack of inclusivity involving women and involving people of color and LGBT - - you know, all of the above. So, I think we need to make sure we encourage, as

part of this program, that everyone who is interested in these issues get involved and get out there once the platform is open and be a part of that interaction.

Elizabeth Dougherty: Thank you for that support, Clovia! That's really what we're looking for is for people to be involved. It's again not just for the government to solve this issue. And if you look at the makeup of the Council, you'll see that we have wide representation; we have small business large industry nonprofit. The leader of AUTM, in fact, is a member of the Council. We have remarkable investors; we have remarkable attorneys; we have people from across the federal government - - not just the US Patent and Trademark Office. In fact, the head of the SBA sits on the Council. So, we've got a lot of great thought leaders involved. And I think it's going to really be reflected in the outcome of the work of the Council.

Clovia Hamilton: Well, I'm excited! And I think everyone here, who cares about these issues can't help but be excited about that! So, thank you for sharing!

Clovia Hamilton: I do have a couple more questions for Jennifer and Elizabeth and then we'll turn it over to Q&A. I think we're okay timewise. So, Jennifer you are still here with us. Can you answer what's the relationship between a female academics and VCs - - the venture capitalists? Everyone's interested in money.

Jennifer Woolley: Well, I know Elizabeth has some more data on this and some touch points going forward. But it's been pretty well documented that so far, women founders of companies are less likely to obtain venture capital. And when they do get it, they get less of it. When we take into consideration women academics, there's no evidence to show that there's anything better there.

Jennifer Woolley: But on the other side, the women who are becoming serial entrepreneurs actually are creating investment portfolios for venture capitalists that are very successful.

And so, what I've seen is the serial entrepreneurs have been able to make some significant inroads into venture capital and make some very strong relationships with venture capitalists; not only build earn it with the number of deals, but the size of the deals as well. So, that a positive sign for the next roll out.

Clovia Hamilton: Well, let's talk a little bit about "the why". You know, why do you think women are less likely to get the venture capital? Is it tied to what Amanda was talking about earlier in terms of negative stereotypes, the structural and cultural issues? And also, why do you think the serial entrepreneurs are more successful? Does it have to do, for example, with just getting an experience over time or building up a portfolio and financial credentials that they helped them to get the next deal. What are your thoughts about the whys?

Jennifer Woolley: The short answer is yes.

Jennifer Woolley: You know, we get a lot that there's been a lot of work highlighting the difficulties that women face seeking funding such as legitimacy challenges and discouraging signals. There's some information on having to rely on personal resources. And so, overall, it's more likely that women are going to have to rely on smaller pockets of funding.

Jennifer Woolley: But there are both those structural and cultural issues that Amanda was talking about that are endemic in the venture capital world as well.

Clovia Hamilton: Very good! Thank you for that! And just a few more for Elizabeth. She has some more nuggets she wants to share with our audience - - um.

Clovia Hamilton: There's a program at Santa Clara University, the High-Tech Law Institute program and the National Strategy to Expand Innovation. Would you like to share information about those programs with us?

Elizabeth Dougherty: I'd be happy to! So, Clovia we've just touched on, with respect to the Council for Inclusive Innovation that they are in fact rolling out this National Strategy; and it will be available on our website very shortly.

Elizabeth Dougherty: But with respect to the information that came out of a collaboration between the US Patent and Trademark Office and the Santa Clara Law School's High-Tech Institute, we were fortunate to work together as collaborators to host a number of roundtables where we invited in industry; and particularly, female leaders within industry to share best practices of how they have been able to diversify or the challenges they face in diversifying their respective businesses or their larger industry (Norris, Fuller, Peacock, & Yazzolino, 2021).

Elizabeth Dougherty: And Santa Clara has done a beautiful job and I'm happy to share it in our links of resources a document that shares a number of paths forward.

Elizabeth Dougherty: They specifically broke the information down into several categories that we need to address when again trying to increase diversity:

- IP awareness amongst the people participating, both in academia and in corporate America. There, in many instances, is simply a lack of [understanding] that people may be creating intellectual property, in that it is something to be protected.
- Taking another look at how invention disclosures are sought how they're recorded how they're addressed. Are they being done in such a way that they're precluding or excluding members of the invention innovation community?
 - Is that the terms that are being used?
 - Is it how you go about seeking those to participate also looking at the application approval and preparation?

Elizabeth Dougherty: Sometimes, if not handled in the right way it can again dissuade people from participating and it's often said that women in particular get frustrated by that process.

