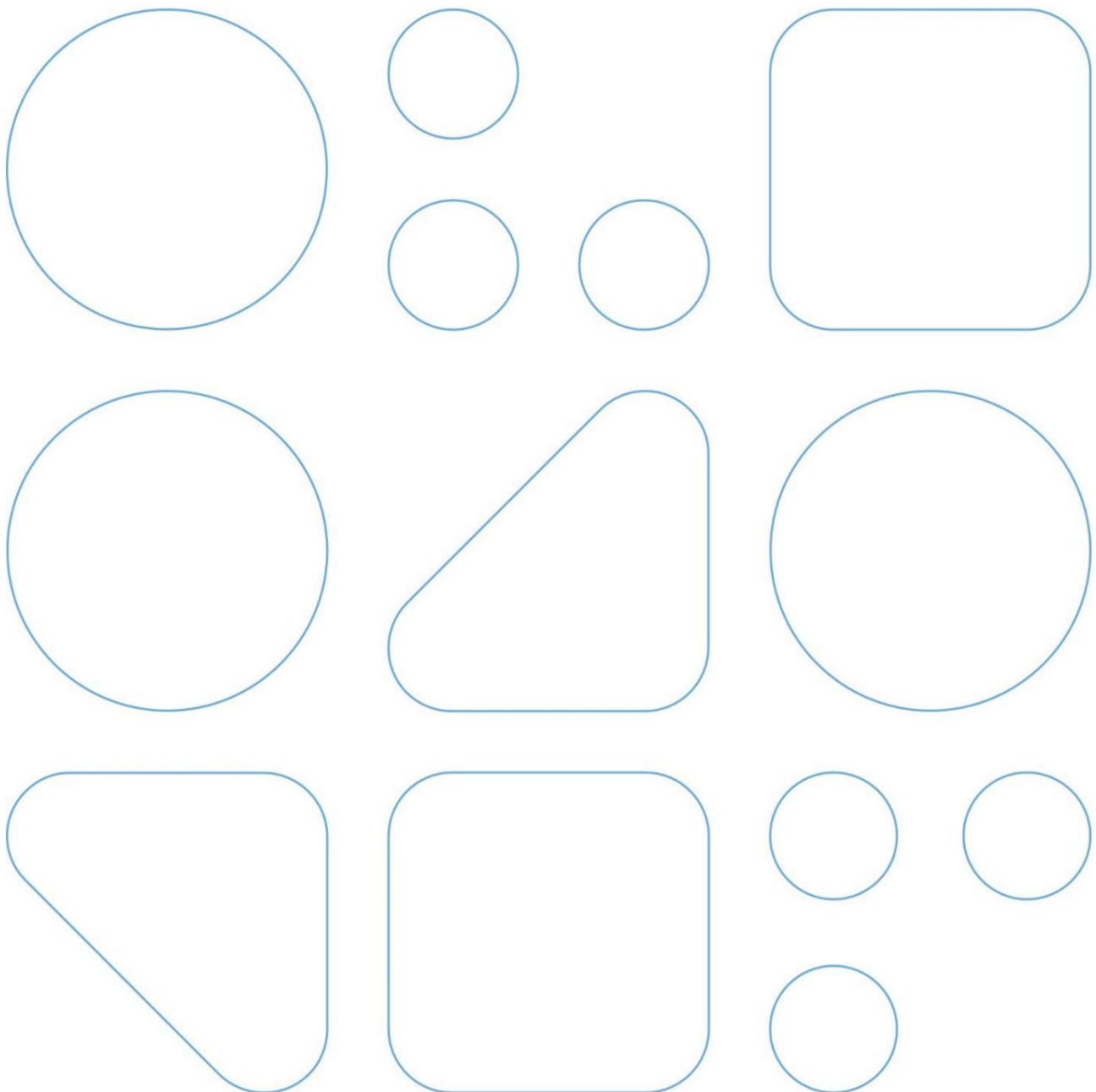


Sub-plan 9: Research and innovation

2022-2026

20.04.2022



Development plan 2040

Sub-plan 9: Research and innovation

This plan is one of nine sub-plans under [Development Plan 20240](#), which describes Akershus University Hospital's (Ahus) main goals and plan for the development of the hospital up until 2040. The sub-plans describe specific projects and development initiatives that are planned for the next four years. The partial plans are rolled out and updated annually, as part of the company's prioritization and budget process.

