

WOMEN IN INNOVATION

Changing the world

The entrepreneurs tackling society's challenges



Innovate UK is part of
UK Research and Innovation

Innovate UK



Foreword

The Rt Hon Greg Clark MP

Secretary of State for Business,
Energy and Industrial Strategy

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It's my pleasure to introduce the winners of Innovate UK's Women in Innovation Awards 2019.

The Women in Innovation campaign has been hugely successful in reaching a more diverse audience – providing funding and support to help more women achieve their business ambitions.

The winners are developing pioneering innovations to tackle the Grand Challenges we face as a society, from a new paper coating to cut down single use plastic, to helping us train mechanics using simulators.

The competition shows our modern Industrial Strategy in action, backing businesses of all sizes across the UK to grow and boost the economy with the skills and inventions we will need for the next generation.

By supporting top female talent, these awards strengthen the long tradition of innovation in the UK. I believe that Britain can provide the new ideas that will lead the world and over the following pages we celebrate women leading the way today.

Dr Ian Campbell

Interim Executive Chair, Innovate UK

Jennifer Rubin

Executive Chair, Economic and Social Research Council and Executive Champion for Equality, Diversity and Inclusion, UK Research and Innovation

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To address the Grand Challenges set out in government's modern Industrial Strategy – artificial intelligence and data, clean growth, the future of mobility, and ageing society – we need to embrace different perspectives and experiences.

Diversity in business is a proven driver of economic growth. Tackling underrepresentation in innovation will lead to a deeper understanding of the impact of scientific, technological and medical advances on diverse groups, which will help us become a more successful nation.

We are delighted to introduce the winners of Innovate UK's Women in Innovation awards 2019. With the backing of this award, we hope that the winners will go on to make a significant contribution in their fields, improving outcomes and making progress against society's biggest challenges. We wish them every success on their journey.





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Boosting innovation through diversity

At Innovate UK, we know that the most disruptive innovation can only occur when a diverse group of ideas and minds come together.

It's been estimated that boosting female entrepreneurship could deliver approximately £180 billion to the UK economy¹. But, in 2016 we found that just 1 in 7 applications for our funding were led by women, despite the fact that success rates between men and women were largely equal².

To encourage more diversity in innovation, we launched our first Women in Innovation campaign with a simple aim: to get more women innovating in business.

Media consultancy firm Ebiquity carried out research to understand the specific challenges affecting women in innovation. The report found that securing funding was the biggest challenge for female innovators, and a third of respondents felt that being a woman in a male-dominated industry had negatively impacted their career³.

£180bn

could be delivered to the **UK economy** by boosting female entrepreneurship

£1.2m

funding support awarded through Women in Innovation competitions

70%

uplift in females registering for Innovate UK support

We launched the first Women in Innovation competition and awarded 15 of the most innovative female-led businesses £50,000 funding and business support. In addition, we provided support to a further 16 award holders and ran an entrepreneurial mission to Boston for 7 women in tech.

Ebiquity also found that a lack of visible female role models is a key factor in discouraging women from achieving their business ambitions. To change this, we partnered with Getty Images to capture stereotype-shattering images of the winners, which were displayed in a central London gallery and added to Getty's online image library⁴. The campaign led to a 70% uplift in females registering for Innovate UK support.

To continue the momentum, we ran a second Women in Innovation competition last year, offering £50,000 funding, mentoring and business support to 9 female entrepreneurs tackling society's biggest challenges: clean growth, the future of mobility, an ageing society, and AI and the data driven economy.

To encourage more women to take the plunge into business innovation, we want to better surface these excellent individuals who are set to change the world. Currently, women feature on just 14% of the 900 blue plaques in London, with a similar story elsewhere. To celebrate the achievement of the 2019 Women in Innovation award winners, and to inspire future generations of innovators, we have put up plaques at schools right across the UK.

Innovate UK is committed to helping more women achieve their potential, because world-changing innovation can only happen with support.