Elizabeth Dougherty: I recently had the opportunity to meet with a stakeholder who told a story about their inventor and how their inventor was reluctant to seek a patent for a technology. And they were reluctant because they didn't want to preclude others from being able to benefit from the technology. And they just wanted to help people and they just wanted to have this invention out in the community.

Elizabeth Dougherty: My first thought was that it was a female inventor because we hear that all too often as to why, a couple anecdotal reasons why women sometimes choose to not patent. In fact, it turned out to be a man which I found very surprising.

- But also, inventor incentives and recognition
 - how are we celebrating recognizing and rewarding those people again within companies or academia that are recognized as inventors?
 - are we doing all we can do to highlight them?

As we said earlier, you know you can't be what you can't see, so why not set these people up on a pedestal to be recognized,

to be mentored, to be people who lead, and who others seek to follow.

- And then of course goals and data tracking. I think we've touched on that here today.

Elizabeth Dougherty: That, in order to address the problem, one, there has to be an awareness of the problem, and that is coming about. That is an area where we are certainly picking up speed.

Elizabeth Dougherty: You know, over time, there have been ad hoc one-off conversations, particularly about women and inventing.

Elizabeth Dougherty: But I think it was, perhaps this is my personal opinion, the National Women's Business Council in 2012 did a collaborative research project with the USPTO where they used our data. And they really started to jumpstart this conversation (National Women's Business Council, 2022). Since then, organizations like the Institute for Women's Policy Research have put out numerous papers. They are a nonprofit organization headquartered in Washington DC who have been a very vocal proponent on one, the need for additional data on women and invention in entrepreneurship and also just starting that dialogue like what we're doing today (Institute for Women's Policy Research, 2021).

[Note: See also the Intellectual Property Owners Association's Diversity in Innovation Toolkit (Intellectual Property Owners Association Women in IP Committee)]

Elizabeth Dougherty: So, you know the USPTO is happy to have others in this conversation so we're not the voice alone in the wilderness. But again, data collection is important; awareness is important; and again, just seeking to address what's really a multi-faceted issue.

Clovia Hamilton: Very good! At this point in time, I think we should move into Q&A. I want to thank everybody for answering all these questions, but I think we should move into Q&A. And we can take a look, we have some questions posted here that we can take a look at. And if the audience has any questions feel free to post them at this time.

Clovia Hamilton: Collegiality, any thoughts in terms of entrepreneurship?

Amanda Elam: Clovia, since I actually started a business when I was teaching in NC State University, with two co-founders from the vet school, I've never personally encountered any issues with collegiality. But I wasn't in a tenure track role. So, I wasn't having to deal with a lot of service issues.

Amanda Elam: Quite the opposite, I found there was a lot of support in NC State's engineering tech school and women are very involved in all areas. I don't know if other people have encountered a different circumstance.

Clovia Hamilton: Any other thoughts from our panel?

Siri Terjesen: I like Amanda's answer and I also like where Pamela was going earlier that women have these natural skills in this. I think a key issue is then: how to spend your time?

Siri Terjesen: So, there's a universe of possibilities. And you see this with women who are starting ventures and men too. They are going to all these different events. And then you need to find the group that's going to give you the right information and that might be feedback that you really need that is hard to get at first. But I think it's also a challenge on the time of course for constraints we addressed earlier, such as trying to manage with a family or other constraints.

Clovia Hamilton: I agree! I agree! I worked in tech transfer at the University of Illinois; and I was director of tech transfer at Old Dominion; and I heard all types of stories.

We did have women. We had fewer women and men participated in tech transfer in both programs. But, you know, women really did not complain as much about there being a lack of collegiality, as they did [with] having difficulties perhaps in navigating the waters.

And the women who were married to faculty who had their spousal support seemed to have more support and didn't have those issues. But the more junior women tended to just have difficulties finding their tribe; finding mentors; finding the support of faculty to kind of guide them on navigating the waters. And when I talk about navigating water, Siri, I'm referring to what you're mentioning: time management. You know, just how to deal with service as Amanda mentioned. You know, the juggling and balancing service and research obligations and teaching obligations.

Clovia Hamilton: So, I think in that regard, mentoring - what Pam's shared earlier will come in really handy. And I also agree that women, we naturally, most of us, kind of have a relationship building down. But it's who are the right people; and finding our tribe is the big issue.