Nine sub-plans have been drawn up:

Subplan 1: The elderly patient

Sub-plan 2: Acutely and critically ill patients

Sub-plan 3: Cancer

Sub-plan 4: Mental healthcare and substance abuse treatment

Sub-plan 5: Children and young people

Sub-plan 6: Competence and education, recruiting and retaining

Sub-plan 7: New tasks and further development of patient services

Sub-plan 8: New work processes and technology

Sub-plan 9: Research and innovation

About the investment area

In recent years, "strengthening Ahus as a university hospital" has been one of ten main goals.

Target achievement for strengthening the university hospital function is assessed based on whether the company achieves a minimum 15 per cent annual increase for clinical treatment studies and whether the number of peer-reviewed scientific articles has increased from the previous year. Three priority measures have been defined within the area in 2021; increase in external research funding, personalized medicine and pragmatic studies. The company also has an internal control objective that all research and innovation projects must be registered in the eForm.

Ahus is one of six university hospitals in Norway. The requirements to be a university hospital are established in a separate regulation. In this there is a demand for cooperation with universities that graduate doctors and other health personnel. The hospital will also make a significant contribution to research-based theoretical and practical education and doctoral education within a wide range of subjects and subject groups.

The enterprise must have basic biomedical and healthcare research, translational research and clinical research in most subject areas, as well as be able to demonstrate research activity of high international quality and breadth. An overall goal for Ahus is to fulfill our obligations as a university hospital by strengthening research, education and innovation at the company.

What has been achieved so far

The results for the main objective show growth in the number of articles until 2016 with flat development until 2020, then an increase for 2021. The number of clinical treatment studies is growing. Of priority measures, Ahus has seen growth up to 2016 for external research funding and then some stagnation.

For personalized medicine, Ahus has established a local InPred-Ahus structure that ensures coordination and implementation of diagnostics and experimental treatment at the hospital. Ahus also participates in several regional and national networks and participates in and leads studies on personalized medicine.

The work with pragmatic studies has produced studies at Ahus that utilize established clinical solutions, including registries and data warehouses, for intervention studies. Ahus also leads a work package related to pragmatic studies in NorCRIN 2, which is a major national initiative from the Research Council of Norway. There is a high degree of coverage for studies in eSkjema, which is an internal quality measure.

Ahus is in a stable situation when it comes to research and innovation, but has the potential to strengthen some important indicators.

Plan for the period 2022-2026

Research and innovation must encompass all divisions/clinics, and work with new opportunities and challenges therefore needs broad involvement in the hospital, as well as with external actors. The sub-plan for research and innovation will primarily discuss the development and progress of some major areas of effort.

This work must have flexibility as some included areas are decided outside Ahus. New, important areas of effort may also appear which should be included in the sub-plan during an annual audit.

Cooperation with municipalities and districts on comprehensive processes

Cooperation with municipalities and districts should be strengthened during the planning period. Ahus has established cooperation with municipalities in Nedre Romerike, OsloMet and local businesses through the Lillestrøm Health Hub. This network is planned to continue with wider participation in Romerike Helsehub. Ahus also participates in the Professional Council for competence, innovation, research and digital interaction, which is a subcommittee of the Cooperation Agency for the municipalities.

In its report from 2019, the municipalities' strategic research body recommended that the municipalities should strengthen research and establish research infrastructure. For many years, Ahus has focused on building up a solid research infrastructure and the municipalities can take part in this, should they wish to.

Ahus can also offer competence transfer if the municipalities want to build up their own infrastructure for research and innovation.