The women to watch

Dolores Sanders

Total Control Pro Ltd

Improving small business manufacturing through data sharing

Dr Fanya Ismail

SGMA (Sol-Gel Coatings & Advanced Materials)

Plastic-free waterproof coffee cup coating



Dr Debbie Wake

MyWay Digital Health

Digital platform supporting diabetes patients



Cintia Kimura

KG Protech

Simulation training tech for mechanics of the future



**Daniela
Paredes Fuentes**

Gravity Sketch

Pioneering VR car
design tool



Sheana Yu

Aergo

Air-powered seating
improving patients' posture



Jessica Bruce

Run3D

3D analysis helping
people walk pain-free



▲
Alex Haslehurst

Vitruve Health

Digital assessment
for patient health

▲
Agnes Czako

AirEx

AI-powered air brick
for healthier homes



Driving change

Cintia Kimura is the founder of KG Protech, which makes remote practical training tech for car mechanics.

‘My father worked as a technician for 20 years looking at everything that could go possibly wrong. He used to break cars to find faults – it works, but it’s expensive, and you can only do it once per car. I came up with KG Test & Train. It turns any car into a training centre, so it puts technicians into real-life fault situations so they can learn how to diagnose and fix them.’

‘I’ve always had an entrepreneur’s mentality. Even when I worked within a big corporation I was trying to improve processes and make them more efficient. Then one day, I got up, took the money I’d been saving for 4 years, and I made the choice to start my own business. It was like a reflex, I’d spent so much time on something I didn’t believe in and I really wanted to do something new.’

‘I was 22 when I started this business. Soon after, I met my co-founder, Georg Homolatsch. We worked on the idea together then brought it to London where we learnt how to shape a company and evolve a product.’

‘Innovation is about helping people and showing that tech can co-exist with the workforce. It can create new opportunities, grow businesses and bring more people into jobs.’

How to make the most of angel investment

Jenny Tooth OBE is Chief
Executive of UK Business
Angels Association (UKBAA)

Angel investors bring around £1.5 billion annually to small businesses across the UK, but we know that many women innovators are failing to access equity investment to build and scale their business.

Entrepreneurs can be hesitant about giving up equity in their innovative business, but it's important to consider the added value that you can access through angel investment. Angel investors not only bring much needed capital, they also bring access to business experience, market knowledge, key contacts with customers or buyers, as well as strategic guidance. Angels can also bring links to next stages of funding, including venture capitalists, venture capital trusts and equity debt.

Whilst many women founders would benefit from having women investors to back their business and bring valuable support, we continue to lack enough women investors in the angel community here in the UK. At UKBAA, we are working to change this and build a much more diverse investment community to enable many more women innovators across the UK to access the investment they need.

How to secure angel investment

First, don't ask for less funding than you need. Be realistic about how much it will take to move to the next stage of growth, and to give you a good runway for at least the next 12 months. Angels will assess whether you fully understand your finances, your growth projections and what you want to spend the money on – whether it's building your team, further product or technology development. Make sure you feel confident about your numbers and financial plan so that you can clearly answer any questions on your current figures and your financial projections.

Second, don't be afraid to tell investors about everything that you have achieved so far in your business. Angels focus more on the entrepreneur than any other part of the business when deciding who to back, yet many women entrepreneurs underestimate their achievements.

Draw attention to the milestones that you have reached so far. Include any grants or funding, awards, recognition, PR and testimonials from customers and followers. Make investors aware of the great team you may have built and any key industry experts that you have attracted as supporters or advisers.

Finally, make sure you're approaching the right investors for you and your business. You should be looking for investors that bring 'smart' money – those that understand your industry and market so that they can bring the right contacts and experience. Make sure you're clear on the help you need from investors as well as the finance. The UKBAA Investment Directory has a list of angel groups around the UK that you can search by sector, stage and region. Don't be afraid to walk away if you feel that an investor is not right for you.

From the factory floor up

Dolores Sanders is the founder of Total Control Pro Ltd, a data-sharing system helping to streamline small businesses' manufacturing processes.

WOMEN IN INNOVATION

2019 winner

‘Growing up, my parents ran their own t-shirt printing company. It was a small business based in London in the early 70s, which was a really dynamic time.

