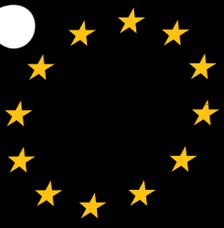


Science, Technology and Innovation

Projects



INSIGHT publishers

DNRF Special Edition

Promoting frontier research



The DNRF's Centre of Excellence Programme
Supporting visionary ideas in all research areas

POWER *to the researcher*

A state funded initiative known as the Centre of Excellence Programme has proven integral to Denmark's current scientific prowess. Celebrating autonomy and innovation, the flagship initiative supports the creation of elite research units. Now 23 years old, the scheme has recently received substantial funding from the Danish government, ensuring it can extend its bold commitment to frontier research.

Centres of Excellence (CoE) are sponsored by the independent Danish National Research Foundation (DNRF). Their aim is to incubate and realise groundbreaking science. Launched in 1993, the scheme has proven enduringly successful, and is widely recognised for enhancing multidisciplinary research, notably in natural sciences and biosciences. According to a 2013 evaluation, the DNRF has succeeded in elevating the quality of Danish research to a level where it can rival top international institutions, with the “extremely successful” design of CoEs perceived as integral to this achievement. Numerous other accolades have gilded its prestige. Several centre leaders have received Denmark's EliteForsk prize for young researchers, and many centres have also received grants from the European Research Council to prolong their work. But what are the factors that forge such world-class pedigrees?

“We stress that centres are allowed to determine how best to spend their budgets,” says Professor Thomas Sinkjaer, Director of the DNRF. “Risk taking is encouraged; for us, a failure is not a failure if you're operating at the forefront of your field.” Unlike other types of research framework, which seek to define objectives or deliverables, the DNRF has fearlessly adopted criteria that celebrate blue-sky thinking. Daring, curiosity, and an enthusiasm to tackle science's ‘big questions’ are a vital part of the ethos that makes CoEs - and their leaders - so unique.

Professor Thomas Sinkjaer,
Director of the DNRF

Christiansborg Palace is the seat of the Danish Parliament



Providing that they pass stringent eligibility tests to ascertain their viability, CoEs receive grants that can sustain their activities for up to ten years. Funding is awarded for two sequential periods: initially for six years, with a secondary four year term provided if a mid-term evaluation is passed at the five year mark. Centres vary in size from 15 to 60 personnel, and can specialise in a myriad of different

subjects, as its active portfolio demonstrates. Current CoEs include the Centre for Medieval Literature, the Stellar Astrophysics Centre, the Centre for International Courts and the Centre for Geomicrobiology. Although there is no predefined formula for proposing a CoE, in order to receive backing each must demonstrate certain key characteristics. Ambition, originality and the potential to achieve at international level are attributes that can help to pass the rigorous application process, which only six per cent of applicants pass.

Centres are each headed by distinguished scientists who have achieved excellence in their chosen fields, but also exhibit key leadership qualities. Whilst the underlying science is important, possessing the personal vision to manage a long-term project, and the authority to inspire a creative and dynamic research community, is regarded as equally vital by the DNRF. For this reason, the organisation also arranges courses in research management to enhance these qualities whilst directors embark upon their roles. "We want to help scientists reduce their administrative burdens," says Sinkjaer. "The first two

Investing in Excellence

The Danish National Research Foundation (DNRF) was established in 1991. It is an independent organisation committed to funding outstanding research at the highest international level at the frontiers of all research fields, including humanities, life sciences, physical sciences, social sciences and technical sciences.

The Centre of Excellence (CoE) programme is the primary funding mechanism and the foundation's flagship programme. A grant for a centre is large and flexible and may run for up to ten years. Only top researchers with the most ambitious ideas are awarded a CoE. So far, 100 such centres have been established.

"The first two things I ask new centre leaders to acquire are a coffee machine and a professional administrator. The coffee machine is the place where great ideas are formulated, and the administrators are there to help our professors focus on what they are best at – research!"



In January 2015
the Danish
Government
awarded a capital
injection of
€400m
to the DNRF

things I ask new centre leaders to acquire are a coffee machine and a professional administrator. The coffee machine is the place where great ideas are formulated, and the administrators are there to help our professors focus on what they are best at – research! We encourage our specialists to rethink how they organise their work, since admin and other related functions like engaging in outreach activities, can be an increasing burden."

"We'd like to call our fundamental objective 'curiosity driven research'. CoEs are essentially dream projects – investments into research that are truly at the heart of what researchers passionately want to do," explains Sinkjaer. "The DNRF wants applicants to convince us that these questions are important to address, and that they as individuals are the best placed to engage with them. If successful, we will grant researchers a great degree of freedom, and seek to provide an optimal working environment in which to realise their goals. But, in return, we will monitor their progress and engage in periodic dialogues with them, which I consider very important to the overall success of the CoE concept."

Sinkjaer believes that the best researchers deserve to be awarded with independence and trust, but that it is also important to challenge them. "One of the reasons for our success is that representatives of the DNRF annually visit each centre, to conduct assessments and, if necessary, challenge the thinking and strategy of the director. Each of these visits creates a powerful dialogue which is very positive, and can help directors to reflect and ask themselves about the big questions they want to address."

As part of ongoing monitoring, CoEs are required to submit information that includes key performance indicators, such as evidence of their research dissemination. "In some cases, we have needed to

suggest a revised focus and the assessment of a team's composition, for example, if we see five or so separate groups working under the same umbrella," says Sinkjaer. "Adjustments can help them to become more cohesive. Because I am a former CoE director, and the board members accompanying me are well respected researchers, this creates a lot of respect between both parties involved in the process".

The DNRF has established 100 CoEs so far, with its most recent additions opened in January 2015. €22.6m will be poured into three new Centres of Excellence at one institution alone. Topics investigated by the groups will include an investigation of highly efficient internet solutions for the future, nanocapsules for drug delivery, and improved scanning technology for medical image processing. The DNRF has a clear vision for the future of the CoE project, and has identified 12 areas of research into which it will contribute €93.33m during the next six years to sustain it, with a further €53.3m pledged for extensions of centres deemed successful. In acknowledgement of CoEs' important contributions to science, in January 2015 the Danish Government awarded a capital injection of €400m to the DNRF, prolonging the future of the institution. This substantial award will sustain its centres until 2036, and also guarantee opportunities for successive generations of elite research scientists, for whom CoEs function as inspirational training environments. "This is great news," responds Sinkjaer. "It means we can plan for up to ten years ahead, and continue to operate at current levels of activity. This gesture is a powerful indication that the Danish political establishment backs CoEs, and has committed to investing in Danish science in the long term." ★

