AARHUS UNIVERSITY

BRINGS SOLUTIONS

INSPIRATION FOR COLLABORATION AND INNOVATION
Why does Aarhus University want to strengthen its collaboration with the outside world? Why do we encourage more researchers and students to engage in entrepreneurship? Why do we publish an entire magazine to tell you about the positive stories and outcomes?

We do this because collaboration pays off. It improves our degree programmes, promotes research, and benefits society. If in doubt, we welcome you to read the stories on the next 31 pages.

The stories are about breaking new ground and finding solutions to the world’s most difficult and perplexing problems. And they are about how Aarhus University brought the business initiative to fruition in 2022.

As a researcher, student, employee, or partner, do you feel inspired to get involved? Perfect, so get started with the contacts on the back and the links on the pages.

Enjoy.

Lone Ryg Olsen, Director of Enterprise and Innovation, Aarhus University

Thanks to contributors:
- The Business Committee
- The Committee on Education
- Arts
- Health
- Natural Sciences
- Technical Sciences
- Aarhus BSS
- The Technology Transfer Office
- The Kitchen
- The Link

Edited by:
- Enterprise and Innovation 2022

85% of businesses are satisfied with the benefits of research collaboration with AU
Source: CFA, AU
**TOP 3:** This is what business and industry expect from an AU research collaboration

- **41%** → WANT SOLUTIONS TO SPECIFIC CHALLENGES
- **40%** → SEEK NEW OPPORTUNITIES FOR INNOVATION
- **31%** → WOULD LIKE TO EXPAND THEIR NETWORK

Source: The Danish Centre for Studies in Research and Research Policy, AU
Camilla Gustafsen has made a name for herself as a pioneer of new business ventures. She hopes that her example will inspire other researchers who want to try their hand at entrepreneurship.

She was named one of the “25 female entrepreneurs you should know” by the Danish Chamber of Commerce in 2022 for her work as co-founder of Draupnir Bio and Muna Therapeutics. Camilla Gustafsen’s leadership role at Draupnir Bio is critical to the company’s development of new medicines for patients suffering from serious illnesses.

Camilla Gustafsen hopes that her strong professionalism and significant ambitions to help people in need will inspire other researchers to see and work with the commercial development of their research projects.

Starting from scratch
Camilla Gustafsen comes from an academic research background, and she needed sparring partners when she had to hang up her lab coat and transition from biomedical researcher to businesswoman.
Draupnir Bio was fortunate to be associated early on with the mentor network Accelerace and later with the Nordic Mentor Network for Entrepreneurship, thanks to the assistance of Aarhus University’s Technology Transfer Office. This provided the young company with valuable advice and sparring with experienced biotech and pharmaceutical executives.

**Responsible for other people’s investments**

Having received an investment of DKK 225 million in 2019 for Draupnir Bio and subsequently DKK 450 million for Muna Therapeutics in 2021, today Camilla Gustafsen does not have to look far for interested and competent partners and advisers.

She has adapted well to the role of research director, which requires her to be very focused in her thinking.

“You are responsible for other people’s investments, which keeps you focused on the end goal. At the same time, medicines must meet stringent requirements, so during the development process, you must adhere to a defined process that is organised in such a way that the final product is reached as efficiently as possible,” she notes with a smile.

Camilla Gustafsen is new to The Kitchen, and she praises Aarhus University’s offer for academics who need to define and develop the commercial angle of their research projects.

“It’s important to play ball with someone who can ask constructive, critical, and inquisitive questions. Initiatives like The Kitchen help to strengthen and mature the local entrepreneurial ecosystem, and it can undoubtedly assist more people in starting their own businesses.”

Camilla Gustafsen’s experience has taught her that it is rewarding and motivating to contribute to the creation of a company with a positive culture and fantastic employees who enjoy coming to work every day.

“It’s similar to the research environment in that the entrepreneurial environment is motivating because it’s a place where people meet and are excited about the things they create.”

“My background is in an academic research group (Simon Glerup’s research team, ed.) with a strong emphasis on conducting research that has the potential to help sick people. But when we started Draupnir Bio in 2017, we had to learn a lot of things from scratch,” says Camilla Gustafsen.

She knew everything there was to know about organising and managing a research project, as well as presenting her findings to the outside world. But she didn’t know much about “all the things you also have to do when you start a business.”

“We had a research result that opened doors for us. But we didn’t know much about how to build an organisation, both scientifically and in terms of the board, HR, and so on. All the practical stuff. It was crucial for us to speak with someone who had done it before,” Camilla Gustafsen explains.

Camilla Gustafsen is co-founder of the companies Draupnir Bio and Muna Therapeutics, which develop new medicines. Initiatives like The Kitchen, she believes, are vital for stimulating the academic entrepreneurial ecosystem.
Research collaboration fosters innovation

MORE UTILITY FROM FINGERPRINTS AND BLOOD TRACES

TraceAge is investigating the dating of blood traces and fingerprints to assist police in solving crimes. The findings will almost certainly be used on an international scale. The experiment is being carried out by the forensic chemistry unit at the Department of Forensic Medicine and the Bioinformatics Research Centre at Aarhus University, in collaboration with Copenhagen researchers. TraceAge is supported by the Grand Solutions programme of Innovation Fund Denmark.