How the measures can increase quality and patient safety More and better

research is important to strengthen Ahus as a university hospital. Education and innovation will have a direct positive effect on quality and patient care. The research environments and research infrastructure were a necessary buffer during the early phase of Covid-19, which shows that Ahus as a university hospital is a robust organization that can withstand external stress. Research and development are essential for offering new patient treatment, maintaining strong professional environments and contributing to knowledge and discussion in society. Ahus and co-located structures with the university/college (UH) sector ("Campus structure") will further elevate Ahus as a hospital and this will also provide better patient care, both internally at Ahus and in transition to the municipality/primary health service.

How diversity and migration health must be safeguarded The

Norwegian Health Authority's patient base reflects the diversity of the Norwegian population. The focus at Ahus is patient studies and we will necessarily, and more than other Norwegian companies, contribute to new knowledge and better treatment of patients with different cultural and ethnic backgrounds. Ahus must follow a recruitment policy that ensures diversity and this also applies within research, education and innovation.

Areas of focus

There are six areas of effort that should be worked on broadly across divisions and clinics and with actors also outside the research sector at Ahus and with external actors.

Separate working groups will be set up for each area, with subgroups with broad representation. Identified areas of effort to date are presented below:

- 1) Economics in research and innovation
 - a) Large investments/ research structures
 - b) Infrastructure for research in the division/clinic
 - c) Support for research groups
 - d) Clinical studies
- 2) Cooperation with the HE sector
- 3) Recruitment and career plans for researchers
- 4) Innovation at Ahus
- 5) Improve overview and use of biomaterial
- 6) Professional development areas
 - a) Precision medicine
 - b) Digitization and AI
 - c) Pragmatic studies

During the period, new areas may also appear that will need a similar process.

The working groups within each area will work to define clear goals and set concrete measures for further development within each area. The work will follow the normal process for investigation at Ahus and will also have process support from actors outside the research sector.

To ensure sufficient involvement and correct anchoring, proposals for mandates and members for the working groups will first be discussed in the Ahus and Campus Ahus Coordination Meeting, followed by input from the Joint Research Committee. The mandate and working groups will then be anchored in the hospital management.

It is proposed that the hospital management acts as the steering group for the working groups and that the Coordination meeting becomes a working committee. Results from the working groups are presented in the joint research committee before the case to the Coordination meeting and then the hospital management.

Area of focus 1: Economics in research and innovation

Divided into four sub-themes:

1) Large investments/research structures

How to ensure stable funding of major investments/infrastructure at the Research Center? This may apply to investments and infrastructure such as EpiGen, 3D lab, Department for Health Services Research (HØKH), and support functions in the Division for Diagnostics and Technology (DDT), including laboratory services, radiology/imaging, pathology and research ICT.

Goal:

- Strengthen major research efforts/infrastructure at Ahus: EpiGen, 3D-lab, HØKH and DDT
- Aim for stable and predictable conditions

2) Infrastructure for research in the division and clinic

There is a need to continue working with infrastructure for research and innovation in divisions/clinics. As an example, the Children's and Youth Clinic has identified a research unit dedicated to children and young people as important to them. Some divisions and clinics have built up their own research units, and there is potential for cross-disciplinary learning. In the next period, there should be structured work in broad working groups around the dimensioning and content of division/clinic-specific infrastructure. Here, it can be considered how environments can be built in which research is interdisciplinary, as cross-disciplinary collaboration can increase the possibility of succeeding in combining clinic, basic subjects and epidemiology.

The working groups must also assess how such infrastructure supports targets for an increase in articles and the number of clinical treatment studies.

Here, one measure could be an increased focus on research competence when recruiting for all types of positions in divisions and departments.

Goal:

- Strengthen the infrastructure in the division/clinic
- Strengthen cooperation between the research groups

3) Support for research groups

How to strengthen the research groups at Ahus? The working group should look at how research groups can be supported in order to increase quality and production. This must be seen in the light of guidelines already set in the development plan. It is also natural to discuss how strengthened research management in the divisions and down in the departments can help to increase the focus and quality of research.

Research leaders in each division should work closely with research group leaders to ensure that all groups have regular meetings and strategies to increase their own expertise, scientific production and external funding.

Funding of research groups should also be considered. Routines related to the evaluation of research groups will continue.

Goal:

- Strengthen research groups internally in the division and clinic, and cross-functional collaboration.