‘They were printing t-shirts for people like Malcolm McLaren and Pink Floyd, and working near Richard Branson when he was starting out.

‘I’ve got happy, early memories of machines and being in the factory, and as I got older I started to run the shift patterns and work in the office myself.

‘My first business at 18 was my own handmade printing company. I’d make screens and set up the machines, being really hands-on with the product.

‘Now I’ve taken my experience of growing up in a factory environment and modernised it. My business system exists in the cloud and connects the 2 worlds together – using new tech to share data between small businesses, allowing factories to operate more effectively. I’m not an expert in milling or lathing, but when I go on site visits I understand the machines and processes and can factor the people and the dynamic into it.

‘There’s a buzz around machine automation and machine data, but our niche is about understanding how people work.

‘The biggest benefit our software offers is helping people on the floor do their jobs better. People being empowered to do their jobs better is intrinsically linked to every company’s productivity.’



Sketching the future

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Daniela Paredes Fuentes is the creator of Gravity Sketch, software that allows designers to sketch in a 3D space using augmented reality.



“When I was younger, I was always the dreamer. From a very early age, I wanted to study design. Then I wanted to study car design. Then I wanted to own a company. And that was when I was 10.”

‘I’m both a designer and an engineer. My undergraduate degree is in industrial design – designing products that focus on human needs, taking into account ergonomics, aesthetics and usability. But I always felt that there was something missing, and I needed to be able to understand how things work to be able to challenge them. I decided to go to London to study a joint masters in innovation and design engineering at the Royal College of Art (RCA) and Imperial College London.

‘Developing the software was a team effort. We worked on it through our master’s degree final project at RCA. My team said, “okay – we’re in an academic environment, we’re safe – let’s explore, go as crazy as possible and really challenge the topic we want to study”. Our goal at the time was to be creative.



‘It’s not just about making money. We’ve created a really interesting product. When you see it in the hands of people and it makes them excited and happy, and they tell you it’s game-changing – it’s about that. We’re always thinking: what’s next? How can we do it better?

‘Some people are ashamed of sketching. Our education system seems to have built us like that. It’s either you’re a Da Vinci, or you don’t draw. There are so many great ideas stuck in people’s heads. Maybe they haven’t evolved to become great ideas because the tools aren’t there yet. I want to provide the tools to help people push their creativity further.’

“We’re always thinking: what’s next? How can we do it better?”

Why communities are essential for growth

Deborah Okenla is the founder and CEO of YYSYS (Your Startup, Your Story), a diverse community for founders, developers, creatives and investors.

“The start-up journey can be a lonely one, but communities can make it so much better.”

The start-up journey can be a lonely one. From accessing information to getting support and feedback, everything is more difficult if you're working completely alone. That's why, for founders and entrepreneurs, connecting with and being part of different communities is so essential.

Whether they're digital - Slack channels, WhatsApp groups or forums - or physical - meet-ups and events - communities

are the best way to break down barriers and to find out about the opportunities and resources that can propel your business forward.

I would recommend a business owner spends around 40% of their time on relationship management - connecting with people on and offline and following up those connections. New opportunities mean new collaborations, and that can lead to solid revenue growth.

Communities for support

Having a strong support network provides you with a safe space to seek counsel when the journey gets tough. And if you surround yourself with smart, focused and genuine people, you'll find it helps you build these characteristics in yourself along the way.

Communities for feedback

There's no better way to ensure your business or product serves a diverse range of end users than engaging that community early on. Finding communities with a range of individuals you want to target and incorporate their feedback into your work from the get-go.

How to find and access the right networks

Follow the crowd – use platforms like Twitter to follow hashtags like #womenintech, so you can connect with others authentically.

Go digital – you don't have to network in person, look for online groups like Slack channels you can join for support.

Network upwards and sideways – network with people at the same level.

You never know where they'll be in a few months.