THE IMPORTANCE OF AMATEUR ARCHEOLOGY

DIME is a platform for registering private archaeological finds developed with assistance from Aarhus University.

Amateur archaeologists uncover artefacts that professional researchers have never had the chance to find, and in the spring of 2022, the DIME team, led by project manager Andres Dobat of Aarhus University, received funding from the Augustinus Foundation for a project titled “Citizen research as cultural heritage innovator” that focuses on metal detector finds and amateur archaeology.

AMMONIA AS A FUEL

We all know that ammonia is an important fertiliser in agriculture, and you may have heard that the hydrogen factories that will be built in the coming years seek to make ammonia the fuel of the future.

Aarhus University’s Department of Engineering has facilities at its research centre in Foulum that allow for experiments on how an ammonia fuel becomes most efficient. Aarhus University, Topsoe, DTU, and energy industry participants are project partners.

BETTER AND CHEAPER LITHIUM-ION BATTERIES

Lithium-ion batteries (LIB) must be faster and cheaper, and methods to avoid the addition of substances such as the expensive cobalt must be discovered before they can seriously claim to have a green profile.

BetterLiBs is a research project in the iNANO building at the Department of Chemistry that tests a promising technique for coating lithium ions with new zwitterionic monomers. The technique extends the life of the batteries while also increasing energy density.

The project is supported by the Energy Technology Development and Demonstration Program (EUDP), and it is being carried out in collaboration with the company Biomedics, which has extensive experience with organic polymer chemistry.
Dynamic collaboration creates an industry breakthrough

Blockchain is more than just a trendy term. It serves as the foundation for a unique collaboration between researchers, students, and industry at AU Herning. The UnWind project is led by Professor René Goduscheit.

The Department of Business Development and Technology (AU Herning) has a clear goal: to identify external challenges and work on how to translate research into business.

The UnWind project, which has received a lot of attention from the industry, uses blockchain technology to document all relevant information about each individual wind turbine component. And there are a lot of them; the project will improve quality assurance for all 10,000 components that comprise a modern wind turbine. Blockchain has never been used in the wind turbine industry, and the positive results of UnWind may have far-reaching implications in the future.

According to Professor René Goduscheit, the wind turbine industry has extremely complex supply chains, and digital dialogue can result in significant streamlining.

“The fewer manual processes there are, the cheaper and more efficient it is. Our research has shown that a blockchain solution can be used to document the lifetime, materials, and other information about each individual bolt. Thousands of these bolts are used, and blockchain can help with both servicing defective parts and separating components when the end-of-life turbine must be dismantled,” he says.

Adding value through research

The UnWind project is non-commercial in principle, but it has been carried out in close collaboration with the Danish Industry Foundation and industry titans such as Vestas, Siemens Gamesa, and the German research institute Fraunhofer.

AU Herning contributes programming and hardware expertise, and there is also a partnership with APQP4Wind and collaboration with Green Power Denmark.

“The principle underlying this type of green efficiency development is that the competitors are the fossil industry. All wind industry companies are working together to reap the benefits of a project like UnWind,” René Goduscheit explains.

“At AU Herning, we work to create value, and we are far from the silo mentality that can sometimes characterise parts of the academic environment. Our research and teaching activities should help with everything from concept development to market testing, marketing, establishing value chains, and providing support through IT and digitisation. We work as a team, and research is carried out concurrently with and in parallel with our interactions with business enterprises.”

A small but significant step in the right direction

The UnWind project was linked to a PhD project, and the two projects exchanged ideas – a typical way of doing things at AU Herning.

“The PhD student is now on their way to industry to add value. The same is true for the affiliated Master’s degree students. One of the most important goals of AU Herning is to train business engineers, IT specialists, and business professionals who will directly impact the business community,” says René Goduscheit.

While UnWind has been a success and has highlighted a significant opportunity, the project has yet to address concrete challenges. The bolts that were blockchain-documented are among the most basic components of a wind turbine.

“Blockchain solutions for the other components are the next step, and they are enormously more complicated,” says René Goduscheit with a smile.
There are major issues, and then there are MAJOR issues. Troels Skrydstrup, an internationally recognised researcher, sets out to solve some of the biggest.

Wind turbines must be discarded after a maximum of 30 years, and there is no technology to recycle the materials. According to one estimate, we will have 43 million tonnes of end-of-life wind turbines in 2030. What will happen to them?

Against this backdrop, it is not surprising that the Innovation Fund Denmark was ready with significant financial support, as a research group wanted to investigate methods to break down the plastic material epoxy, which makes up a large part of wind turbine components and is normally almost impossible to break down.

The research is led by Professor Troels Skrydstrup, who is also the centre director of the research centre CADIAC (Carbon Dioxide Activation Centre) and co-director of Aarhus University’s The Novo Nordisk Foundation CO2 Research Centre (CORC).

The research is being conducted through the CETEC (Circular Economy for Thermosets Epoxy Composites) consortium, which includes the Danish Technological Institute (DTI), Aarhus University, and the two companies Vestas and Olin.

“We have identified a very effective method for breaking down the epoxy polymer into some of the original building blocks, which can then be used to rebuild new plastic material. We’ve filed two patent applications, and one of our business partners has already expressed interest in one of them,” he says.

Applied research
Troels Skrydstrup, who has a long research career behind him, is inspired by the close collaboration with industry that characterises the work at CETEC.

