

Subplan for research and innovation 2022-2026

Process for preparation of subplan for research and innovation

The work on the subplan for research and innovation is led by the Director of Research and Innovation Helge Røsjø. A writing group consisting of Ronja Hesthammer, Karin Vassbakk, and Helge Røsjø has submitted drafts and revised text. A reference group has also been established based on participants in the Joint Research Committee, in which research managers in clinical divisions/clinics, user representatives, and the University of Oslo and OsloMet participate. To ensure participation, the safety delegate service and employee representatives in the Research and Innovation Division have also participated in the reference group.

The subplan has been revised following consultation input from external and internal parties with a deadline of 15 March 2022.

Participants in the reference group for the subplan for research and innovation:

- Ane Hjelle, Department of Research Support, Research and Innovation Division, employee representative
- Anne Eskild, professor, head of research and head of department, Department of Gynaecology and Obstetrics
- Asbjørn Årøen, professor, research director, Orthopaedic Clinic
- Berit Lund Opheim, Head of Department, Campus Ahus, University of Oslo
- Christoffer Lundqvist, Professor, Department of Health Services Research (HØKH), Research and Innovation Division, employee representative
- Eirik Bjelland, a representative from the User Committee
- Henrik Schirmer, Professor, Department of Cardiology, Medical Division
- Hilde Lurås, professor, head of the department, Health Services Research (HØKH), Research and Innovation Division and head of the clinic, Campus Ahus, University of Oslo
- Ida Gjervold Lunde, research manager, Division of Diagnostics and Technology
- Juha Tapio Silvola, Professor, Research Chair and Head of Department, Division of Surgery
- Ketil Hanssen-Bauer, professor, head of research and head of department, Mental health care
- Knut Magne Augestad, Professor, Division of Surgery and Head of Clinic, Campus Ahus, University of Oslo
- Mariann Glenna Davidsen, Department of Research Support, Research and Innovation Division, safety representative
- Mathias Barra, Department of Health Services Research (HØKH), Research and Innovation Division, safety delegate
- My Svensson, Professor, Research Chair and Head of Department, Medical Division
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- Torbjørn Omland, Professor, Medical Division and Head of Campus Ahus, University of Oslo
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- Vegard Bruun Wyller, professor, head of research and head of department, Department of Paediatric and Adolescent Medicine
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1. About the focus area

1.1 Background

Ahus is one of six university hospitals in Norway. The requirements for being a university hospital are based on separate regulations. This includes requirements for cooperation with universities that graduate doctors and other health personnel. The hospital will also make significant contributions to research-based theoretical and practical education and doctoral education in a wide range of disciplines and professional groups. The enterprise must also have basic biomedical and health research, translational research, and clinical research in most subject areas, and be able to demonstrate research activity of high international quality and breadth. An overarching goal for Ahus is to fulfill our obligations as a university hospital by strengthening research, education, and innovation at the company.

In recent years, "strengthening Ahus as a university hospital" has been one of the 10 main goals. The achievement of goals is assessed based on whether the enterprise achieves a minimum 15 % 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; an increase in external research funding, personalized medicine, and pragmatic studies. The enterprise also has an internal control objective that all research and innovation projects must be registered in eSkjema.

1.2 What has been achieved so far

The results for the main goal show growth in the number of articles up to 2016 with a flat development up to 2020, then an increase for 2021. The number of clinical treatment studies is growing. Of priority measures, Ahus has experienced growth until 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, participates in, and leads studies on personalized medicine. The work on pragmatic studies has yielded 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.

2. Plan for the period 2022-2026

2.1 Briefly about the plan

Research and innovation should encompass all divisions/clinics, and work on new opportunities and challenges, therefore, need broad involvement in the hospital, as well as with external actors. The subplan for research and innovation will thus primarily point out some major priority areas that need to be discussed, and then say something about the process. This work must have flexibility as some included areas are decided outside Ahus. New, important focus areas may also emerge that should be included in the subplan during the annual revision.