Getting the most from networking

- ▶ **Focus:** don't try and speak to everyone at an event. Focus on making one deep connection that's relevant to your work – that's enough to build a great relationship
- ▶ **Be open:** allow others into your network
- ▶ **Be someone of value:** know what you can offer someone else and what this is worth to others. The more you can offer, the more people will be drawn to you
- ▶ **Be memorable:** your uniqueness is what will stand out and ensure you connect with the right people
- ▶ **Follow up:** send an email, connect on social media and add a reminder in your diary to contact your new connection again within 2 months of your meeting

“There's no better way to ensure your business and product serves a diverse range of end users than engaging with that community early on.”

Design for good

Designer **Sheana Yu**'s adaptive wheelchair seat helps people improve their quality of life.

When a childhood accident caused her to develop spinal issues, Sheana Yu became acutely aware of posture's impact on health.

Inspired by her own experiences, Sheana created Aergo, a system that helps users sit more comfortably. A network of air cells monitor pressure differences and, triggered by movement, inflate and deflate automatically according to the user's movement, adapting to their position and improving their posture. For wheelchair users, maintaining good posture can reduce stress on the body, improve comfort and maintain skin health.



“Don’t be apologetic about your idea. I’m a product person, I’m clear about the engineering.”



Sheana initially created Aergo for young wheelchair users. ‘A wheelchair holds the user in a single position, but kids love to move – that’s in their nature. My priority was finding a solution that would allow them to move as much as they wanted to. In testing, Aergo has helped young wheelchair users take part in activities more easily.’

During testing, Sheana discovered that Aergo could also benefit older adults, whose posture can be affected by lack of muscle tone or conditions including dementia.

‘There’s a lot of issues that arise from unhealthy posture including pressure ulcers. We installed a seat for an elderly patient who was slumped in a chair. She got much more support without using straps and foam, which are rudimentary solutions.’

Developing any medical device so it can be used safely is a meticulous process. ‘You need to get it right. Every step has to be very careful and you have to understand the risks, safety and regulations – you can’t sprint towards the final goal.’

Smart ventilation

Agnes Czako invented AirEx, a smart-tech airbrick that could improve the energy efficiency of tens of millions of UK homes.



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Agnes Czako's previous work as a home energy assessor gave her an insight into a problem affecting people in some of the most vulnerable parts of London: cold and damp old houses.

So, she decided to make a difference. 'I didn't want to just observe the problem, I wanted to do something about it,' said Agnes.

AirEx is Agnes' intelligent air brick innovation, which uses built-in sensors and AI to monitor and respond to the environment, weather and occupant behaviour. Using a simple open-and-shut mechanism, the brick

regulates air flow and ensures the right level of ventilation. This helps to reduce a home's heat demand and resolve damp and condensation problems.

Agnes' focus now is on fighting fuel poverty and climate change, by creating an energy saving device that is affordable to the mass market. 'I'm not interested in designing something that's just available to a few people,' Agnes said.

“I’m not interested
in designing
something that’s
just available to
a few people.”

£150

potential annual
saving on home
heating bills

24

months average
payback time

15%

potential
reduction in a
household’s
heat demand



Healthy collaboration

For **Alex Haslehurst**, co-founder and CTO of Vitruve Heath, there's no innovation without collaboration.

Alex Haslehurst and her co-founder are developing a tool to help clinicians assess patient health, particularly motor function, more accurately and efficiently than existing clinical tools.

Alex and her team believe that assessing physical health is particularly essential for older adults, for whom a better understanding of their health could help them manage conditions and retain independence. 'One of the most important things as you age is maintaining the ability to interact with the world around you.'

For Alex, collaboration at the start-up stage is essential. 'Almost everyone you meet is really valuable. They're all excited to help. Other people going through the same things, more experienced people, right up to angel investors who will mentor you.'