“Naturally, the commercial world has different goals than our independent research. You quickly determine whether a method is too expensive, too toxic, or perhaps even prohibited. This steers our research in a single direction, towards concrete and applicable methods. It is extremely motivating for both myself and the students,” he says.

Troels Skrydstrup has transitioned from basic research, where his findings were only a minor component of a product, to being at the forefront of research that maps out very specific solutions to defined problems. In reality, the difference between the two types of work may not be that great.

“It’s exciting to be able to keep learning new things, and I like to see how our research directly contributes to solving some very big challenges.”

Major grants
Troels Skrydstrup is also involved in the RePURpose project (Aarhus University, DTI, and private partners), which works to recycle polyurethane from insulation and foam products. By using various chemical methods, the goal is to break down the plastic material into its original building blocks, allowing the same polyurethane-based product to be rebuilt.

Finally, the professor has recently begun work on Aarhus University’s CORC project, which has received a DKK 630 million grant for its research on the use of plastic materials to capture CO2.

“60% of everything we make ends up as waste at some point. That is why it is critical that we have a waste strategy and know what we will do with it. It’s very exciting if plastic materials, which will eventually end up as waste, can help us capture CO2,” Troels Skrydstrup adds.
MUNICIPAL DEVELOPMENT BASED ON NEW KNOWLEDGE

Aarhus University established and expanded collaboration agreements with a series of municipalities in 2022. The agreements help direct new research and skills to where they can do the most good.

Shoulder to shoulder with Aarhus
2022 got off to a good start when the university renewed its four-year collaboration agreement with the municipality of Aarhus. In the agreement, Aarhus Municipality emphasises its desire for research and knowledge to be used outside of the university to create growth, jobs, and visibility for investors.

For instance, Aarhus University contributes knowledge and experience to efforts to achieve CO2 neutrality, as defined in Aarhus Municipality’s Climate Action Plan 2021-2024.

Skive’s green food production development
Collaboration in renewable energy and green agriculture and food production. This is the purpose of the collaboration agreement between Skive Municipality and Aarhus University.

The agreement will aid in the translation of new research from the Foulum research centre into practice.

Entrepreneurship in Ikast-Brande
A collaborative effort in the areas of entrepreneurship, climate action and sustainability, and social economy. This is the content of the first collaboration agreement signed by Aarhus University and Ikast-Brande Municipality in 2022.

“Ikast-Brande is of interest because the municipality has large ambitions in terms of recruiting highly skilled labour and social economic initiatives,” says Rector Brian Bech Nielsen.

Bridge-building and task-solving in Holstebro
Aarhus University is always concerned with providing students with the opportunity to gain a strong foothold in the labour market. This ambition is largely reflected in the new collaboration agreement with Holstebro Municipality, which has its own profile with a major focus on initiatives such as green conversion in local businesses as well as a desire to integrate university knowledge and students in municipal task solutions.

More educational activities in Herning
Aarhus University wishes to relocate degree programmes to AU Herning, thereby expanding on well-established professional environments.

A new collaboration agreement with Herning Municipality expands the possibilities.

The parties will work together to create the best framework for students and maintain strong relationships with the area’s thriving business community, all while exploring additional opportunities to create innovative research environments in Herning. The new collaboration agreement will be in effect until 2025.

Case studies on Samse
The collaboration agreement between Samse Municipality and Aarhus University is based on an existing, long-term relationship, and the idea is that Samse can serve as a living laboratory where innovative solutions to municipal problems can be tested in connection with research.

The university has agreed to provide ongoing input to the municipality’s climate action plan.

Make a difference in Danish municipalities with your research project
Contact Kirsten Jensen
kj@au.dk

In 2022, Dorthe West, the mayor of Herning, and Brian Bech Nielsen, rector of Aarhus University, signed a new collaboration agreement.
The development of quantum computers of the future requires unusually strong capabilities in physics and computer science. However, the research team behind a new startup still needs alliances with non-academic business people when developing new software.

When it comes to the development and marketing of software for quantum computers, experienced researchers from Aarhus University are venturing into uncharted territory. The research group, which has a background in computer science and physics, has identified a critical lack of software if quantum computers are to provide value to businesses. As a result, the startup company Kvantify was formed, and it has since reached out to industries that can benefit from the innovative technology.

“We researchers can theorise and analyse, but we need to engage with the business world if we are to develop software that allows the quantum computer to make a difference,” explains Professor Nikolaj Zinner of the Department of Physics and Astronomy.

The collaboration goes beyond marketing and commerce. Quantum computers operate in a way that necessitates extremely precise software, so developers must also understand the business process. “Specific problems require completely unique control systems. Otherwise, you risk the quantum computer running slower than regular computers,” Nikolaj Zinner observes.

Who to connect with?
In addition to the necessary academic skills, Kvantify has thus emerged around Hans Henrik Knudsen, who already has a long business career on his CV after earning a PhD in physics in 2008. The young company has also assembled a diverse team of
Aarhus University was praised for its focused collaboration with the business world when Director of Enterprise and Innovation Lone Ryg Olsen received the Danish Society for Education and Business’s (DSEB) award for innovation and entrepreneurship. The event was organised by DSEB in collaboration with the International Chamber of Commerce to recognise business efforts in education and research.

