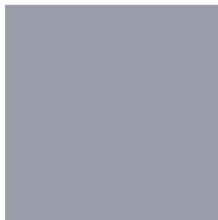
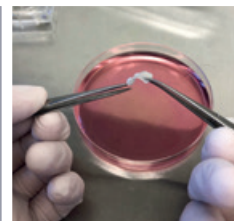
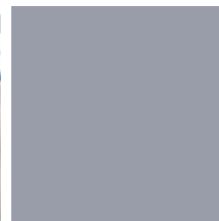
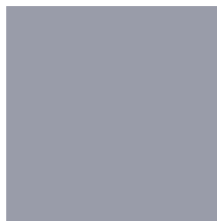


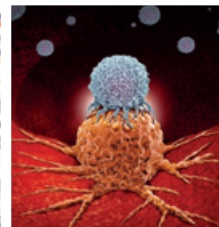
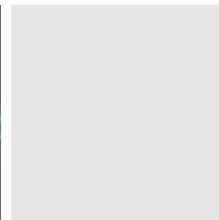


GREATER COPENHAGEN
HEALTH • SCIENCE • PARTNERS



CLINICAL ACADEMIC GROUPS BRING EXPERTS TOGETHER

University researchers and clinical researchers collaborate and develop new ideas together, resulting both in faster scientific results and better treatment of patients





“

The University of Copenhagen, the Technical University of Denmark, the Region Zealand and the Capital Region of Denmark bring together researchers and clinicians in strong clinical research groups with a shared vision.

FOREWORD

Ever since we launched the collaboration, Greater Copenhagen Health Science Partners, we have been driven by a desire to create a more integrated healthcare sector and a smoother path from research to the clinic and from the clinic to research. Likewise, there has been a strong focus on applicability and impact for citizens.

Overall, we are bridging the gap between universities and hospitals for the benefit of patients.

At an operational level, we have created a well-functioning framework that brings together basic research, hospital research and clinical work. At the organisational level, we have succeeded in establishing a forum for dialogue on the health sector of the future. In a relatively short time, our Clinical Academic Groups (CAGs) have delivered recognisable research results, leading to clinical impact.

The 18 CAGs that you can read about in this brochure have all been appointed by an international assessment panel to ensure that each of these translational collaborations has the potential to make a difference for patients in a specific health area.



Per Erik Jørgensen

Director of Greater Copenhagen Health Science Partners





CAG ALLERGY

The purpose of CAG Allergy is to reduce the increasing number of patients suffering from allergic diseases, including eczema, asthma and rhinitis as well as food and drug allergy.

Allergy affects all age groups, and it may be lifelong and have major implications by reducing patients' quality of life and increasing the occurrence of cardiac, psychiatric and autoimmune comorbidities.

Allergy often results in disability and shortened life expectancy, just as the socio-economic cost of allergic diseases are considerable.

The CAG will solve this major challenge by conducting ground-breaking research in early diagnosis, new individualised treatments and by taking a new holistic approach to patient care.

The core of the CAG consists of leading experts from general practice and five specialties involved in treating allergic patients. They work together with high-profile basic research units in immunology and across healthcare sectors.

The strong structure of the CAG provides an optimal environment for pioneering research and will attract international researchers and funding. It will pave the way for transforming clinical practice to meet the needs of future patients at the right level of expertise from the start.

The work will be linked up to new educational initiatives with the specific aim of increasing knowledge and recruiting new scientists and clinicians to develop the field in creative synergy and to enhance our basis for international competitiveness.



CAG chairman Jeanne Duus Johansen

CAG vice chairman Charlotte Menné Bonefeld

CAG PHYSICAL ACTIVITY AND SPORT IN CLINICAL MEDICINE

(imPAct)

CAG imPAct aims to initiate translational research activities to directly couple laboratory and clinical research groups within physical activity. Our activities and collaboration will lead to the cross-fertilisation of disciplines across hospitals and university faculties/institutes. In addition, it will increase the synergy between research, clinical activity and education within the area of physical activity in prevention, disease treatment and rehabilitation.

Regular physical activity has beneficial effects within prevention and treatment of chronic diseases. Further, physical activity can improve the treatment and rehabilitation of patients after trauma and injury, and prevent future musculoskeletal disorders. Yet, the use of physical activity in daily clinical medical practice is very limited.