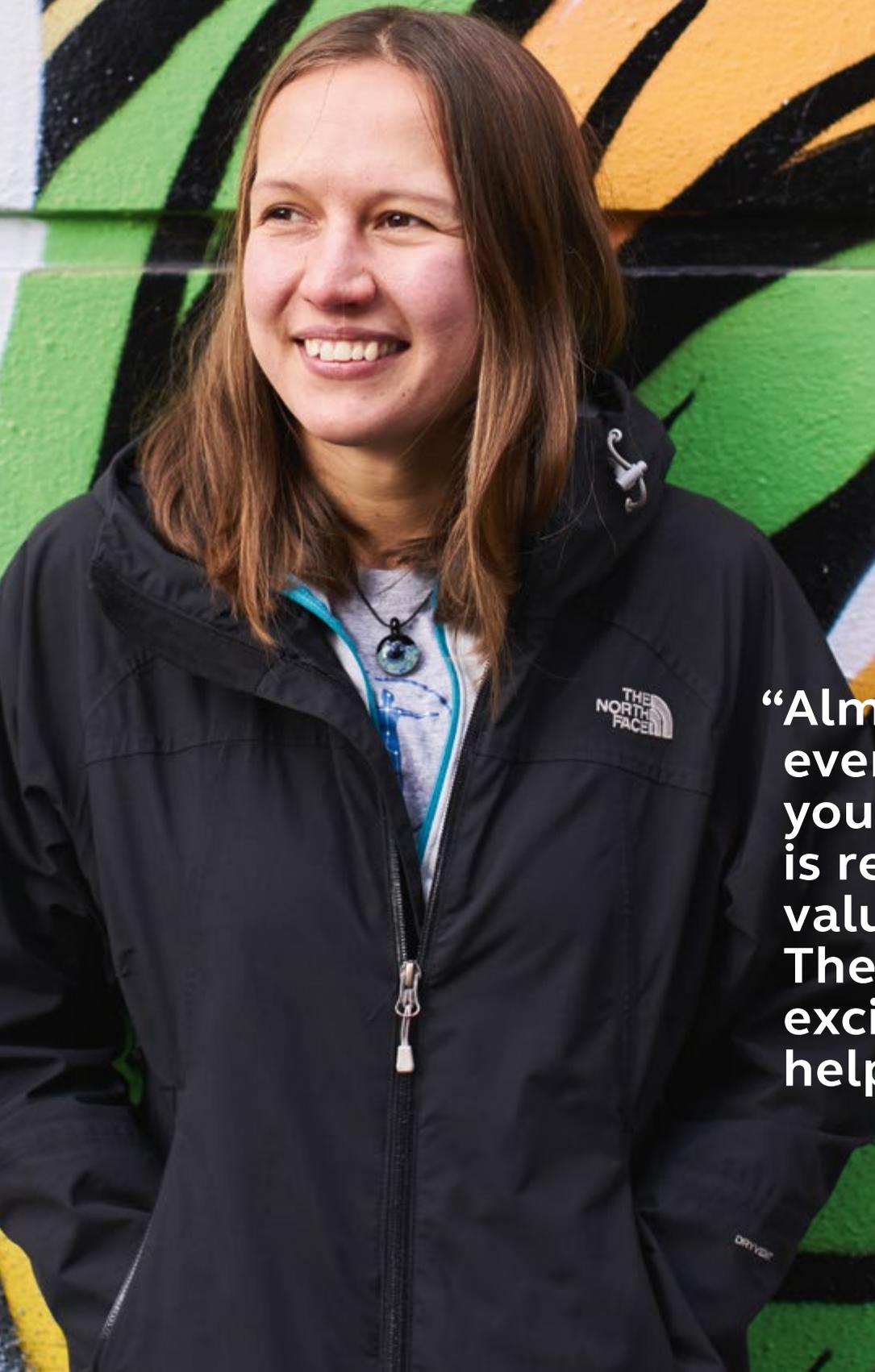
Engaging with potential customers is just as crucial. 'Talk to your users over and over. Make sure what you build and what your customers want matches up. The more you can talk to your users the better.'

'Our one failure so far has been not getting something into peoples' hands sooner. With new products you need to iterate quickly, get it in use, get people trying it, and then move on. And remember, hard work pays off in the end, so keep going.'



WOMEN IN INNOVATION

2019 winner



“Almost everyone you meet is really valuable. They’re all excited to help.”