2.2 Cooperation with municipalities and urban districts on holistic pathways

Cooperation with municipalities and urban districts should be strengthened during the planning period. Ahus has established cooperation with municipalities in Nedre Romerike, OsloMet, and local businesses through Lillestrøm Health Hub. The plan is to continue this network with broader participation in Romerike Health Hub. Ahus also participates in the Professional Council for Competence, Innovation, Research, and Digital Cooperation, which is a subcommittee of the Cooperation Body for Municipalities.

In its report from 2019, the municipalities' strategic research body has urged municipalities to 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 the municipalities so wish. Ahus can also offer the municipalities competence transfer if the municipalities want to build up their infrastructure for research and innovation.

2.3 How the measures can improve quality and patient safety

It is important to focus on more and better research to strengthen Ahus as a university hospital. Education and innovation will have a direct positive effect on the quality of care and patient care. The research communities 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 stresses. Furthermore, research and development are crucial 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/university college (UH) sector ("Campus structure") will lift Ahus further as a hospital, and this will also provide better patient treatment, both internally at Ahus and in the transition towards the municipality / primary health service.

2.4 How diversity and migration health are to be safeguarded

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

3. Priority areas

In the process of preparing a subplan for research and innovation, six priority areas have been identified that it is desirable to work broadly across divisions/clinics and with actors outside the research sector at Ahus and with external actors. Working groups will be set up for areas and subgroups with broad representation. Identified priority areas so far are presented below:

1. Economics in research and innovation
 - a. Major initiatives/ research structures
 - b. Infrastructure for research in division/ clinic
 - c. Support for research groups
 - d. Clinical studies
2. Cooperation with the higher education 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. Digitalization and AI
 - c. Pragmatic studies

During this period, new areas may also emerge that will need a similar process.

The working groups will work to define clear goals and set concrete measures for further development in 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 of the working groups will first be discussed in the Coordination Meeting Ahus and Campus Ahus, followed by input from the Joint Research Committee. Subsequently, the mandate and working groups will be anchored in the hospital management. It is desirable that the hospital management acts as the steering group for these working groups and that the coordination meeting becomes a working committee. Results from the working groups are presented to the Joint Research Committee before the case for the Coordination meeting and then to the hospital management.

3.1 Priority area 1: Economics in research and innovation

Divided into four sub-themes:

1) Major initiatives/research structures

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

Goal:

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

2) Infrastructure for research in division/ clinic

In the work on the subplan for research and innovation, a need has been identified to continue working on infrastructure for research and innovation in divisions/clinics. As an example, the Department of Paediatric and Adolescent Medicine has identified a research unit dedicated to children and adolescents as important to them. Some divisions/clinics have built up their research units and there is potential for learning across the board. In the next period, one should therefore work structured in broad working groups on the dimensioning and content of divisional/clinic-specific infrastructure at

Ahus. In this work, one can also look at how to build environments that conduct interdisciplinary research, as cross-functional collaboration can increase the possibility of successfully combining clinical, basic sciences, and epidemiology. The working groups will also assess how such infrastructure supports the goal of increasing articles and the number of clinical treatment studies at Ahus.

One measure could be an increased focus on research competence in recruitment to all types of positions in divisions and departments.

Goal:

- Strengthen division/ clinic infrastructure
- 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 to increase quality and production. This must be seen in light of guidelines already set in the development plan for Ahus 2035. It is also natural to discuss how strengthened research management in the divisions and down in the departments can contribute to increased focus and quality of research at Ahus. It has also been noted that research managers in each division should work closely with research group leaders to ensure that all groups have regular meetings and strategies to increase their expertise, scientific production, and external funding. Funding of research groups should also be discussed. Procedures have been established at the enterprise for evaluating research groups and this will be continued.

Goal:

- Strengthen research groups within divisions and clinics and cross-functional cooperation.

4) Clinical studies

Increasing the number of clinical trials is one of the main objectives of the enterprise. The National Action Plan for Clinical Trials aims for the proportion of patients in the specialist health service participating in clinical trials to be 5% by 2025 and for the number of clinical trials recruiting patients in the specialist health service to double during the plan period 2021-2025. This assumes an annual growth in the number of studies of about 15%.