4) Clinical studies

An increase in the number of clinical studies is one of the company's main goals. The National Action Plan for Clinical Studies has the objective that the proportion of patients in the specialist health service who participate in clinical studies will be 5 per cent by 2025 and that the number of clinical studies recruiting patients in the specialist health service will double during the planning period 2021-2025. This requires an annual growth in the number of studies of around 15 per cent.

How should we strengthen clinical research and the infrastructure in the clinics/divisions to achieve these goals, and how can we establish closer cooperation across the divisions/clinics to learn from each other's experiences?

A working group has worked on the value of clinical intervention studies for Ahus, and looked at how to estimate savings for the hospital by participating in clinical studies and a model for how any savings can be used for investment in critical infrastructure. The group has consisted of representatives from the Medical Division and the Division for Diagnostics and Technology, which carry out most clinical intervention studies at Ahus, as well as the Research and Innovation Division and Finance. This work can form the basis for further process, and then with wider representation during the planning period.

Goal:

- Strengthen infrastructure for clinical studies in participating divisions/clinics.

Area of focus 2: Cooperation with the HE sector

Research, education and innovation are closely linked in a knowledge triangle (figure 1).

Cooperation with the HE sector is also important for public information and dialogue. Campus solutions between university hospitals and the HE sector, which combine research, education and innovation/industry development, are raised as a means of renewing the public sector in the government's draft new long-term plan for research and higher education. Ahus will strengthen its collaboration with HE institutions that co-locate activities and personnel with Ahus. Cooperation with the HE sector is also important for recruiting researchers, as well as building good career paths for them research expertise (see focus area 3).

The working group should consider how Ahus can strengthen its existing collaboration with the institutions UiO and OsloMet, as well as consider whether Ahus should investigate the possibilities for collaboration with other HE institutions such as NMBU and other central initiatives, for example Oslo Science City.

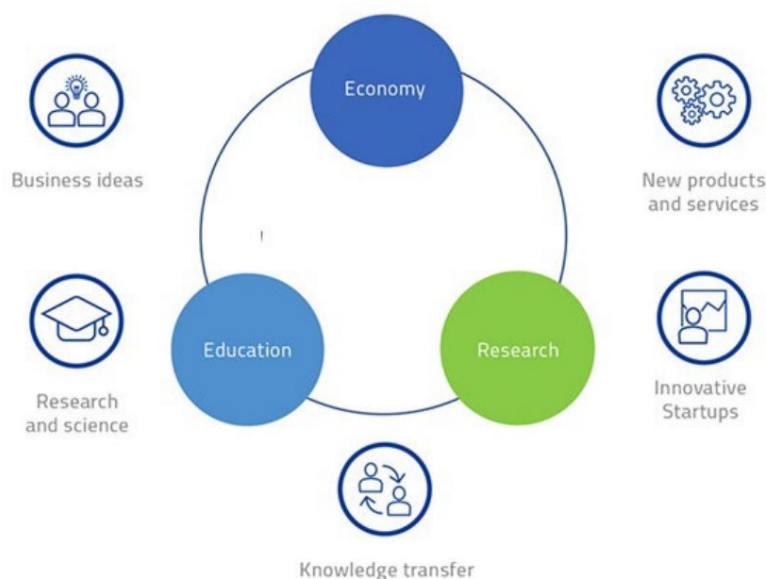


Figure 1. Research, education and innovation/business development are closely linked in a knowledge triangle. The interaction between research and education provides also new ideas and knowledge transfer, which is important for public information and dialogue.
Modified from the European Institute of Innovation & Technology

New buildings must contain plans for research, education and innovation in order to strengthen Ahus as a center for education and innovation within life sciences in the region. Ahus should take a leading role

locally and regionally to develop life sciences, for example by providing complete infrastructure for all aspects of simulation, research and clinical trials, including research questions, regulatory clarifications, research implementation, statistics and health economics.

