

10 October 2018

Perspective plan for AU Foulum

Discussion paper on new opportunities for complementary activities at AU Foulum

Version 0

Introduction

Interaction with companies, business organizations and other knowledge institutions can provide energy and inspiration for both research and innovation. However, close interaction is often subject to geographical proximity.

The proximity provides better opportunities for (informal) exchange of knowledge, shared use of research facilities, and opportunities for education and career / job change etc. Potentially, new activities create synergy with the existing research, ensuring that AU Foulum is an exciting and inspiring place to work.

The purpose of preparing a perspective plan for AU Foulum is to clarify, if there are complementary activities that could be drawn to AU Foulum, and what is needed in terms of changes in infrastructure and other conditions etc.

This version 0 should be considered as a first discussion paper and it has been prepared to get ideas and suggestions from research groups at AU Foulum. Research groups are now kindly asked to discuss the paper and provide ideas and provide their ideas. Please see enclosure 1.

On 2. November 2018, an internal AU Foulum workshop will be held in order to initiate discussions between research groups from different departments. Subsequently, a new version of the perspective plan (version 1) will be prepared, presenting ideas and proposals that can contribute to new activities at AU Foulum.

In January, meetings with external partners will be held. The purpose is to present the perspective plan and to investigate the interest for contributing to further concretization of proposals for new, supplementary activities at AU Foulum

Development perspectives for AU Foulum

AU Foulum is a leading research centre within e.g. bioeconomy, livestock and plant cultivation. Research facilities include livestock, experimental fields, demonstration facilities, laboratories etc. covering the entire value chain from field to fork. In the years to come, these facilities will be further developed as funding has been provided for a demonstration biorefinery plant as well as renovation and building of new livestock facilities.

Research activities at AU Foulum are often connected with challenges in relation to e.g. food supply, food quality, circular economy, animal health and welfare, resource consumption, climate impact and environmental conditions. In several areas, there is a direct connection between AU Foulum research and UN sustainability goals.

There is a long tradition for cooperation with authorities, companies and organizations within the agricultural and food areas. Many research projects are carried out in direct cooperation with companies and agricultural organizations.

Based on the above, there is significant potential for innovative companies to set up business at AU Foulum with the purpose of cooperating with the research environments and use the unique research facilities at the center.

New needs – and possibilities

In the years to come, research groups from Department of Food Science and Department of Molecular Biology and Genetics will move to Aarhus. Previously, research groups from Department of Engineering moved from AU Foulum to Aarhus.

These moves will pose certain challenges for the interdisciplinary cooperation within the agricultural and food areas, and also reduce the use of buildings and research facilities. Generally, this may result in reduced activities, fewer employees and empty buildings.

This may – in turn – generate a downward spiral, despondent employees, insecure cooperation partners and a declining interest in investing in AU Foulum.

However, the moves also leave room for new activities at AU Foulum, and the purpose of the perspective plan is to examine the possibilities of attracting new, relevant research and development activities to AU Foulum.

Such activities may be included in synergy – cluster cooperation – with existing research and use the buildings and research facilities at the center.

In other words, such activities will provide inspiration, dynamics and new possibilities to apply research-based knowledge.

Cluster cooperation

Successful cluster cooperation comprises companies, knowledge institutions, industry associations, local and regional authorities etc. in collaboration relations that creates an upward spiral of growth and development based on cooperation on innovation, research and education.

Successful clusters are often characterized by having geographical (regional) roots. The world's best-known cluster is Silicon Valley in California. The Dutch Wageningen UR is a well-known European example. In Denmark, we have the off-shore cluster in Esbjerg and the medico cluster in Northern Zealand.

The Central Denmark Region is the Danish region in which agriculture and food processing has a significant financial importance. Agriculture and downstream industries are the major industries for several of the regional municipalities.

Agro Food Park in Skejby is a cluster focusing on food. The ARLA innovation center located here is a major driver in the cluster, and now AU moves its food research activities to this area.