Aarhus University was lauded for its business efforts, including the establishment of the interdisciplinary startup hub The Kitchen.

“The Kitchen assists students and researchers in translating their knowledge into entrepreneurship by providing services ranging from business plans to access to investors. It can be a great source of inspiration for other educational institutions,” said DSEB’s chairman, PensionDanmark CEO Torben Möger Pedersen (pictured) when presenting the award.

Academic knowledge creates value for society

One of the factors that contributed to Aarhus University receiving the award was praise for the university’s conviction that the fusion of research-based knowledge with entrepreneurial aspirations is frequently the formula for successful business for society.

Since its inception three years ago in the disused kitchen of the municipal hospital, more than 300 new companies have participated in The Kitchen’s entrepreneurship programme, and the hub’s enterprising researchers and students have raised more than DKK 140 million in funding.

Professor Nikolaj Zinner of the Department of Physics and Astronomy is one of the driving forces behind the startup company Kvantify, which raised DKK 15 million in 2022 for its work with quantum computers.

specialists in chemistry, medicine, computer science, and process optimisation, and it has raised DKK 15 million.

“In the start-up phase, when things moved very quickly, we had some good clarifying talks with the consultants in the business development offer The Kitchen,” recalls Nikolaj Zinner.

“It was critical to form alliances with people other than academics, and we received very useful advice about who we should connect with and what we should keep in mind.”

Balanced collaboration

With his roots in an older, prestigious institute, the professor was well aware that the university can be a bit of an ivory tower at times. As a result, having someone to discuss problems with was useful when determining which partners could benefit the project.

At the same time, it is the academic competencies that propel Kvantify towards its solutions, and the trick has thus been to forge some good forms of collaboration.

Kvantify has, for example, partnered with several industrial PhDs, which is seen as a win-win situation for the companies because it allows their employees to grow their knowledge.

“The reason it has been possible is also due to the incredible support from the university and department heads, who have allowed our researchers to take time off or go on leave,” Nikolaj Zinner emphasises.

Kvantify’s quantum computer software is initially aimed at the finance, logistics, and pharmaceutical industries.

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TRUE ECOLOGY

Ant-whisperer wants to keep your apples blemish-free

Ida Cecilie Jensen wrote her thesis on using wood ants as pest control in apple orchards, and before she knew it, she had established a company to market her environmentally friendly idea.
Despite the fact that the main participants are very small indeed, PhD student Ida Cecilie Jensen made a discovery with enormous potential in her research. The beneficial effect of ants in combating pests in agriculture has long been known, but Ida Cecilie Jensen’s discovery is revolutionary: apples simply get less scab (fewer spots) when there are wood ants in the trees.

However, wood ants bring aphids, which fruit growers dislike. But that is no longer the case. Ida Cecilie Jensen first wrote an academic assignment on the subject, followed by her thesis. She discovered that having wood ants on the branches reduced scab by 60%, and at the same time, a research group was working on developing a sugar product that made the ants stop caring for aphids.

"I wrote my thesis with a supervisor who is the country’s foremost ant expert. For this purpose, we established an experimental plantation. After finishing the thesis, it irritated me that the existing pest control companies in Denmark refused to market the concept. After all, organic production MUST be developed. We depend on it," Ida Cecilie Jensen says. She contacted The Kitchen and decided to start AgroAnt herself. Then everything happened very quickly.

**Denmark’s Political Festival and SDG Tech Awards**

"The consultants at The Kitchen have given me support to set up a business while I am still writing my PhD project. They have been there for me the entire time, helping me get on courses, providing feedback, putting me in touch with an accountant and a lawyer – they have been invaluable."

Ida Cecilie Jensen was invited to participate in this summer’s Folkemøde (Denmark’s Political Festival) on Bornholm – “it was also The Kitchen that was responsible for me getting an invitation” – where she competed in a pitch competition in front of a panel of judges that included former ministers Tommy Ahlers and Connie Hedegaard, as well as Christian Vintergaard, CEO of the Danish Foundation for Entrepreneurship.

"I thought I could start it quietly as a side project while working on my PhD. But it’s amazing how quickly things have changed!"

Ida Cecilie Jensen won two pitch competitions and four grants, totaling more than DKK 250,000 in funding to launch AgroAnt. This summer, she was nominated and selected as a finalist in the “Best Startup” category at the SDG Tech Awards, one of the Nordic region’s largest sustainability competitions.

**More conferences and a revelation**

AgroAnt will establish its first anthills in apple orchards, complete with sugar dispensers, in 2023. The machines are the most innovative aspect of AgroAnt, and Ida Cecilie Jensen has collaborated with an engineer and Grundfos in the development work.

"I don’t have to invent anything revolutionary with the machine when others have extensive experience with this type of thing," Ida Cecilie Jensen says.

She will also attend several conferences in 2023, as well as remain active in a forum for female entrepreneurs and talk with consultants from The Kitchen. At the same time, she is working full-time on her PhD, in which she is investigating the true cause of how the ants keep apple scab at bay. Because, in fact, no one has ever documented this.

Along with her research at the Department of Ecoscience, PhD student Ida Cecilie Jensen runs her startup AgroAnt.
Do you enjoy being terrified out of your wits? Then perhaps you should participate in the project Apex of Fear, in which horror researcher Mathias Clasen investigates the limits of horror.