The working group should look into whether Ahus, in collaboration with co-located units from the HE sector, can function as a resource for external units – which can both be municipalities, other public enterprises or commercial companies – to further develop life sciences in the region. In order to be able to scale up capacity, there must be predictable funding frameworks. Risk of build-up cannot be borne by Ahus alone. Such a development will be based on a multi-party model that promotes and gathers expertise and provides the basis for synergy effects in strategically important areas.

Goal:

- Ahus as an important actor and collaboration partner with the HE sector

Area of focus 3: Recruitment and career plans for researchers

As a university hospital, Ahus has the potential to increase the number of research workers at the company, and career plans are an important part of this work. This must be done in close collaboration with HR and sub-plan 6 – Competence, education and recruitment. Retaining, training and recruiting professionals/employees and expertise are important measures.

The working group should look at the possibilities for more structured work with recruitment and career development for researchers. The basis for the research will be researchers with a primarily clinical position. This means that the number of combined positions must increase if Ahus is to increase its research volume. In addition, each division and department should have researchers with a large research share, preferably full-time researchers.

A strengthened collaboration with the HE sector (see effort area 2) can provide growth in part-time and full-time positions for research in the next 4-year period, also for researchers with a different professional background than medicine. Furthermore, cooperation with the HE sector is important to build good career paths for research expertise in master's and PhD courses. The working group proposes how Ahus can work with the HE sector to develop realistic career plans for researchers. Initiatives such as professional meetings for academic staff (Academy Ahus) and mentoring of younger talents (Team Ahus) could be such measures.

It is also important to look at the status of recruitment for PhD positions within occupational groups that recruit for academic positions. Measures to improve possible recruitment challenges in various subjects also naturally form part of this work.

Goal:

- Establish career plans/strategy for research

Area of focus 4: Innovation

Ahus does not have its own innovation strategy. It will be important to prepare and anchor such a strategy during the planning period. Routines must also be established for reporting innovation activity in accordance with overall guidelines.

Goal:

- Strengthen the company within the field of innovation

Area of focus 5: Improve overview and use of biomaterial

Large amounts of clinically collected biological samples should make it possible to build comprehensive biobanks quickly and at low cost. It is a remaining follow-up point on the internal audit from 2017 that Ahus should get a better overview and use of biobanks.

Ahus can increase the success rate for external funding by making available an overview of already collected biological samples. It will require better electronic registration of biological samples (eBiobank as a tool), and a culture for sharing material between researchers and research groups. Currently, operating costs for storing biological material are borne by the individual research groups, and it is likely that this affects the motivation of groups to share the material.

The working group should work broadly with various aspects related to biomaterial and biobanking, including whether certain databases, registers and biobanks should be defined as priority cohorts, and have specific funding to increase the degree of utilization and availability. The group should also assess the organization and structure for the collection, storage, monitoring and retrieval of biological material, as well as the financing of such activity. It should also how data warehouses (systems for a complete overview of data on patients in real time across the hospital) and the utilization of historical controls (*in silico* control arm) can contribute to the utilization of biomaterial.

Goal:

Better utilization of biobank material for research and innovation - internal projects at Ahus and in collaboration with external ones.

Area of focus 6: Professional development areas

1) Personalized medicine

In some fields, molecular characterization is crucial for the choice of therapy, since there are therapies approved for specific molecular attack targets. As of today, this has come the farthest in cancer treatment, both for solid tumors and in haematological cancer. Personalized medicine also has potential in other fields. A central objective is to offer personalized medicine to patients in their own admission area. It is also important to participate in clinical studies. This requires the establishment of good systems for the entire chain from diagnostics to patient treatment. Work with personalized medicine has links to the sub-plans for new tasks and further development of patient services and cancer, and will also be relevant for mental healthcare.

Goal:

- Build systems for the entire chain from molecular characterization to the execution of clinical studies at Ahus so that patients in their own admission area and the region are offered personalized medicine

2) Digitization and AI

Digitization is a development area in which Ahus has a great need to develop. The use of technology has enormous potential to improve, simplify and innovate. This also applies to the use of

artificial intelligence, where algorithms and machine learning are used to interpret signals, support decisions and implement measures. The working group should consider which services and processes at Ahus it is most expedient to digitize. Digitization is as much about increasing the level of expertise internally as the solutions themselves. By collaborating with top qualified personnel from the HE sector, it will increase competence and the development of digitization and artificial intelligence.