The CAG will seek to connect theoretical researchers directly with clinical departments. It will create a better formalised academic coupling of research-active clinicians to the experimental milieu.

The role of physical activity in complex diseases is not fully elucidated, and the interplay between physical activity and pharmacological treatment is poorly understood. The curriculum of the Danish study programme in medicine only contains very sporadic information about the effect of physical activity on the sick body. However, this should be integrated into the programme.

The CAG will involve co-supervision of PhD students between experimental and clinical research groups and introduce physical activity into the curriculum of the study programme in medicine.

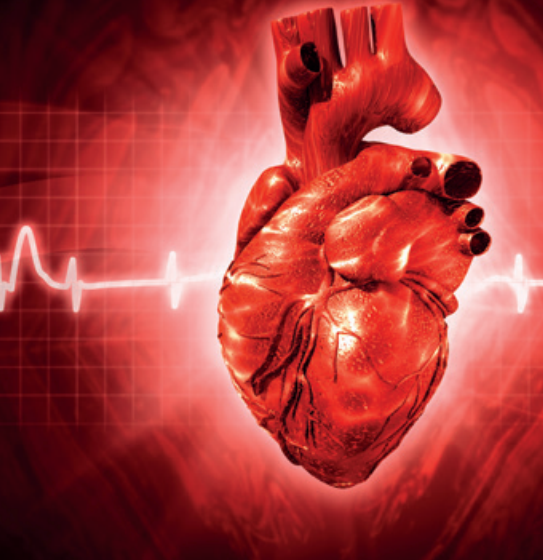


40,000,000

Physical inactivity and sedentary behaviour is the new public health challenge. It is considered responsible for **40 million deaths worldwide each year** and includes four major disease types (cardiovascular, cancers, respiratory and diabetes).



CAG chairman Michael Kjær
CAG vice chairman Flemming Dela



500,000

The field of cardiology is characterised by many patients who, even with treatment, suffer from significant morbidity and mortality due to their heart disease. **Almost half a million Danes suffer from heart diseases**, and one in four across the population die from a cardiac cause.

CAG PRECISION DIAGNOSTICS IN CARDIOLOGY

With CAG Precision Diagnostics in Cardiology we have created a unique research collaboration which strives to ensure more efficient and accurate diagnostics and individualised treatment of cardiac patients.

Leading researchers and clinicians from the University of Copenhagen and the highly specialised cardiac units in the Capital Region of Denmark have joined forces to reduce morbidity and mortality of heart diseases.

Precision diagnostics is a prerequisite for offering precision therapy and eventually personalised medicine. Gradually, several 'omics' technologies (genomics, proteomics, metabolomics etc.) will be combined with clinical and registry data on most cardiac patients in the region.

Presently applied work-up strategies in cardiology generally lead to rather unspecific diagnoses, and correspondingly we provide imprecise 'one-size-fits-all' therapies. This applies to ischemic heart disease, myocardial diseases, arrhythmia and congenital heart diseases and for acute management in emergency rooms.

There has been a tremendous – and rapid – increase in our understanding of cardiac diseases at the molecular and cellular levels, not least achieved through advances in genetics. This actionable knowledge has not yet been translated into clinical practice.

The CAG Precision Diagnostics in Cardiology will ensure the transfer and implementation of the rapidly increasing knowledge of cardiovascular disease.



CAG chairman Henning Bundgaard
CAG vice chairman Søren Brunak

CAG TRANSLATIONAL HEMATOLOGY

The vision of CAG Translational Hematology is to improve the treatment, quality of life and survival of patients with blood cancer.

The focus is on acute myeloid leukaemia (AML), myeloid dysplastic syndrome (MDS) and premalignant conditions i.e. clonal cytopenia of undetermined significance (CCUS) and clonal hematopoiesis of indeterminate potential (CHIP).

The CAG collaboration includes the hematological departments and associated laboratories in all the Danish regions. The national collaboration is anchored in the Danish Research Center for Precision Medicine in Blood Cancers.

Our main aim is to identify and target blood cancer stem cells. To do this, we have established a platform which enables comprehensive drug screening, which is an impor-

tant tool for identifying the best available treatment for the individual patient, also called precision medicine or personal medicine. In addition, we are working on establishing pre-clinical models (PDX and other mouse models) that may serve for identifying new stem cell targeting treatments.