The associate professor from the School of Communication and Culture has been studying “recreational fear” for a long time. He studied people during the corona shutdowns based on a theory that horror fans use frightening experiences to develop coping strategies. When he discovered that the horror fans handled the corona isolation better than the control group, Mathias Clasen gained easier access to new research funding.

A mixed research group called the Recreational Fear Lab will now investigate how to design “appropriately scary” experiences using virtual reality.

The subjects are outfitted with a variety of sensors that allow the virtual reality programme to sense their physical and emotional states.

The experiments, which are funded by Innovation Fund Denmark, will yield a wealth of exciting data about the psychology and physiology of horror. The hope is that this will allow researchers to optimise the experience that can be created in a film, game, or other form of entertainment.

Innovation Fund Denmark can invest up to DKK 5 million in a Danish startup – find out more at www.innovationsfonden.dk

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Associate Professor Mathias Clasen of the School of Communication and Culture assesses the subjects' anxiety in his Recreational Fear Lab.

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Research collaboration with business and industry at Aarhus University

28% of research projects arise based on previous collaborations

25% occur as a result of company inquiries

24% are the result of AU inquiries to companies

Source: Danish Centre for Studies in Research and Research Policy, Aarhus University
ENGINEERS CAN REPAIR THE HEART

Leaky heart valve is a serious heart condition that, in the most severe cases, can result in cardiac arrest. Today, the treatment is a major operation that is not without risk. However, in the future, heart patients will be able to receive assistance from an engineer who will repair the defective heart valve by inserting a ring around the main artery.

It sounds like a plumbing solution, but it is actually a type of gasket developed by PhD student Mariam Noor from Aarhus University’s Department of Electrical and Computer Technology and Aarhus University Hospital’s Department of Cardiothoracic and Vascular Surgery.

When we talk about a defective heart valve, we always refer to the valve at the left ventricle, where oxygenated blood is pumped out into the aorta. If there is a leak, some of the blood returns to the heart, which is strained to accommodate the increased volume.

Mariam Noor’s solution is a ring that surrounds both the aorta and the heart valve, preventing blood from flowing back. She made it out of a very flexible material, and the ring is very precise thanks to 3D printing.

Animal experiments appear to be very promising. The inserted ring has little effect on the heart’s function.

Mariam Noor estimates that it will take several years of animal research and clinical trials before her invention can benefit humans.

INNOVATIVE IMMUNOTHERAPY

Immunotherapy is a very intriguing and rapidly developing type of cancer treatment. ComMIT Biologics, an Aarhus University spinout, is currently developing one of the most promising products. The researchers discovered an inherent effect in our innate immune system that they can influence. The therapy directs the immune system to kill cancer cells in a targeted manner, and it has the potential to be used to treat a variety of cancers.

ComMIT Biologics’ product is the result of many years of research by Gregers Rom Andersen’s team at Aarhus University’s Department of Molecular Biology and Genetics.

Since its inception in 2021, the company has received funding from the Innovation Fund Denmark, the Novo Nordisk Foundation, and, most recently, the BioInnovation Institute’s Venture Lab programme.

The four founders of ComMIT Biologics: Dennis Pedersen, Heidi Gytz Olesen, Mikael Winkler, and Nick Stub Laursen.

See more cases at au.dk/ivaerksaetteri
BLADDER CANCER DETECTED BY AI ASSISTANT

Even if you have a good idea and a groundbreaking discovery, it can take a long time to market a concrete product. It takes the right connections and, of course, the right financing.

Another important characteristic of the researchers behind the spinout company Cystotech, which arose from a joint research project at Aarhus University, was perseverance. With guidance from the startup hub The Kitchen, among others, the two researchers Anna Munk Nielsen and Jacob Eimose Jensen went in search of partners.

This is why Cystotech now has five co-owners, after finding a partner with access to capital who also put them in touch with people who understand IT and business development.

Cystotech expects to expand its investor circle in 2023, bringing them one step closer to launching their clinical tool, which will assist doctors in detecting bladder cancer at an early stage.

OVULATION ASSISTANCE IN FERTILITY TREATMENT

When women have difficulty conceiving, the cause is frequently an inability to ovulate, which is a difficult condition to influence. Hormone therapy is the only option, and it is rather ineffective.

However, fertility treatment may get a boost if the positive results continue for Notify Therapeutics, an Aarhus University spinout led by Karin Lykke-Hartmann, professor of molecular biology. Notify Therapeutics’ product has been tested in patient tissue and mouse models with success. It is administered directly into the ovaries as an injection and stimulates the release of fertilised eggs.

The product is being developed as part of the BioInnovation Institute’s incubator, Creation House. More animal studies, as well as toxicology and cancer research, will come next. An approved product is unlikely to reach clinics for another four years.
Workfeed, which emerged from Aarhus University’s IT environment, has launched an innovative employee scheduling system that has already attracted a large number of customers. The system’s goal is to make shift planning simple and painless for smaller businesses.

Workfeed has been looking for business partners to help it grow, and they have found one in the form of IT millionaire David Heinemeier Hansson, who has also joined the company’s board. Workfeed has now accumulated approximately DKK 11 million, which will be used to roll out the platform in other markets in other countries, thanks to an investment from Vivino and support from the Danish Growth Fund.