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

Work has been done in groups on the value of clinical intervention studies for Ahus. This work has looked at how to estimate savings for hospitals through participation in clinical trials and models for how any savings can be used for investment in critical infrastructure. The group consisted of representatives from the Medical Division and the Division of Diagnostics and Technology, which conducts most clinical intervention studies at Ahus, as well as the Research and Innovation Division and Economics. This work can form the basis for further process, with broader representation during the planning period.

Goal:

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

3.2 Priority area 2: Cooperation with the higher education sector

Research, education, and innovation are closely linked in a knowledge triangle (Figure 1). Cooperation with the higher education sector is also important for social education and dialogue. Campus solutions between university hospitals and the university and university college sector, which combine research, education, and innovation/business development, are highlighted as an instrument for renewing the public sector in the Government's draft new Long-term Plan for Research and Higher Education. Ahus will therefore strengthen its cooperation with higher education institutions that co-locate activities and personnel with Ahus. Collaboration with the university and university college sector is also important for the recruitment of researchers, as well as for building good career pathways for research competence (see priority area 3).

The working group should take a closer look at how Ahus can strengthen its existing collaboration with the institutions UiO and OsloMet, and consider whether Ahus should investigate the possibilities for collaboration with other higher education institutions such as NMBU and other key initiatives, such as Oslo Science City.

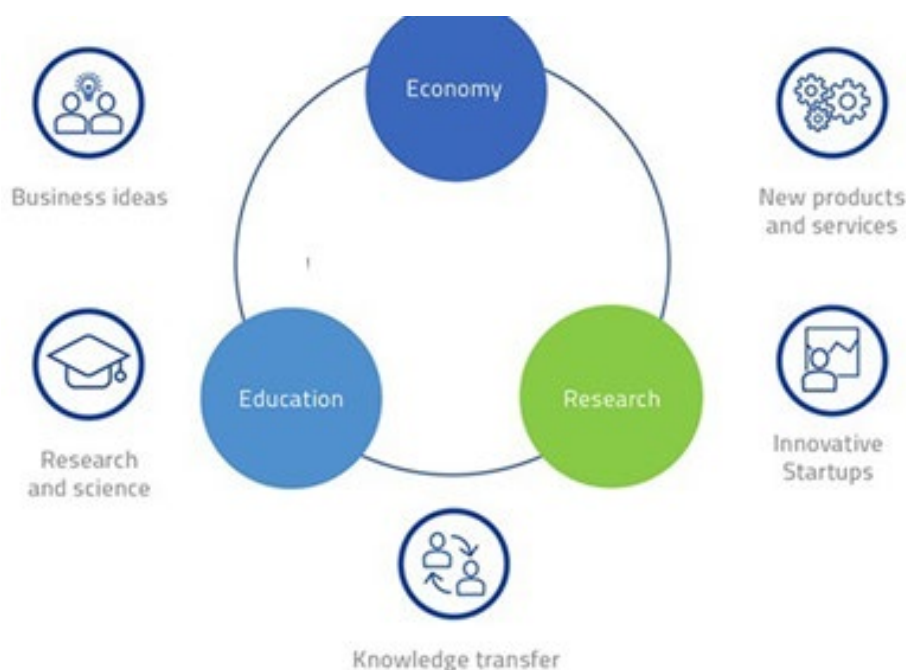


Figure 1. Research, education, and innovation/business development are closely linked in a knowledge triangle. The interaction between research and education also leads to new ideas and knowledge transfer, which are important for social education and dialogue. *Modified from the European Institute of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

New buildings at Ahus must include plans for research, education, and innovation to strengthen Ahus as a center for education and innovation in life science in the region. Ahus should further take a leading role locally and regionally in developing life science, 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. Furthermore, the working group should look at whether Ahus, in cooperation with co-located units from the higher education sector, can act as a resource for external entities – which can be municipalities, other public enterprises, or commercial companies – to further develop life science in the region. To scale up such capacity, there must be predictable financing frameworks, as the risk of build-up cannot be borne by Ahus alone. Such a development will be based on a multi-party model that promotes and pools expertise and provides a basis for synergies in strategically important areas.