The CAG is conducting two investigator initiated clinical trials, and several more are in the pipeline. We are working on integrating molecular and clinical diagnostics, patient reported outcomes and treatment opportunities to develop algorithms that may all help stratifying patients for individualized clinical management.

The CAG will work on improving the translational medicine and on further education of the next generation and present clinicians and scientists in the field of blood cancers.



CAG chairman Kirsten Grønbæk

CAG vice chairman Krister Wennerberg



CAG MODULATING THE INFANT MICROBIOME FOR DISEASE PREVENTION

CAG Modulating the Infant Microbiome for Disease Prevention will seek to improve prevention of chronic inflammatory diseases and treatment of paediatric asthma.

The CAG will strengthen existing knowledge of the role of intestinal bacteria in the development of chronic inflammatory diseases among children. Imbalance in the bacterial composition and maturation of the intestines and airways can affect children's risk of developing asthma later in life. The overall aim of the CAG is therefore to understand the connection between the infant microbiome and the development of chronic inflammatory diseases.

The studies of the CAG will be based on a large amount of unique data collected from a mother-child group within the COP-SAC2010 project. Over the last eight years, the project has followed children with an imbalance in the bacterial composition and thus increased risk of developing diseases. The mother-child group data offers a unique opportunity to outline the mechanisms that link the infant microbiome – before the emergence of disease – to the development of common chronic inflammatory diseases.

The CAG will seek to develop new strategies for prevention and effective intervention targeted at the microbiome to protect the child from diseases.

+250,000

In the Western world the prevalence of asthma and other chronic inflammatory diseases has more than doubled over the last 50 years. **Between 250,000 and 300,000 adult Danes have been diagnosed with asthma**, and a total of 7-10 per cent of all schoolchildren in Denmark suffer from asthma.



CAG chairman Klaus Bønnelykke

CAG vice chairman Søren Johannes Sørensen

CAG HOST INFECTIONS LABORATORY RESEARCH DRUGS

(CHILD)

There is a need for fast and reliable diagnostics and effective prevention of infections. This lack causes 50 per cent of all children to be treated unnecessarily with antibiotics during the first two years of their life and 30 per cent to be hospitalised with an infection during childhood. This has significant socio-economic and human costs and contributes to the antibiotic resistance crisis.

CAG CHILD means to improve prevention and treatment of the large number of children affected by infections each year. The CAG consists of an ambitious group of highly committed basic researchers and clinicians, including all four paediatrics wards in the Capital Region of Denmark.

This makes it possible to collect biological material from children suffering from infections and infection-like inflammation and to apply it in basic research.

Infection is the most frequent cause of disease among Danish children and responsible for 10 per cent of all deaths among children below the age of one. Infections include everything from common airway infections not requiring treatment seen in all children to rarer, life-threatening infections such as meningitis.

The CAG will contribute to the implementation of the latest new knowledge on prevention and diagnosing in the healthcare system's handling of infections in children.

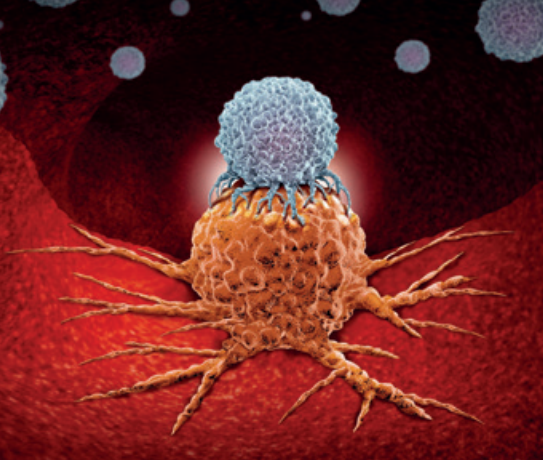


CAG chairman Ulrikka Nygaard
CAG vice chairman Søren Buus



10%

Infection is the most frequent cause of disease among Danish children and responsible for **10 per cent of all deaths** among children below the age of one.



CAG CANCER IMMUNOTHERAPY

(CAGci)

One in every three Danes contracts cancer at some point in their lives, and just below 285,000 Danes live with a cancer diagnosis. In Denmark the one-year survival rate for cancer is 75 per cent for men and 77 per cent for women.

CAGci seeks to improve treatment with immunotherapy for cancer patients to ensure that more cancer patients survive the disease.

