Chairman Smith, Chairwoman Comstock, Ranking Member Lipinski, Ranking Member Johnson. Thank you for inviting me to participate in this hearing on NSF's Innovation Corps, or I–Corps.

As you know, for over 70 years the National Science Foundation has funded basic research in universities. And for the last 30 years, 3% of the NSF budget gave grants –money with no strings attached – to scientists in any field who wanted to turn their basic research into a company. This is known as the Small Business Innovation Research, or SBIR program. Six years ago, the NSF recognized that scientists who received government grants were having a hard time getting to the next step of raising private capital.

The genesis of the I-Corps program is pretty simple – figure out why scientists were having a hard time getting private capital and building successful companies, then teach them the skills they were missing.

It soon became apparent that the reason they were having a hard time raising money was that scientists couldn't talk the language of private capital investors.

University scientists believed that just having innovative technology was enough to make a successful business. The reality is that's wrong. Great technology is just one part of a successful company. Private investors – Venture Capitalists and angel investors - needed to hear about more than just the technology.

To speak to venture capitalists or angel investors, scientists need to learn a few things that weren't in their PhD program. They needed to figure out how to turn their innovations in the lab into products that people want to buy. They had to figure out who these customers would be and how the product would be sold. They needed to talk to regulators, understand patents and licensing issues, understand how to create customer demand, how much would it cost to make their product, and how many they would sell, and at what price.

In the past, a scientist starting a company would write up all the answers to these questions in a business plan, hire the people, build the product and only find out years into the company that their assumptions about what customers wanted were wrong. I-Corps starts with the premise that on day one all an entreprenuer

have are untested *hypotheses* – a fancy word for guesses – about each part of their business.

We teach I-Corps in a way that's pretty extraordinary. While we teach scientists the theory about starting a company, we also make them get their hands dirty, by having them get out of their labs and test their hypotheses by talking to 10-15 customers, regulators and partners each and every week. And they use the feedback from potential customers to improve multiple versions of their product. By the time the class is over they've talked to over 100 people. We now know that the I-Corps method of teaching scientists to "get out of the building and talk to people" turns theorists into capitalists.

And our scientists love this I-Corps learning process because what they are doing is running the scientific method, this time with potential customers rather than test tubes in a lab.

So, when you hear the phrase that I-Corps is a "bridge to private capital" you know that means that we teach our best scientists to learn a new set of skills that help them raise money to build companies.

Companies that can create not just new products but new jobs. Not just in Silicon Valley but in districts like yours.

Having spent 21 years building companies, my first instinct was that this type of education should be done by existing private incubators and accelerators, not the government. However, our observation 6 years ago is still true today – while these NSF funded technologies can turn into future companies, most don't fit the model of "grow to a billion-dollar valuation in three years" that private incubators and accelerators are looking for. The teams that I-Corps teaches require the patience and long-term vision that the NSF brings. NSF-funded scientists and engineers are working on "deep tech" – really long-term, geeky technology like new materials, new devices - outside of the mainstream social media, smartphone apps. Yet for our country, turning these inventions into products might have the biggest payoff. We now know that without I-Corps training our most advanced technologies would never turn into companies.

There's one other thing about these "Deep Technologies" companies that is becoming more evident - many are potentially "dual-use" technologies. Meaning that they have potential as

commercial companies, but their products can also be used for our Department of Defense and Intelligence community to keep our country safe and secure.

As you've heard from Acting Director of Engineering Tilbury, the I-Corps program is now taught at 86 colleges and universities in the U.S. There is likely an I-Corps site in each of your districts. Over 1,000 teams of the country's best scientists and engineers have been through the national training program, and many thousands more have interacted with local I-Corps sites.

America is better for having I-Corps. It's made turning our government-funded science into companies more efficient.

We should do more of I-Corps. We can make it broader and better, reaching more people and teaching more skills. First, keep in mind that today I-Corps is for university scientists funded by the NSF. But if you're outside a university you can't take this class. And that's a shame, since we have an effective program we ought to share with all Americans not just the few in universities. We ought to open the I-Corps to innovators and entrepreneurs who have ideas in every part of the country,

whether they are in a university or a garage, that aren't yet ready for private capital.

The second way to make I-Corps better is to improve on what we've learned over the last six years. One of our biggest learnings is that even after teams have been through I-Corps they need to learn new skills like how to hire and build teams that know how to sell and market the product, how to grow and scale a company and how to find investors looking for Deep Technologies. NSF is currently testing a follow-on class called I-Corps Go that does just that.

I hope everyone on this committee is proud of the I-Corps program that you've created and supported. It's one of programs that continues to make America great.