



Annual Report

Research Activity 2021



Division of Head, Neck and Reconstructive Surgery
University of Oslo and Oslo University Hospital





Contents

Organization Chart.....	2
Oslo University Hospital and University of Oslo	3
From Division Director Kim A. Tønseth and Head of Research Morten C. Moe.....	3

Department of Plastic and Reconstructive Surgery

Research in plastic and reconstructive surgery	4
Group Leader: Kim A. Tønseth	

Department of Otorhinolaryngology, Head and Neck Surgery

Cochlear implant, hearing and ear surgery	6
Group Leader: Marte Myhrum	
HPV in Head and Neck	10
Group Leader: Harriet Akre	

Department of Ophthalmology

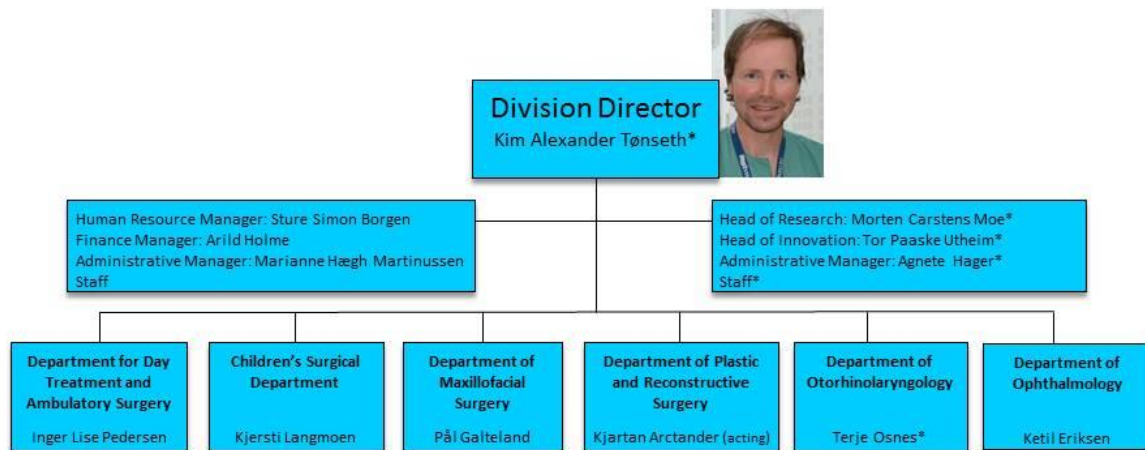
Center for Eye Research	12
Group Leader: Goran Petrovski	
Clinical Retina Research	17
Group Leader: Ragnheiður Bragadóttir	
Anterior segment of the eye	21
Group Leader: Liv Drolsum	
Unit for research-driven innovation	24
Group Leader: Tor Paaske Utheim	

Publication list HHA research groups 2021	27
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Organization Chart

Division of Head, Neck and Reconstructive Surgery (HHA)



* UiO employee(s)





Oslo University Hospital and University of Oslo

Oslo University Hospital (OUH) is Norway's largest hospital with over 24 000 employees. The Hospital has a local function for parts of Oslo's population. Being the largest hospital in Norway, Oslo University Hospital provides highly specialized health care services to the citizens of Oslo and the Southeast health region. In addition, the Hospital has a nationwide responsibility for a number of national and multi-regional assignments. The Hospital is responsible for the majority of medical research and education of health personnel in Norway. The University of Oslo (UiO) is Norway's largest research and educational institution with 28 000 students and 7 000 employees.

From Division Director Kim A. Tønseth and Head of Research Morten C. Moe

The Division of Head, Neck and Reconstructive surgery (HHA) encompasses the fields of otorhinolaryngology/head and neck surgery, reconstructive plastic surgery, orthodontics and dentofacial orthopedics, maxillofacial surgery, pediatric surgery (ward) and ophthalmology. The proximity to patients and their medical issues are the cornerstones of the research conducted at our Hospital, which aims at improving patient care. High ethical standards ensure the confidentiality, and our goal is to continuously improve diagnostics, treatment and management for all our patients.

The Division's research aim is *to be the country's leading research institution within our field of expertise*. The research activity is organized into seven different research groups covering a broad range of basic, translational and clinical research with an overall aim to improve patient care. In order to build up research activity further in the clinic, we have included the following topics as our main research aims:

- Interdisciplinary health research combining medicine and health science
- Registry-based quality control - and research based on large patient volume
- Translation research focusing on "tissue engineering"
- Clinical studies of high quality and relevance for our clinical activity
- Collaboration with industry (pharmaceutical industry and medical technical equipment suppliers) on specific research projects
- Innovation

Throughout the last years, we have steadily increased our research activity, and in 2020, the Division published 96 papers in per-reviewed journals. We have also had a steadily increase in external funding for research, and aim to further strengthen and develop our research network in the coming years.