Immunotherapy represents a significant breakthrough in cancer treatment, and new forms of immunotherapy are rapidly being approved for treatment of still more forms of cancer. The new treatment options indicate that far more patients, even patients where the disease has spread, can become survivors of cancer.

Immunotherapy is based on the immune system's ability to detect and kill cancer cells and will lead to changes in most, if not all, forms of cancer treatment over the next few years.

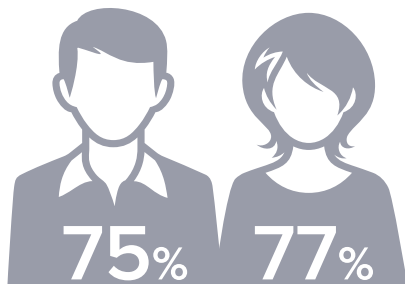
However, the implementation of new forms of immunotherapy has been so rapid that many clinicians face pressing questions and challenges with regard to treatment. The overall aim of CAGci is to develop evidence-based clinical solutions to these challenges and to offer evidence-based training of health staff in cancer immunotherapy.

By strengthening the cross-institutional and cross-disciplinary knowledge exchange between clinicians and researchers within cancer immunotherapy, CAGci will be able to explore the potential of immunotherapy for the benefit of patients, their relatives, and society.



CAG chairman Inge Marie Svane

CAG vice chairman Anders Woetmann Andersen



One in every three Danes contracts cancer at some point in their lives, and just under 285,000 Danes live with a cancer diagnosis. In Denmark the one-year survival rate for cancer is **75 per cent for men** and **77 per cent for women**.

CAG RESEARCH OSTEOARTHRITIS DENMARK

(ROAD)

CAG ROAD means to improve the quality of life of persons with osteoarthritis (OA), which is the second most widespread condition in Denmark next to allergies. Around 900,000 Danes suffer from osteoarthritis (OA), and the costs of the condition with regard to both treatment and loss of production are substantial.

The CAG will increase focus on prevention and develop better treatment for patients. Based on the latest new research-based knowledge it will shed light on the risk factors and disease mechanisms affecting the development of OA.

In light of the demographic development with increased life expectancy and an

expected increase in the number of persons with obesity, the number of persons suffering from OA is likely to grow, possibly leading to great human and social costs.

In addition, OA has significant socio-economic consequences in the form of treatment costs, handicap, reduced quality of life and lost earnings.

CAG ROAD is a strengthened cross-disciplinary partnership between researchers and clinicians and other professionals within the field of OA. Together they will translate basic and clinical research into improved quality of life for persons with OA.



CAG chairman Anders Troelsen
CAG vice chairman Stine Jacobsen



900,000

Around 900,000 Danes suffer from osteoarthritis (OA), and the costs of the condition with regard to both treatment and loss of production are substantial.



18

CAGs established since 2017 across basic and clinical research.



10

Key-members in each CAG from all four organisations who take an active part in the development of the CAG.



54

More than **54 Translational CAG PhD students** doing research in a translational environment bridging the gap between research and medical treatment.



2 / 22

2 Danish Regions including **22 Hospitals** in the Capital Region of Denmark and the Region Zealand.



2

A CAG chairmanship – one basic scientist with primary employment at the university and one clinical researcher with primary employment at the hospital.



2

2 Universities with great expertise in basic health science research and health technology.

A blurred background image of a microscope, showing the eyepiece, objective lenses, and stage. The image is overlaid with a white rectangular box containing text.

CLINICAL ACADEMIC GROUPS (CAGS)

- ✓ Translate cutting-edge research into excellent patient care.
- ✓ Strengthen the cooperation between basic and clinical research across universities and hospitals.
- ✓ Ensure that research results are implemented faster for the benefit of patients and society.



5,000

Each year 5,000 patients are diagnosed with colorectal cancer in Denmark. The financial burden is substantial as major complications after colorectal cancer surgery increase costs up to three times. Only one in three patients with complications returns to work within three months compared to one in two patients without complications. The proportion of patients who never return to work is also doubled after postoperative complications. Preventing recurrence after surgery will result in a dramatic reduction in overall costs.

CAG PERSONALISED ONCOLOGICAL SURGERY

(POS)

CAG POS intends to reduce morbidity and increase survival for patients diagnosed with colorectal cancer. The CAG vision is to implement a generic research approach by combining clinical and basic research through Personalised Medicine (PM) treatment of patients undergoing oncological surgery.