Agriculture imports large amounts of soy each year, primarily from South America, where soy production contributes to deforestation and predatory exploitation of nature. Decameal, a Danish company founded by two biologists from Aarhus University, works to develop the best protein product based on crabs that are pests in Danish waters.

Decameal’s founders have participated in a pitch competition in The Kitchen, and they have received a special grant from the Danish Foundation for Entrepreneurship, which has designated the project as one of the year’s most promising startups.

IT programmers frequently pull out their hair when they have to update the components that make up their overall script – and if the update is not performed, the function may become unstable.

However, if the programme JSFIX lives up to its potential, the trivial work can soon be safely forgotten. JSFIX can look into computer programmes and change the code where necessary.

The programme was created by two Aarhus University computer scientists who founded the spinoff company coana.tech and received DKK 2.5 million in grants to develop their innovative programme.
BETTER MEASUREMENT OF BLOOD PRESSURE

For many Danes, measuring blood pressure at home is a convenient and time-saving solution. Unfortunately, home measurements can easily become inaccurate, negating the entire benefit.

Akusis was founded by two young engineering students from Aarhus University’s health technology programme, Leah Minhee Krogh and Danny Bøjstrup Pedersen. They collaborated with general practitioner Kurt Rasmussen to develop a solution that can both increase patient comfort and produce completely accurate results and valid reporting of blood pressure measurement.

In the autumn, Akusis began working on prototypes and hopes to be on the market by 2023.

SUSTAINABLE CHEMISTRY

NorFalk is one of two grant recipients who received a special Youth Startup Investment Potential micro-grant of DKK 100,000 from the Danish Foundation for Entrepreneurship in 2022.

The startup’s product is components in washing powder, cosmetics, and soap that are more environmentally friendly than those traditionally used. NorFalk was founded by two civil engineers from Aarhus University with backgrounds in chemistry and biotechnology, who collaborated on the design of their business concept with the university’s startup hub The Kitchen.

“The Kitchen is a great community to be a part of,” says Nicklas Nørgaard, who founded NorFalk together with Kasper Falkenberg.

GREAT EXPECTATIONS FOR NEUROMedICINE

NMD Pharma, a spinout from Aarhus University’s Faculty of Health, has received a total investment of EUR 35 million. NMD Pharma is on the hunt for a novel type of medicine for neuromuscular diseases, and its generous investors include one of Europe’s largest health funds, Jeito Capital.

NMD Pharma won the INCUBA Award for Startup of the Year in 2022, and CEO Thomas Holm Pedersen was recognised for his great inspirational value in the entrepreneurial environment, in part because he founded a startup with such great potential at Aarhus University.
Graduates with an MSc in engineering from Aarhus University in Herning complete their studies by solving a task for a local company – and many students go on to work for the same company.
Exams in local businesses – with excellent job opportunities
The link between education and business is an important building block for the future welfare society. At the Department of Business Development and Technology, this connection is more developed than in many other places, as students finish their course in Technological Business Model Innovation (TBMI) by solving specific tasks for companies in Central and Western Jutland.

The exam task is called TBMI Challenge, and it is the third pillar of a course of study in which the first two modules deal with theoretical and technological business development, respectively.

“The TBMI Challenge is based on companies defining a challenge or a desire for development. The students are assigned a task and must then analyze the company and its needs, as well as devise a plan for implementing the solution,” Associate Professor Mirko Presser explains.

The task concludes with the student presenting his or her analysis and proposed solutions to the company as well as the teacher or co-examiner.

Fresh perspectives on old problems
The Department of Business Development and Technology is located at Aarhus University in Herning. The companies, which include both established companies, startups, and other types, are typically located in Herning, Holstebro, Ringkøbing-Skjern, Skive, Lemvig, Struer and Ikast-Brande.

“The companies are overjoyed that their problems are being evaluated by outside experts who are up to date on the latest technology. They get new perspectives on old problems, and our reputation in the area is growing. Since we began five years ago, more than 100 companies have participated,” says Mirko Presser.

Since 2018, Associate Professor Mirko Presser has led the TBMI Challenge, and the number of companies participating in the exam challenge has grown year after year.

Some of the students who participated in the TBMI Challenge are later hired by the companies where they worked.

“Our students can provide a unique perspective on a wide range of challenges, and their contribution can be extremely valuable in the evaluation of business ideas in companies,” says Mirko Presser.

The TBMI Challenge typically addresses issues such as automation, green efficiency, digitisation, and the targeting of new products or the analysis of new markets.
Some of Denmark’s most innovative and reputable companies are located outside of the major cities, and companies in Western Jutland frequently struggle to recruit highly skilled workers. DTL Ringkøbing-Skjern is a collaboration between Aarhus University, Ringkøbing-Skjern Municipality, and the business community. DTL is an abbreviation for Digital Transformation Lab. In 2022, a new initiative focusing on business internships was launched in DTL Ringkøbing-Skjern. Students from Aarhus University are matched with local businesses for an internship that culminates in an exam assignment. Companies in Western Jutland gain new knowledge and engagement from a young person, which hopefully leads to a permanent position for the student. So far, Vestas, HydraSpecma, Landia, and VELUX have received new knowledge and possibly future employees.

Approximately **50%** of the companies that collaborate with AU students require assistance with specific task solving.