Clovia Hamilton: So, in the end, if there's any way these tech transfer offices can help junior faculty become involved by offering those types of support mechanisms, I think that would help.

Amanda Elam: Clovia, that's actually what really worked for me! Right?! It was our North Carolina tech transfer office.

Amanda Elam: For me and my cohort of male co-founders, our heads were down and focused on research, and teaching all the time. Right? And our tech transfer office basically treated every new spin out as sort of part of a cohort and included us in events and for about five years after launch. And I think they could have kept doing it, by the way, in alumni programs. and had us come back and mentor some of the other businesses coming forward. But they didn't do that. And then the other resource that was amazing for me in the early stages, was actually the North Carolina Biotech Center in North Carolina and it's a model for every state and North Carolina.

Amanda Elam: The state legislature, actually, you know sponsored the launch of North Carolina Biotech Center continues to fund it partially. They make grants and loans; and they have intellectual exchange groups, they have programming to start businesses.

Amanda Elam: Everything from how to navigate IP to you know basic marketing to how drug development works, how you know FDA approval, they get people in from state federal levels, universities and it's just ongoing right.

Amanda Elam: And networking events you can go to. And that's how I got my tribe going. That's how I got launched was my little group at the university and then not in the NC by a tech Center what other states have programming what other universities are connected with community programming like that. Right?!

Clovia Hamilton: That's exactly what it takes! You know, a comprehensive program a support program.

Clovia Hamilton: Let's see - - I am always peering over at my clock make sure we don't go over time. Um ... the next question

is well we've already covered collaboration and in our last session, I think you know what we're talking about finding your tribe finding your cohort and finding their support. As you know that has a lot to do with collaboration and encouraging those types of collaboration.

Clovia Hamilton: We've talked a little bit about tenure and promotion. We've talked a little bit about VC dollars. Let's talk about risk. We can take on risk taking, encourage I know one of you mentioned the level or an extent of women being risk averse or not so let's talk a bit about that.

Amanda Elam: Since I brought it up, I'll go first. I'll kick off the discussion. Do all the women on the panel, do you feel risk averse?

Amanda Elam: I bet the answer's no.

Everyone: No!!

Amanda Elam: And here I'll put one statistic out. This is always what's baffled me about this idea that women are risk averse.

Amanda Elam: Half of all marriages fail in seven years, and women are more likely to give up employment and job aspirations for marriage.

Amanda Elam: We are huge risk takers we're just making different calculations at different opportunities and for different reasons. Right?! Because, as a mother, we have different problems that we're trying to address.

So, I would like to flip that narrative on its head. I think we make lots of risk calculations and when I speak on panels I share my teaching experience, which is on average women tend to err towards smart and men tend to err towards bold. And to be a good entrepreneur, you have to be smart and bold.

Clovia Hamilton: Yeah, I agree! Any other thoughts about risk aversion?

Pamela Kalbfleisch: Yeah, so the mentoring research is interesting in that one of the primary things that prevents people from being mentors is being afraid of risk - - seeing too much risk in being intimate with others, sharing your own experience with others, sharing your own thoughts (Kalbfleisch & Davies, 1993). So, to be a mentor means that you're willing to take a risk on someone.

Pamela Kalbfleisch: And, and we know the women do mentor and are mentored (Kalbfleisch, 2000, Neumeyer et al, 2018). But it's a risky proposition. Just having a close relationship is a risk.

Clovia: Right!

Jennifer Woolley: And, and on top of that, I think it's really important for all the aspiring entrepreneurs and innovators, to take a step back and think: what is it that you want to do? How are you defining success?

Jennifer Woolley: And even by doing that you may find that your metrics for success fly in the face of what you're surrounded by or what you're told is success.

Jennifer Woolley: And that in and of itself is going to be risky. But that's Okay! You have to listen to yourself and understand what your own metrics are before you can take on something as huge as a starting another company or being entrepreneurial in any way or being an innovator.

Elizabeth Dougherty: I think that it's part of the recipe for success.

Clovia Hamilton: Let's hear from each of the panelists their final thoughts.

Clovia Hamilton: We can go in the order of how I see you on my screen. So, let's go with -- we've got Jennifer's up! You want to go first Jennifer?

Jennifer Woolley: Aw man! I feel like I'm being cold called.

Clovia Hamilton: You're first (laughing).

Jennifer Woolley: I do want to thank everybody for being here! This has been a great conversation and it's really highlighted how diverse the experiences are; how diverse our interests are as researchers as entrepreneurs as innovators; and how we need to stay true to that and dig into that even more.