Current oncological and surgical treatment of patients with cancer is performed according to standardised pathways. Even with high adherence to these pathways and with state-of-the-art oncological, perioperative and surgical treatment, one in four patients suffers from complications within 30 days after colorectal cancer surgery and one in three patients will develop disease recurrence. With current treatment

strategies, too many patients either do not get the right surgical or oncological therapy or experience complications without benefitting from the treatment.

There is compelling evidence that a tailored approach delivering the right treatment at the right time will have dramatic effects on the prevention of complications and recurrence after surgery.

The CAG will provide a state-of-the-art clinical research platform for PM in surgery through a collaboration between basic scientists specialised in big data, experts in translational techniques in the laboratory and a multidisciplinary team of experts from each phase of the entire patient care pathway.



CAG chairman Ismail Gögenur
CAG vice chairman Ali Salanti



38,500

Sun exposure is the primary risk factor for SC, and despite massive prevention efforts, in Denmark incidence has risen to an estimated 38,500 per year.

CAG SKIN CANCER INNOVATION CLINICAL ACADEMIC GROUP

(SCIN)

The vision of SCIN CAG is to reduce skin cancer (SC) incidence, morbidity and socioeconomic costs related to SC. It will improve the quality and equality of care for patients and substantially benefit research, education and society through a consolidated interdisciplinary collaboration focussing on Individual Risk Assessment, SC prevention, Precision Diagnostics and Individualised Treatments.

Collaborating on this interdisciplinary effort, SCIN CAG will unite all dermatology departments across the Capital Region of Denmark and Region Zealand and, furthermore, consolidate the multidisciplinary collaboration with transplantation units, plastic surgery and oncology to secure equal care for SC patients.

The collaboration also includes the Technical University of Denmark (DTU), focusing several CAG activities on artificial intelligence (AI).

Skin cancer is the most common cancer globally, with an increasing incidence that is currently higher than for all other cancers combined. Daily, approximately 100 Danes receive a SC diagnosis, and 40 per cent of these will eventually develop additional tumours. Representing approximately 3 per cent of the Danish population, about 150,000 persons are currently affected by the disease nationally, classifying SC as an endemic disease. The costs of SC are consequently substantial, reflected by notable patient morbidity, heavy socioeconomic burdens and significant mortality in immunosuppressed populations.



CAG chairman Merete Hædersdal
CAG vice chairman Lars Kai Hansen



LGI

The CAG strives to provide novel and clinically relevant data on the importance of LGI in human disease by adopting a translational approach based on a formalised collaboration between investigators from basic science, clinical specialties and epidemiology.

CAG GREATER COPENHAGEN RESEARCH CENTRE FOR SYSTEMIC LOW-GRADE INFLAMMATION

(LOGINFLAM)

The CAG LOGINFLAM aims to improve treatment for patients with diseases associated with low-grade inflammation (LGI).

LGI is implicated in most noncommunicable diseases, e.g. type 2 diabetes, cardiovascular disease, periodontitis, neurodegenerative diseases and cancer. These diseases account for massive direct and indirect health costs; thus, LGI represents a substantial societal burden. Also, traditional chronic inflammatory diseases, e.g. periodontitis, rheumatoid arthritis, primary Sjögren's syndrome and systemic lupus erythematosus, as well as adverse effects of therapeutic interventions, e.g. transfusions or surgery, are linked with LGI. These diseases frequently share inflammatory

pathways and coexist in individual patients, suggesting that treatment of one LGI-dependent disease may favourably affect another comorbidity.

While LGI research has attracted interest, clinical implementation of results has been limited. This is partly due to a predominant interest in conventional 'disease-specific' mechanisms and interventions, e.g. antidiabetic or lipid-lowering drugs, and a belief that inflammatory mechanisms often are epiphenomena and not primary pathogenic drivers of disease. However, there is increasing realisation that even after optimal conventional treatment, persistent LGI represents a residual 'inflammatory' risk, and that inflammation is a maker and not merely a marker of disease.



CAG chairman Peter Riis Hansen
CAG vice chairman Palle Holmstrup

CAG PROGNOSTICATION OF ACUTE RECOVERY CAPACITY - IN AN AGING POPULATION

(ACUTE)

The ACUTE-CAG vision is to improve acute healthcare for older and frail multimorbid patients with chronic diseases and polypharmacy.