Goal:

- Ahus is an important player and partner with the higher education sector

3.3 Priority area 3: Recruitment and career plans for researchers

Ahus as a university hospital has the potential to increase the number of research-active at the company, where career plans are an important part of this work. This must be done in close cooperation with HR and subplan 6 – Competence, education, and recruitment. Retaining, educating, and recruiting professionals/employees and competence are important measures. The working group should look at the opportunities Ahus has for more structured work concerning recruitment and career development for researchers. The basis for research at Ahus will be researchers with primarily clinical positions. This means that the number of combined positions must increase if Ahus is to increase in research volume. In addition, each division and department should have researchers with a large research share, preferably full-time researchers.

Strengthened cooperation with the university and university college sector (see priority area 2) may result in growth in part-time and full-time positions for research in the next 4-year period, as well as for researchers with a background other than medicine. Furthermore, cooperation with the university and university college sector is important for building good career pathways for research competence in master's and PhD programs. The working group should look at how Ahus can work with the university and university college sectors to develop realistic career plans for researchers. Initiatives such as 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 to Ph.D. positions within occupational groups recruiting for academic positions at Ahus. Measures to improve any recruitment challenges in various disciplines are also naturally part of this work.

Goal:

- Establish career plans/strategies for research

3.4 Priority area 4: Innovation

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

Goal:

- Strengthen the enterprise in the field of innovation

3.5 Priority area 5: Improve overview and use of biomaterial

Large quantities of clinically collected biological samples should enable Ahus to build comprehensive biobanks quickly and at a low cost. A remaining follow-up point on internal auditing from 2017 is that Ahus will have a better overview and use of biobanks. Ahus can also increase the success rate for external funding by making available an overview of biological samples already collected. However, this will require better electronic registration of biological samples at Ahus (eBiobank as a tool), and a culture of sharing material between researchers and research groups. Currently, operating costs for the storage of biological material are borne by the individual research groups, and this likely affects the motivation of groups to share the material. The working group should work broadly on various aspects related to biomaterial/biobanking, including whether individual databases, registries, and biobanks should be defined as priority cohorts, and then possibly have specific funding to increase utilization and accessibility of the resource. The working group should also discuss the organization/structure for collecting, storing, monitoring, and retrieving biological material, as well as financing such activities. Furthermore, the working group should discuss how the focus on data warehousing (systems for complete real-time visibility of data on patients 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 – projects internally at Ahus and through collaboration with external parties.

3.6 Priority area 6: Professional development areas

1) *Precision medicine*

In some fields, molecular characterization is crucial for the choice of therapy as one has therapy approved against specific molecular targets. As of today, this has come furthest in cancer treatment, both of solid tumors and in hematological cancer, but it is expected that such precision-adapted medicine will also be developed in other disciplines. For the University Hospital Ahus, it is important to be able to offer patients in their own catchment area and region participation in studies in precision medicine, which requires systems for the entire chain from molecular characterization to conducting clinical trials at Ahus. Work on precision medicine is also relevant for subplans «New methods» and «Cancer», and may also be relevant for subplan «Mental health care».

Goal:

- Build systems for the entire chain from molecular characterization to conducting clinical trials at Ahus so that patients in their catchment area and the region are offered precision medicine

2) *Digitalization and AI*

Digitalization has been recorded as the area of development within which Ahus has the greatest 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 discuss which services and processes would be best served by digitizing at Ahus. Digitalization is as much about increasing the level of competence internally as the solutions themselves. Collaborating with highly qualified personnel from the higher education sector will increase competence and development of digitalization and artificial intelligence.

Goal:

- Develop and apply expertise in digitalization and artificial intelligence at Ahus.

3) *Pragmatic studies*

It is desirable to further increase the integration between research and the clinic at Ahus. Pragmatic studies are based on clinical data from unselected patients in normal practice. In this way, the studies bridge the gap between evidence-based medicine and clinical practice. Pragmatic studies leverage data warehouses and registries to retrieve data primarily collected by clinical personnel, reducing the need for dedicated study infrastructure. Pragmatic studies have the potential to increase the rate of inclusion while reducing implementation costs. The working group should discuss which structures must be established at Ahus to increase competence in, and thus the use of, pragmatic studies. The 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 patients during implementation, which is a patient safety measure, support for own employees on the introduction, and for Ahus to meet legal requirements.