More than one third of companies want to work more with students than they do now.

**85%** of companies believe that the benefits of a research collaboration outweigh the costs. 

*Source: CFA, AU*

**63%** of companies have hired students after they collaborated on thesis or internship projects.

*Source: Epinion*
Every year, Aarhus University sends a large number of students to businesses to participate in project-based courses or business specialisations. It is extremely beneficial to students, and according to a recent Epinion survey, it is also popular with the companies involved.

Among the companies that have collaborated with a student, 92% are highly satisfied. Aside from the 92% who were pleased with the process, nearly two-thirds hired a student after the collaboration ended.

Berit Eika, pro-rector for education, is obviously pleased with the positive feedback, but she emphasises that Aarhus University still needs to improve its ability to connect with small and medium-sized enterprises in particular.

“Because SMEs generally hire fewer new employees than large corporations, project collaboration with students is a great way to bring new knowledge into the organisation,” says Berit Eika.
PhD Career Day on 27 April

PhD employment is an important starting point for a future career in academia, but the business community also seeks young people with PhD or postdoctoral experience. That is why PhD Career Day is held every year, a career fair where students can meet companies that present which skills they require and what opportunities they can provide. In 2023, PhD Career Day will be held on 27 April in Stakladen, and more than 20 major Danish companies looking for academic and methodological knowledge are expected to participate. In addition to PhD Career Day, students can participate in two virtual career days on 28-29 March.

More info and registration at phd.au.dk/career-day

CASE COMPETITION
NEW TOURIST EXPERIENCES

When Aarhus University held a tourism case competition, a dozen students and graduates competed for the most innovative idea. The task was to create new tourist experiences or digital experiences at cultural institutions.

The winning team took home the prize – a series of counselling sessions – with a game in which the tourist selects a theme within their area of interest and creates a route between cultural offerings.

The event was hosted by Growth4SMEs at Aarhus University in collaboration with universities in Leuven, Belgium, and Oslo, Norway, as well as Dansk Kyst og Naturturisme ("Danish Coastal and Nature Tourism"), Dansk Storbyturisme ("Danish Metropolitan Tourism"), and Aarhus Job Centre.

Growth4SMEs aims to connect university students with small and medium-sized businesses.
Aarhus University’s students and researchers are rapidly developing an entrepreneurial culture. This is especially visible in The Kitchen’s inspiring environment, where many new businesses take their first steps.

However, the first steps can be especially challenging for academic startups because they frequently contain completely new technologies or unknown angles on known challenges. Because there is no market for a completely new product that is not a copy of something already known, the first phase can be extremely difficult.

The AU Launch grant was established in 2022 to alleviate this barrier by providing support for further development or market research in connection with products that had not yet passed the clarification phase.

Both established startups at Aarhus University and entrepreneurs who had not yet been registered as companies could apply for the grant. Applicants for the grant could receive up to DKK 500,000.

All university-affiliated entrepreneurs were eligible to apply for startup assistance through the AU Launch initiative. Researchers Line Dubois and Malthe Hansen (pictured) were awarded nearly DKK 200,000 for their company, MedicQuant.
A new grant was awarded for the first time at Aarhus University in 2022. This is the Merck grant, which is aimed at entrepreneurial ideas in the life sciences and can be applied for by both university students and PhD students. The grant was established by Merck Denmark, and recipients will be chosen by a jury chaired by Vice-Dean of Health Hans Erik Bøtkeeper. Two projects will be chosen and each receive a DKK 25,000 grant for prototyping, testing, consulting, travel, or other expenses that will help the project mature.

The BioInnovation Institute was established to foster research-based business ideas that benefit society. Beginning in 2022, BII (supported by the Novo Nordisk Foundation) will also operate from Aarhus University.

In the first round, the Novo Nordisk Foundation distributed 16 micro-grants of DKK 50,000 over a two-year period to university entrepreneurs in the life science areas of therapeutics, health tech, and bioindustrials.

According to a statement from the BioInnovation Institute, Aarhus University was chosen because of its strong environment for life science entrepreneurship.

Researchers and students in the early stages of their innovation journeys have been chosen as the target group. Recipients must also show a strong commitment to turning their idea into a business and assemble a strong team.
EARLYCASH AT GRUNDFOS AWARDS

With the help of the EarlyCash grants, a number of startups are launched in the academic environment each year. EarlyCash is a DKK 25,000 grant that can be used to test a business idea or give it a decisive push towards realisation. Only Aarhus University students and researchers are eligible to apply.

Once participants have started a course or been connected to an Ignite Buddy in the university’s startup hub The Kitchen, the path to an EarlyCash grant is set. There is a chance to be chosen for an EarlyCash pitch, in which startups can earn a small financial boost.

EarlyCash is sponsored by Grundfos. The EarlyCash recipients who manage to gain the most impact from the grant are recognised at the annual Grundfos Awards, which are also held at Aarhus University. Palm Mute Pedal and Nuntio received DKK 30,000 and DKK 15,000 in extra prizes in 2022, respectively.

The great laboratory inauguration

Aarhus University in Herning strengthened its facilities in February by opening nine new laboratories on the same day, thereby taking another step towards becoming Denmark’s hot spot for business research.