More than 1 million in 1.3 million hospital admissions per year in Denmark are acute, and 70 per cent concern elders, making emergency departments (EDs) a hub for opportunistic risk screening and interventions.

The onset of acute illness in the multimorbid elderly population is often complicated by competing acute and chronic conditions and polypharmacy, resulting in an increased risk of adverse reactions to pharmaceuticals and other therapeutic choices.

Only a few mechanistic or interventional studies are initiated from the onset

of acute illness due to logistical difficulties at busy EDs with 24-hour patient flow. Consequently, despite recommendations and political ambitions, acute multimorbid elders are rarely treated and investigated as a group.

ACUTE CAG aims to solve this societal and healthcare challenge to benefit education and the development of viable solutions.

ACUTE CAG investigates non-disease-specific measures and the implementation of multimorbid treatment strategies from a translational approach. This includes multiple clinical disciplines and collaboration with e.g. social-political-economics researchers.



50%

Approximately **50 per cent of elders above the age of 65** suffer from health conditions that limit their ability to function and work full-time.



CAG chairman Ove Andersen
CAG vice chairman Lene Juel Rasmussen



7,500

In Europe, more than one million critically ill patients die of multi-organ failure each year, and in Denmark alone more than 7,500 intensive-care patients die from multi-organ failure each year.

CAG CENTER FOR ENDOTHELIOMICS

The CAG Center for Endotheliomics seeks to improve survival rates of critically ill patients via precision diagnostics and treatment by uncovering how the individual patient's endothelium contributes to multi-organ failure or, at worst, death.

In Europe, more than one million critically ill patients die of multi-organ failure each year, and in Denmark alone more than 7,500 intensive-care patients die from multi-organ failure each year. Multi-organ failure develops secondary to shock caused by trauma, sepsis or after resuscitated cardiac arrest. This process critically involves the type and severity of endothelial damage developed by the individual patient which, at worst, leads to reduced oxygen in the vital organs and death. The core function of the CAG is therefore to decipher the processes related to the endothelial cell which contributes to multi-organ failure.

The CAG brings clinical experts in trauma, sepsis and cardiac arrest treatment to-

gether with experts in systems biology, bio-engineering and bioinformatics. Together they will – using omics technologies and mathematical modelling of the metabolism of the endothelial cell – provide new knowledge of its role in critical illness and multi-organ failure, identify diagnostic markers of the individual patient's endothelial phenotype and thus open up new possibilities for targeted precision treatment.

The CAG introduces genome-scale metabolic models as the scaffold for multi-omics data integration and computational modelling as tools to decipher the pathophysiology of the endothelial cell responsible for multi-organ failure and progression clinically. Additionally, supervised machine learning algorithms will be applied to data from electronic patient records, Danish registries and clinical databases in order to characterise the clinical disease trajectories resulting from the individual patient's endothelial cell response.



CAG chairman Pär Ingemar Johansson

CAG vice chairman Chairman Bernard O. Palsson

CAG IMAGING-GUIDED CANCER SURGERY

(IGCS)

CAG IGCS strives to increase the life expectancy and quality of life of cancer patients undergoing surgical treatment by improving the methods for complete removal of cancer tissue.

Each year, more than 1,700 patients are diagnosed with head and neck cancer in Denmark. When suitable, surgery is the first priority for treatment.

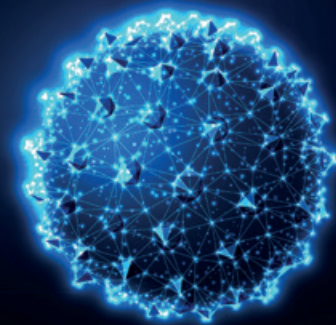
The fundamental challenge in cancer surgery is distinguishing between cancer tissue and normal tissue, and small microscopic pieces of the tumour are often overlooked and left in the area to cause recurrences of the illness. If the surgeon fails to remove the entire tumour, the patient is subjected to chemotherapy or radiation, but such supplementary treatment is a significant burden to the patient, which may subsequently affect their quality of

life and functional capacity. Focussing on the main challenge in cancer surgery, improved methods for complete removal of cancer tissue may lower the postoperative and financial consequences significantly, benefitting both the patients and society.