Goal:

- Develop and apply expertise around digitization and artificial intelligence at Ahus.

3) Pragmatic studies

It is desirable to increase the integration between research and the clinic. Pragmatic studies are based on clinical data from unselected patients in regular practice. In this way, the studies build a bridge between evidence-based medicine and clinical practice.

Pragmatic studies utilize data warehouses and registers to retrieve data that is primarily collected by clinical personnel, which reduces the need for a separate study infrastructure. Pragmatic studies have the potential to increase the rate of inclusion and at the same time reduce costs for implementation.

The working group should look at which structures need to be established at Ahus so that competence in, and thus the use of, pragmatic studies increases. Use of pragmatic studies should also be considered when clinical environments establish new methods or ways of working. This is to ensure quality and follow-up of the patients during implementation, which is a patient safety measure, support for own employees during introduction and for Ahus to meet legal requirements.

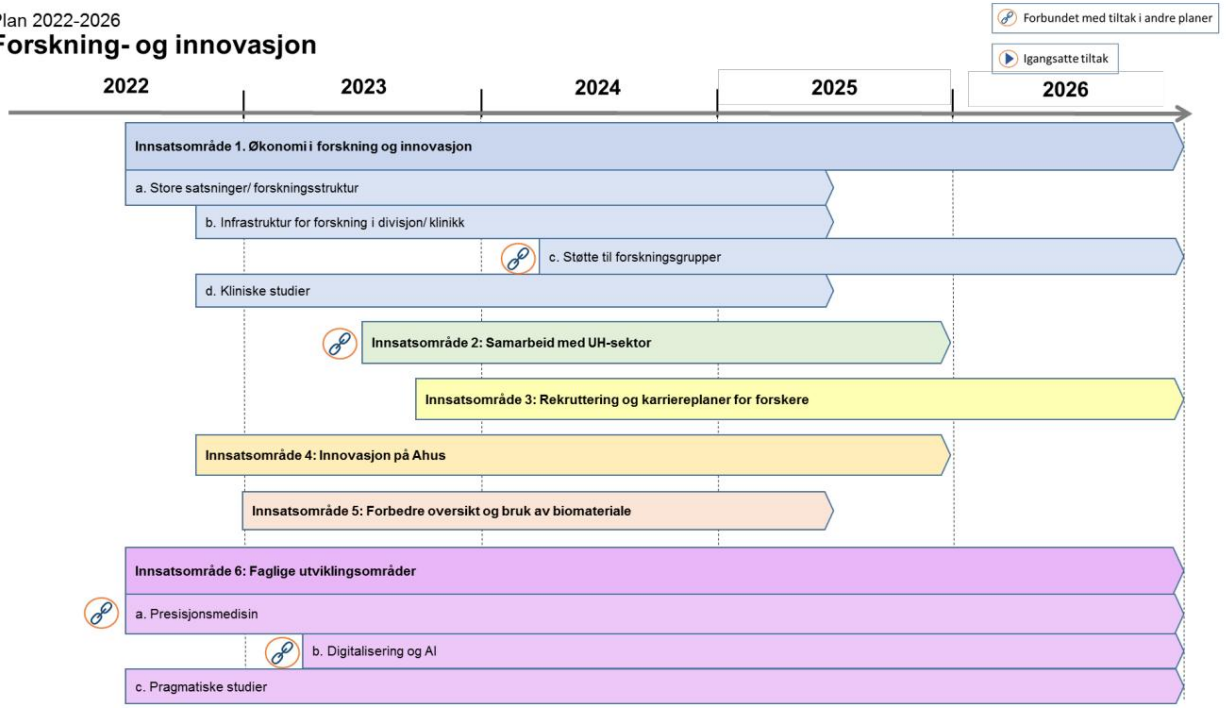
Goal:

- Use pragmatic study design to increase integration between research and clinic at Ahus.

Process drawing

Plan 2022-2026

Forskning- og innovasjon



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