So, I think it's exciting and I think this is a great opportunity to continue our interest in our research and understanding this world a little bit better so that we can make it better.

Clovia Hamilton: Very good! Pam, any final thoughts?!

Pamela Kalbfleisch: I think if you're in a position to help to reach out and help others and to, take a risk on helping someone. And, if you are in a position of needing help, ask for help.

But, when you ask for help, better than saying, "will you be my mentor", it's better to say something like, "is there a project, we can work on together" or "I'm interested in doing X with you" or "is there a role I could play". And then there's something tangible to start that relationship. Right?! Very good!

Clovia Hamilton: Amanda?

Amanda Elam: I think I'll go back to my opening comments and take a cue from there.

Amanda Elam: I would like everyone to understand that when we are reporting aggregate patterns of difference between men and women business owners that most of those differences are explained fundamentally by industry sector. And industry sector determines business size. Right?! And so, I think it's really important to understand that structural characteristics are contributing to these aggregate data that reinforce negative stereotypes. So, you have to look way beyond the top line numbers. You have to you really look specifically and compare men and women who are similar to each other.

Amanda Elam: I think that's what leads me is what we're doing at DIRI. We're trying to flip the narrative. Right?! Maybe it isn't that the women are under-confident. Maybe men are overconfident!

Amanda Elam: Maybe the issue isn't that the women are trailing men. Maybe the issue is that women constitute one to three aspirational growth-oriented entrepreneurs in the world. Why aren't we supporting them. Right?!

Amanda Elam: And we don't encourage others to get engaged and to support by selling the negatives. We get them - - we get investors to invest by selling the positives.

Amanda Elam: So, let's think carefully about our narratives and the framing when we're talking about women's entrepreneurship. And it's been a delight to be on the panel today! Thank you everyone!

Clovia Hamilton: Glad you're here! Let's see. Have we heard from you Siri? Siri, you want to jump in?

Siri Terjesen: You want me to go. I've been enjoying all this advice. I love that!

Siri Terjesen: What Pam said, you know jump in and help someone.

Siri Terjesen: And then I also would offer stay connected because it might be that now is a good time, and you can offer that advice. But it might be that it's two months from now, and that connection, or that it's to someone else. And be not afraid to offer what might be critical, but extremely helpful feedback.

Siri Terjesen: We can't just seek people who reaffirm and tell us the things we want to hear! There are some things we want to hear. But we also need people to think critically and put themselves in our shoes and give us the advice that will help us get to the next level! So, that's it.

Siri Terjesen: Elizabeth?

Elizabeth Dougherty: So, I am happy to round out this remarkable group! It's been such a pleasure to be on such an august panel with such remarkable ladies today!

Elizabeth Dougherty: So, I guess, in part, I would go back to our history. So, we issued the first US patent to a woman in 1793. Very sadly, it was issued in the name of her husband. It was Mrs. Samuel Slater.

Elizabeth Dougherty: Now with that said, we this year in 2022 will induct the largest class of women to the National Inventors Hall of Fame. It's only eight women. But that's still huge that eight additional women are joining the over 500 that make up the National Inventors Hall of Fame.

Elizabeth Dougherty: So, it goes back to what we've said today: we all have a role to play in this! And I would say, and it's been already said by other panelists, if you need help, ask for help.

Elizabeth Dougherty: The US Patent and Trademark Office, and I can speak for other government agencies as well, we don't want to be seen as a black box entity where you throw in something and then you sit back and hold your breath. We're an agency about communication and collaboration. And we have so many

resources available for inventors, innovators, and entrepreneurs.

Elizabeth Dougherty: And many of them are my favorite four-letter word "free". And that's true in a number of government agencies! So, be sure to ask for help! We love to offer help. We love to offer assistance where possible.

Elizabeth Dougherty: And again, you know we all got to where we did because someone helped us. So, it's always important to reach that hand back.

Elizabeth Dougherty: I think of the former Secretary of State, Madeleine Albright and her famous quote "there's a special place in hell for women who don't support each other".

Elizabeth Dougherty: Now that's not to say that we don't need men and everyone in this equation. But as women, I think we're especially gifted in helping one another. So, thank you again for having me today, and thank you to our remarkable panel and audience.

Clovia Hamilton: Thanks to everyone! But, let's give everybody a round of applause. We'll make sure that we'll take a look at what's been posted out here in the chat area. We'll collect everything and we'll include it in our proceedings.

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