In his opening speech, Rector Brian Bech Nielsen stated that the purpose of the laboratory venture is to create a powerhouse for business research that can become a physical centre for the development of innovation, business collaborations, and student projects in Central and Western Jutland, and which can subsequently bring value to the whole of Denmark.

The laboratories will serve as the starting point for the continuous development and innovation required for an educational institution to remain relevant for both business and engineering students, as well as for the companies that seek to hire graduates.

The laboratories are called Concept Development Lab, DIGI Lab, Drone Lab, Experimental and Analytical Lab, MBIT Lab, Production Lab, PROTO* Lab, SENSEMI Lab, and xR² Lab.
Sustainable business rocked the festival

When NorthSide Pitch was held again in 2022, three startups took the stage, while Danish musician Thomas Helmig performed on another stage in the background. With their strong and convincing presentations of their sustainable ideas, they were certainly not overshadowed by Helmig and the other artists at the music festival.

However, Tobias Ørskov from Contribe, who works with CSR solutions, stood out the most on the day. Contribe is a participant in The Kitchen’s entrepreneurship programme, where students develop ideas based on knowledge and theories gained from teaching and research.

A NATURAL WINNER

In 2022, the Kamstrup Pitch Competition was held in The Kitchen for the second time, and the five participants presented a difficult task to the judging panel.

The entrepreneurs Contribe, Olden Kombucha, eBand, Ziropa, and AgroAnt competed in the competition, which had a first prize of DKK 30,000. All of them had used offers from The Kitchen during the year.

The “natural” winner was AgroAnt, a company founded by PhD student Ida Cecilie Jensen with the goal of reducing pesticide use in fruit growing. AgroAnt has developed a method to use wood ants instead.

On page 12 you can read an interview with Ida Cecilie Jensen about AgroAnt.
EVENTS OF THE YEAR

CELEBRATING STARTUPS

The Startup Aarhus Townhall event, held in Turbinehallen in the spring of 2022, celebrated Aarhus’ growing entrepreneurial community.

The event was organised by The Link, a business connector founded by Aarhus University, Aarhus Municipality, and Central Denmark Region, and was held in close collaboration with local investors and the business community. The Link aims to strengthen Aarhus’ international business profile by creating ideal growth frameworks for entrepreneurship.

The stakes were raised with Startup Aarhus Townhall. 500 people attended the completely sold-out event, which succeeded in bringing the local entrepreneurial ecosystem closer together.

Aarhus startups at Denmark’s Political Festival

Aarhus University startups were at the centre of a debate on what should be most important in entrepreneurial companies: the bottom line or sustainability, at Denmark’s Political Festival on Bornholm.

When three young companies with roots in The Kitchen took the stage to deliver their contribution to Aarhus University’s pitch competition, the panel included heavy hitters such as climate pioneer Connie Hedegaard, fund manager Christian Vintergaard, and serial investor Tommy Ahlers.

AgroAnt won for its use of ants instead of pesticides in plant breeding. Cystotech and Workfeed were the other two skilled participants.

Denmark’s Political Festival also featured discussions on Aarhus University’s collaboration with Ringkøbing-Skjern Municipality. Representatives from the municipality, university, and business community all contributed to the discussion about how the innovative project DTL Ringkøbing-Skjern can bridge the gap between industrial and academic Denmark – and become a model for similar collaborations across the country.

ZOOMING IN ON THE MAKER MOVEMENT

New technology such as 3D printers and laser cutters enable us all to create new solutions and bring new ideas to life.

In September, Aarhus University in Herning hosted the MidtVest Maker Fest, which highlighted the maker movement from all angles and attempted to answer the question: How can Danish businesses use new DIY technology in the development of new business areas while also creating a more sustainable product design?

The MidtVest Maker Fest was made possible by the VELUX Foundation and the Tuborg Foundation, among others.
Entrepreneurship was celebrated at global festival

Aarhus was chosen from hundreds of applicants to host Europe’s largest entrepreneurship festival Slush’D in autumn 2022.

With 700 guests on the list of participants, the one-day festival became a big attraction for the business-oriented part of Denmark – several of whom had to go in vain to the sold-out celebration of Danish entrepreneurship.

Organised by the local business initiative The Link in collaboration with Aarhus University, Slush’D provided a unique insight into the Danish startup environment through inspiring presentations, networking, and panel debates. One of them was led by Director of Enterprise and Innovation Lone Ryg Olsen, Aarhus University. Together with philanthropist Maya Faerch, investor Tommy Ahlers, and entrepreneur Christian Jølck, she spoke in front of a packed audience about entrepreneurship as a solution to the world’s problems. The panel quickly agreed that modern entrepreneurship should always have a sustainable aim.

“If you don’t try to save the world with your business, at some point you will quite naturally run out of customers,” one participant said during the discussion.

THE WOMEN STARTUP RETREAT WAS PACKED

More and more women are developing an interest in entrepreneurship, which will benefit the diversity and wealth of ideas in addressing challenges both new and old.

The Kitchen assists where possible, and it resulted in the spring Women Startup Retreat, which is unlikely to be the last. The young startups worked hard to develop their ideas over the weekend course, which was kicked off by a presentation from Associate Professor Vera Rocha, CBS.

Female entrepreneurs frequently express a desire for female role models when embarking on their own startup venture. After the Women Startup Retreat, we have 20 more female role models to look up to.
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