Cluster collaboration in Foulum focusing on bioeconomy and primary agriculture would complement and create synergy with the food cluster in Skejby. Foulum already houses Agro Business Park (ABP) and its 10-15 small and medium-sized companies with a total of 60-70 employees.

However, there is room for more – and preferably larger – companies that may use the buildings in both ABP and AU Foulum.

Cluster for agriculture and bioeconomy at Foulum

The major perspective of cluster cooperation is increased interaction between companies, research, and education and innovation activities. The advantages of establishing a bioeconomy cluster at AU Foulum comprise:

- Increased research input to innovation and development activities in companies within agriculture, food production and/or green technologies
- Increased interaction between problem-oriented research (research-based policy support) and development-oriented innovation, including knowledge transfer from DCA departments to companies and organizations
- Joint utilization of research facilities (experimental barns, experimental fields, laboratories, technical plants etc.) and expertise from technical staff
- Possibilities for joint investments in pilot plants and other major facilities
- Possibilities for renting out facilities to e.g. GTS departments with a view to tests and certification
- Improved possibilities for joint applications to national and European research and innovation funds
- Cooperation in relation to industrial PhD's and industrial Postdocs
- Improved opportunities to attract talents to AU Foulum

Promising cooperation areas

Numerous promising research areas exist at AU Foulum. The following research areas in particular demonstrate promising potential:

- Circular bioeconomy: Utilization of biomasses and residual products for protein and other high-value products
- Energy technologies: Conversion of biomasses, hydrogen and carbon dioxide via biogas, HTL etc.
- Animals: Feeding, health, physiology, animal models, raw material quality
- Housing technologies: Automation, utilization of AI, ventilation, emissions, behavior etc.
- Field techniques: Autonomous units, artificial intelligence and photo recognition, management technologies etc.
- Targeted regulation: Development of landscape filters, emission measurements etc.
- Plant and animal production systems: Productivity, nutrient losses and climate impact

What is needed?

Primarily, we need to identify potential growth areas and secure proposals for actual activities that may be relevant at AU Foulum (cf. enclosure 1).

In addition, it seems relevant to identify prospects and barriers for attracting new activities and companies. Based on this, we kindly ask for input to a SWOT analysis (the following pages).

Analysing internal and external conditions

In the following, you will find a first version of a SWOT analysis of the AU Foulum activities. The analysis focuses on internal as well as external conditions. Strengths and weaknesses are the internal conditions, while opportunities and threats/barriers are external conditions.

The purpose of the analysis is to provide a snapshot of AU Foulum and the strategic possibilities to develop the activities.

Strengths

- Strong research environments with excellent knowledge on the sector/industry
- Strong international networks. Many researchers are experienced with EU projects and internationally financed projects
- Major experience with providing research-based policy support to authorities – and a certain experience with providing advice internationally
- Research at AU Foulum is problem-oriented and relevant to the industry. An extensive cooperation with the industry exists as well as an excellent knowledge of the agricultural sector
- We are team-oriented and have long-lasting traditions for interdisciplinary and solution-oriented cooperation across scientific environments
- AU Foulum research is highly respected and recognized among authorities and cooperation partners. Agricultural research at AU is ranked in top ten for agricultural research
- Excellence in attracting external funding , specifically within strategic research areas
- We have unique research facilities at our disposal, as well as animal lines and well-documented analysis and measurement methods
- Master and PhD students have excellent opportunities to access research data and facilities

Weaknesses

- AU Foulum buildings and research facilities are characterized by the needs and the organization structure of the 80ties and 90ties. This may make it difficult to adapt to and establish research cooperation centred on the newest research trends and societal needs
- Limited experience with – and interest in – establishing spin-outs
- The major part of the funding from the Ministry of Environment and Food of Denmark is tied up in buildings and other indirect costs. This results in inertia and may cause that the facilities are not used
- A significant part of external funding may result in lacking time for contemplation and does not support basic activities
- The relatively low share of basic research activities may cause problems in 15-20 years' time
- Limited experience with international funding and commercial research cooperation with international companies
- Within some research areas it may be difficult to find qualified staff members with a CV – of a sufficiently high international standard – that qualifies for permanent employment
- The student body (bachelor and master) is relatively small; meaning that resource consumption per student is high