There is a great need for new technology allowing for precise intraoperative visualisation of cancer to guide resections with tumour-free margins. Optical imaging represents a promising development within the area, where fluorescent molecules are attached to the molecules that attach to cancer tissue. Using unique camera systems, optic imaging can potentially enable intraoperative visualisation of tumours and metastases and thus help the surgeon remove all cancer in the patient.

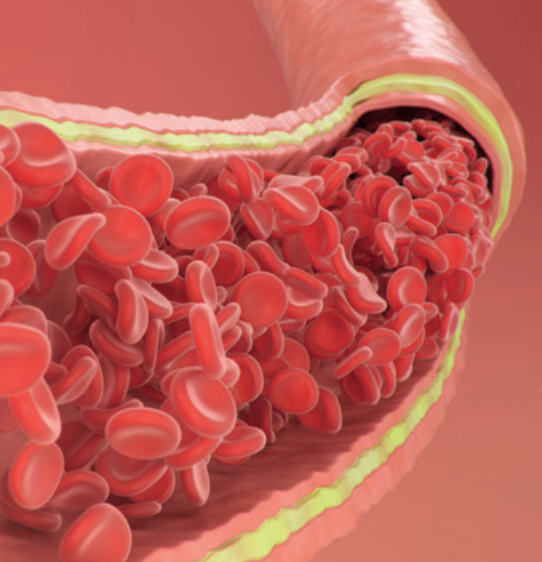


CAG chairman Christian Buchwald
CAG vice chairman Andreas Kjær



1,700

Each year, more than **1,700 patients** are diagnosed with head and neck cancer in Denmark.



10,000

In Denmark, approx. 10,000 citizens live with an **undiagnosed MPN blood cancer**.

CAG THE ZEALAND INFLAMMATION RESEARCH INITIATIVE

(ZIRI)

CAG ZIRI strives to increase the quality of life and survival rates of patients with chronic MPN blood cancers through early-stage diagnostics and improved treatment for MPNs and comorbidities.

MPNs (Philadelphia-negative myeloproliferative neoplasms) are a group of chronic blood cancers – essential thrombocytosis, polycythemia vera and primary myelofibrosis. MPNs are often preceded by a long pre-diagnostic phase of up to 5-10 (or even 20) years of repeated disabling or life-threatening blood clots in e.g. the brain, heart or lungs.

MPNs are typically grouped among the rare diseases. However, a Danish study that screened 20,000 citizens for MPN gene mutations has shown that 3.2 per cent have a mutation that is either a precursor to

an MPN blood cancer or an undiagnosed blood cancer. In Denmark, approx. 10,000 citizens live with an undiagnosed MPN blood cancer and constantly increased risk of blood clots in e.g. the brain, heart or lungs. Patients with MPN blood cancer also have an increased risk of getting other types of cancer. Therefore, MPN blood cancers should be diagnosed at a much earlier stage than is the case today.

Many MPN patients also suffer from comorbidities, including brain disease (dementia), drusen, age-related macular degeneration (AMD), cardiovascular disease, lung disease, osteoporosis with increased risk of bone fractures, chronic kidney disease and increased risk of other types of cancer. The MPNs and associated comorbidities contribute to a significantly reduced quality of life and ability to work.



CAG chairman Hans Carl Hasselbalch
CAG vice chairman Lars Rønn Olsen



CAG NOVEL STRATEGIES TO DIAGNOSE AND TREAT BACTERIAL INFECTIONS

(BACINFECT)

CAG BACINFECT will improve the treatment outcome for patients with infectious diseases through better diagnostics and development of new therapeutic strategies.

Bacterial infections become more and more difficult to treat with antibiotics, and according to the WHO, infectious diseases will constitute a greater health risk than cancer in a few decades. This is the result, among other things, of effective spread of pathogenic bacteria due to extensive use of antibiotics leading to the emergence of antibiotic-resistant bacteria. On the host site we see increasing numbers of senior citizens and patients with weak immune systems as well as increasing numbers of persons worldwide suffering from lifestyle diseases such as diabetes, obesity and smoking.

Vital to successful suppression of many infections is detection at an early stage, fast diagnostics and optimised treatment. This CAG collaboration will shed light on the underlying causes of unsuccessful diagnostics and therapy leading to continued infection, and it will identify infection markers capable of predicting outcomes of various types of bacterial infections. For these purposes, the CAG will develop improved infection models, imitating the organs and tissues which frequently harbour infections.