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Expert opinion

People first: finding and hiring the right talent

Carmen Cummiskey is the founder and Chief Executive of Teqnox, which designs streamlined protective wear for horse riders.

Finding and hiring the right people can be one of the biggest challenges that entrepreneurs face. Here's how you can get it right.

Get structured early

Hiring my chair was the best thing I've ever done for my business. In early-stage business, it's easy to live day-to-day, firefighting whenever you need to. Having someone who's 'been there and done that' can have such a positive effect on your planning, outlook and focus and even how you structure your business, which can earn you credibility.

Get the right advice

A business advisor can help you develop a strategy to push your business forward. There are so many people out there offering help – it can seem like a minefield - but finding the right advice is essential. Make sure you do your homework.

Use [Companies House](#) to see the companies that people have been associated with – their history can help you decide if they're really in a position to advise you in your sector.

Incentivise new hires

In the early stages, you may not have a big salary to offer your employees. But you can offer more than money. Employee share schemes can encourage new hires to stick with the business and motivate them to make it a success. You may not be able to rival the likes of Google, but a creative workspace can encourage innovative thinking. Flexible working is another great way to meet new employees' needs.

How to run a business

Jessica Bruce is Managing Director of Run3D, a bio-engineering firm specialising in real-time 3D gait analysis.



The technology

‘I developed Run3D 5 years ago as a spin-out from the University of Oxford. It uses infra-red to accurately measure how a person moves. We’re now adapting the software to help those in pain, or who have had joint replacement, to regain mobility through gait retraining. This can delay the need for surgery, reduce discomfort, and help people get back on their feet more quickly after surgery.’

The first year

‘The first year was very difficult. It was an incredibly steep learning curve. I had no training in business, but I had a lot of support from my investors, who were very supportive and still are. There are two extreme ends of the spectrum, but if you’re willing to endure the plateaus it’s a really good ride.’

The team

‘I have a really close team: if we need to get something done we’ll all be working late. It’s not a culture of 9 to 5. If we have something going on we get it done, then the next week will be easier as we recover. We all benefit from working remotely too.’

“It’s so important to network with people that are relevant to your industry and listen to the advice they give you.”



Cutting coffee cup plastic

Q&A with **Dr Fanya Ismail**, founder and CEO of SGMA, Sol-Gel Coatings and Advanced Materials.

What's your innovation?

'We are using a chemical process called 'sol-gel' – which produces solid materials from small molecules – to make disposable coffee cups waterproof without the need to use plastic.'

What's your aim?

'To allow people to be able to eat and drink safely without any negative impact on other living species and the environment generally.'

How have you got where you are today?

'Networking with the right people. It's so important to network with people that are relevant to your industry and listen to the advice they give you. I had close contact with [Innovate UK](#) and the [Knowledge Transfer Network](#), so that I could get involved more with the industry that I wanted to be in.'

What do you wish you'd known when you started?