- The geographical location is a problem in relation to students from Aarhus, and – in some cases – to potential, new employees. Limited public transport is a major problem

Opportunities

- If food companies are to contribute to the UN sustainability goals, they need research in order to adapt technologies and production systems
- Bioeconomy research creates new opportunities for cooperation with companies and society
- Generally, AU supports spin-outs. In addition, Agro Business Park offers rooms, advice and network for new companies
- The Food and Agriculture Package from 2015 resulted in a strong increase in the demand for knowledge on targeted regulation, including the aquatic environment in particular and the agricultural impact on this. The increase is supposed to continue at least until 2027, when the third plan period is finished
- The UN sustainability goals and the EU research programmes still provide excellent opportunities for globally oriented research in agriculture and food
- The development within digital technologies and “big data” from sensors opens up new possibilities for proactive research in relation to authorities and the industry
- There is a political demand to use the vacant buildings at AU Foulum
- International companies and investors demonstrate a growing interest for AU Foulum research activities
- The climate agenda will entail even bigger opportunities for research within the minimization of the climate impact of agriculture
- Horizon Europe increases the possibilities of EU funding for research activities within food and agriculture

Threats

- The funding contracts with the ministry within animal, plant and food research is exposed for competition
- Increased demand for advice in the contract with the ministry will reduce the possibilities of achieving external funding
- Important research areas are moved away from Foulum and possibilities for research along the entire value chain is reduced
- High rent costs make it difficult to attract new companies/tenants/cooperation partners
- Lacking incentive for interdisciplinary cooperation among research groups and departments
- Political discussions about the use of buildings and facilities in Foulum will shift the focus away from research opportunities
- Relevant cooperation partners/companies might choose to set up business in Aarhus instead of Foulum

Next steps

It is our intention that this proposal should be discussed in sections/research groups that carry out activities relevant to AU Foulum. Each group will prepare 1-3 (preferably more) ideas and proposals for actual initiatives that may help bring companies or new activities to Foulum.

We hope to get suggestions targeted towards the barriers to attracting new activities, as well as ideas for attracting activities that may establish synergies with Foulum research. Cf. enclosure 1 – a template.

On 2 November, a workshop has been scheduled in the auditorium. We kindly ask at least one representative from each section/research group to participate. The workshop will start with a contribution about the perspectives for AU Foulum, including the challenges and opportunities that AU Foulum faces. Next, we will discuss and prioritize ideas and proposals from the research environments.

After the workshop – and until 9 November – it will be possible to submit further/supplementing proposals for the perspective plan.

We expect that version 1.0 of the perspective plan for AU Foulum will be ready in the middle of November. The plan will be used in a meeting with external partners interested in developing AU Foulum. These may comprise representatives from the Ministry of Food and Environment of Denmark, Central Denmark Region, Viborg Municipality, industry and environment organizations and not least, companies interested in research.

Time (2018 - 2019)	Initiative
August - September	DCA heads of department prepare the present proposal
Start October	Version 0 is sent to all sections and research groups that carry out activities relevant to AU Foulum
October	Discussions at local section and research group meetings
27 October	Deadline for submitting enclosure 1
2 November	Internal workshop with at least 1 representative from each section/research group
9 November	Deadline for submitting comments and suggestions
16 November	Version 1.0 is finished
23 November	Informing external cooperation partners
Mid-January	Seminar with external cooperation partners

Enclosure 1. To be completed at section or research group level

Please, go over the SWOT form. Identify and add your own strengths and weaknesses. Next, fill in the form below.

Based on the SWOT analysis, please indicate actual ideas/proposals that may attract new activities/companies to Foulum:

Research group/section:

Contact person:

Please submit the completed form **no later than 27 October** to clausbo.andreasen@dca.au.dk