CAG BACINFECT research is conducted by clinicians and researchers together across universities and hospitals. Clinical problems are converted into biological questions, which are addressed and answered and finally translated into clinical solutions, improving both diagnostics and therapy.



CAG chairman Helle Krogh Johansen
CAG vice chairman Søren Molin



CAG REGENERATIVE MEDICINE FOR UROGENITAL SURGERY AND FERTILITY

(SURF)

The CAG SURF aims to provide faster and better treatment for patients suffering from rare conditions in the urinary tract and genitals, also known as the urogenital organs. The CAG will be developing new surgical strategies and methods for improving tissue healing and regeneration with a view to healing or replacing damaged or sick organs, tissue and cells. For this purpose, the CAG will be using techniques for producing artificial organs, tissue reconstruction and therapeutic stem cells.

The CAG focusses on reconstruction of the urogenital organs and restoring fertility in paediatric and adult patients.

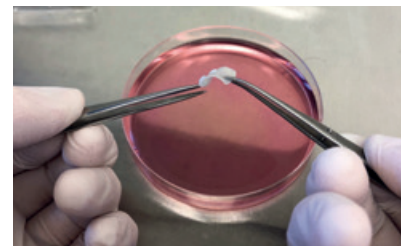
Regenerative medicine for reconstructive urogenital surgery: Urogenital organ

defects may have severe negative effects on the bladder function, including urinary incontinence, risk of urinary tract infection and secondary kidney failure. These patients often experience reduced quality of life, and some suffer from reduced mobility and experience a loss of autonomy as their need for help involves a sensitive, intimate part of the body. Severe birth defects of e.g. the bladder, penis, testicles and vagina are examples of conditions where lack of urogenital tissue may cause severe disease and repeated attempts at surgical reconstruction at human as well as health financial costs.

Regenerative medicine for surgical fertility preservation: Paediatric patients with birth defects or genetic diseases may have

a high risk of reduced fertility. Infertility is a growing problem in Denmark and other countries, and the WHO estimates that more than 48 million couples and 186 million individuals globally suffer from infertility.

Infertility may also be a result of cancer treatment, though, as chemotherapy and radiation can destroy or reduce the quality of the gametes.



CAG chairman Magdalena Fossum
CAG vice chairman Eva Hoffmann

CAG BRAIN AND TECHNOLOGY

(BAT)

The CAG Brain and Technology (BAT CAG) aims to improve diagnostics, monitoring and treatment of patients suffering from neurological disorders using digital technologies close to the patient (eDevices), BIG DATA and artificial intelligence (AI).

The BAT CAG aims to strengthen research across medical specialties and the social and technical sciences. It will identify biomarkers in patients, collect and analyse data and develop data infrastructures. Furthermore, the CAG will improve digital monitoring of symptoms and ensure ethically justifiable implementation of portable, transportable or implanted eDevices in clinical practice and patients' everyday lives. To ensure sustainable implementation of eDevices, the CAG will emphasise user involvement and co-creation together with patients suffering from neurological disorders – both in terms of product design, diagnostics and treatment.

Most patients suffering from neurological disorders experience cognitive difficulties even in the early stages of the disease. E.g., patients may not notice symptoms of epileptic seizures, which affects their chances of reporting such symptoms to health professionals and hence receiving the right treatment. Early disease detection and preventive medicine can improve patients' quality of life by e.g. enabling them to return to work and be socially active.

The BAT CAG seeks to predict disease development by generating knowledge about the various functions of the body using eDevices implemented in patients' everyday lives. This will give the researchers valid, real-time patient data, which may be analysed using advanced data analysis methods.



12%

Neurological disorders are responsible for around **12 per cent of the Danish healthcare expenditure** and represent a fifth of the total healthcare burden.

The number of patients suffering from neurological disorders is increasing alongside the ageing population and increase in patients with lifestyle disorders and multiple diseases.



CAG chairman Troels Wesenberg Kjær
CAG vice chairman Henriette Langstrup

OUR IMPACT RESTS IN OUR ABILITY TO BRING PEOPLE,
RESOURCES AND ORGANISATIONS TOGETHER QUICKLY;
DELIVERING BENEFITS THAT COULD NOT BE ACHIEVED ALONE.

NEED MORE INFO: WWW.GCHSP.DK



**The Capital Region
of Denmark**



UNIVERSITY OF
COPENHAGEN