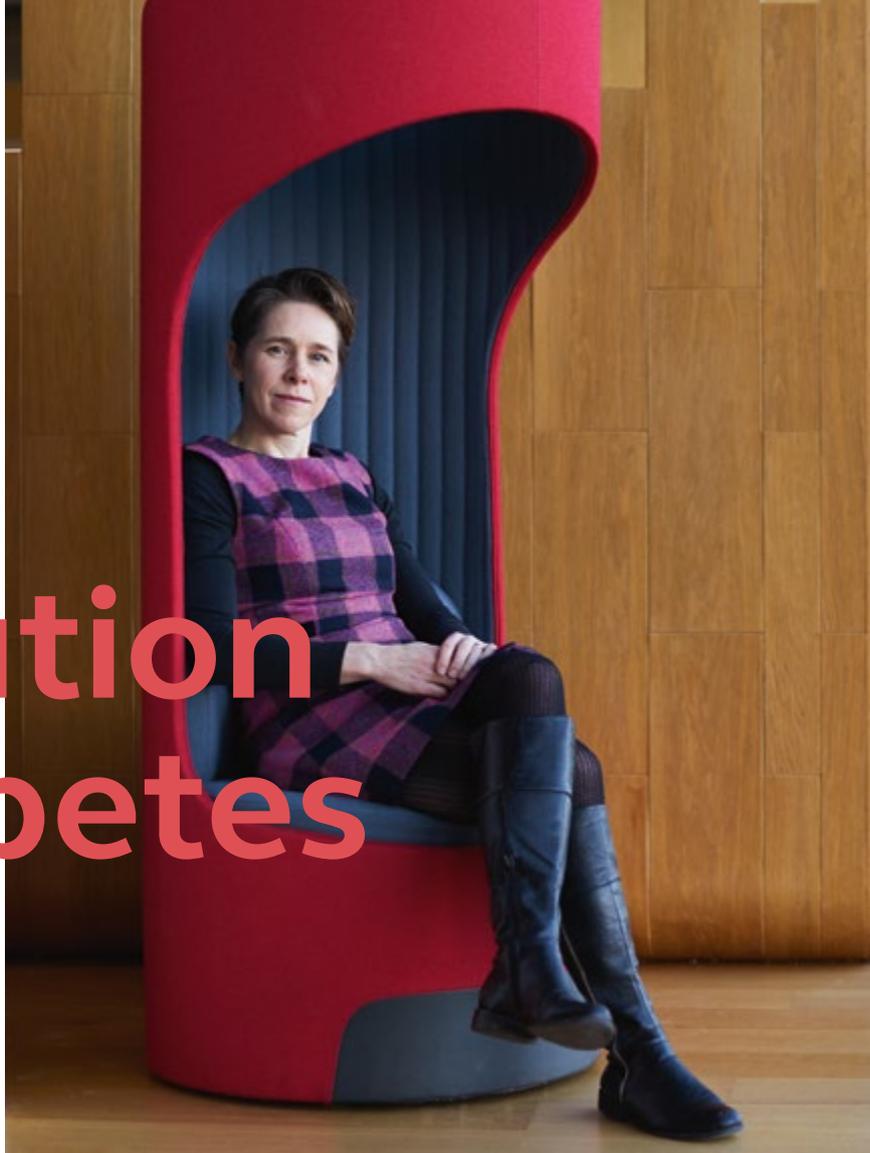
'I wish I knew a lot more about patenting the technology platform because it took me a while to figure out. You need to talk to intellectual property specialists [like the [Intellectual Property Office](#)] to see if your patent is right and covers everything you need it to.'

What's next?

'I really hope this award will help me to push forward my innovation and accelerate its route to the market. I also hope to be able to inspire other women to take the opportunities that I have taken.'

A revolution in diabetes care

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Dr Debbie Wake is the CEO, co-founder and clinical lead for My Diabetes My Way – a self-management platform for diabetes patients.

Digital platform My Diabetes My Way uses patient information and home-recorded data to provide diabetes patients with personalised advice and support to help them manage their condition and stay healthy.

The idea originated in a project led by Dr Debbie Wake and Dr Scott Cunningham at the University of Dundee, before being spun-out commercially by Debbie and her team. It currently has 40,000 registrations in Scotland – but Debbie now wants to take the platform global.

‘We’re seeing people come onto the platform and we can feel the impact it’s having on their lives.’

‘We want to see the same impact we’ve had on Scotland on the rest of the world.’

‘I thrive on innovation, being able to do something different. Building a business is really exciting and the entrepreneurship and start-up world is an exciting place to be.’

References

- 1 [Deloitte, Women entrepreneurs report](#), April 2016.
 - 2 [Women in innovation: research reveals barriers and opportunities](#).
 - 3 [Women in innovation: understanding barriers to innovation](#).
 - 4 [Women in innovation: see what a female entrepreneur looks like](#).
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Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas.

We connect businesses to the partners, customers and investors that can help them turn ideas into commercially successful products and services and business growth.

We fund business and research collaborations to accelerate innovation and drive business investment into R&D. Our support is available to businesses across all economic sectors, value chains and UK regions.



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