Goal:

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

4. Process drawing

Plan 2022-2026

Forskning- og innovasjon

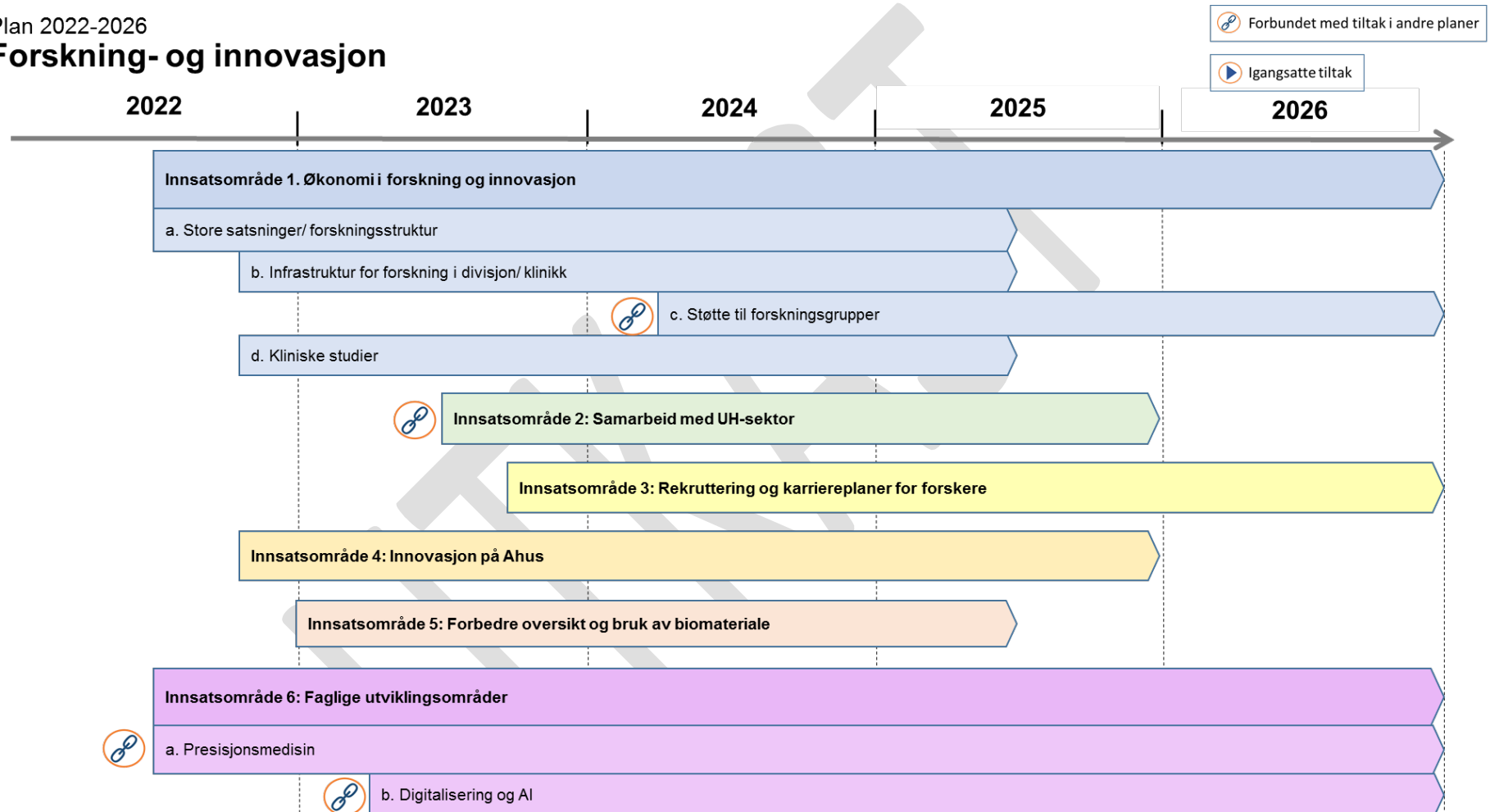


Figure 1: March 29, 2022