Research in plastic and reconstructive surgery



Group Leader

Kim A. Tønseth, Professor, Dept. of Plastic and Reconstructive Surgery, UiO
(k.a.tonseth@medisin.uio.no) / Division Director, Head, Neck and Reconstructive
Surgery OUH (ktonseth@ous-hf.no)

Group Members

- Charles Filip, MD/PhD, OUH
- Hans Erik Høgevold, MD/PhD, OUH
- Davide Impieri, MD/PhD
- Nina Lindberg, PhD Fellow, OUH
- Michael Schneider, MD, OUH
- Henriette Pisani, MD, PhD fellow, UiO/OUH
- Lars Frich, MD/PhD, OUH
- Tor P. Utheim, MD, PhD, OUH
- Sjur Reppe, PhD, OUH
- Lars Johan Sandberg, MD/PhD fellow, OUH
- Other physicians in the department are involved in isolated projects

Research profile and aims

Plastic and reconstructive surgery is performed to restore normal anatomy and function in patients with congenital and acquired disorders, and in patients with tissue defects after trauma or cancer surgery. During the last decades, research in plastic and reconstructive surgery has led to development of a large number of treatment options for patients with different kinds of disorders and defects. These methods are often based on experimental research, which has been refined through clinical procedures. The main outcome is improved quality of life and patient satisfaction, based on restoration of anomalies and dysfunction.

Ongoing PhD-projects

- Nina Lindberg; Mothers' experiences of feeding infants with cleft lip and palate and the effects of a follow-up program on parental information needs, parental stress and infant growth
Supervisor: KA Tønseth
- Henriette Pisani; Trans gender surgery in Norway. Supervisor: KA Tønseth
- Lars Johan Sandberg; Breast Aesthetics for Reconstruction by Three Dimensional Measures.
Supervisor: KA Tønseth
- TP Utheim/KA Tønseth; Projects regarding storage and treatment with cultured epidermal cells

Other projects:

- Vascular malformations
- Breast reconstruction
- Regenerative plastic surgery



Most important national and international collaborators

National

- Dept. of Plastic Surgery, Haukeland universitetssjukehus

International

- Dept. of Plastic Surgery, Linköping University Hospital, Sweden
- Dept. of Plastic Surgery, University Hospital Ghent, Belgium
- Dept. of Plastic Surgery, Karolinska Universitetssjukhuset, Sweden

Funding

- OUH
- UiO
- HSØ

Scientific production of the research group in 2021

Peer reviewed original research articles: 27

Selected publications:

Frich L, Hermann R, Berentzen Å, Ryder T (2021)

“Randomized Study of Wound Drainage on Early Complications After Lymph Node Dissection for Melanoma”

J Surg Res, 267, 467-476

DOI 10.1016/j.jss.2021.05.005, PubMed 34245960

Sandberg LJ, Tønseth KA, Kloster-Jensen K, Liu J, Reece G, Halle M, Edsander-Nord Å, Höckerstedt A, Kauhanen S, Tindholdt TT, Gunnarsson GL, Selber JC (2021)

“Beyond the 21-cm Notch-to-nipple Myth: Golden Proportions in Breast Aesthetics”

Plast Reconstr Surg Glob Open, 9 (10), e3826

DOI 10.1097/GOX.0000000000003826, PubMed 34712540

Khan AZ, Utheim TP, Jackson CJ, Tønseth KA, Eidet JR (2021)

“Concise Review: Considering Optimal Temperature for Short-Term Storage of Epithelial Cells”

Front Med (Lausanne), 8, 686774

DOI 10.3389/fmed.2021.686774, PubMed 34485330



Cochlear implant, hearing and ear surgery



Group Leader

Marte Myhrum, MSc/PhD, OUH/UiO (marte.myhrum@medisin.uio.no)

Group members

- Arne Kirkhorn Rødsvik, MSc/PhD , OUH
- Jakob Skalleberg, MD/PhD fellow, OUH
- Torstein Grønseth, MD/PhD fellow, OUH
- Beth Eksveen, Cand. Paed. Spec, OUH
- Borghild Landsvik, Cand. Paed. Spec, OUH
- Greg Eigner Jablonski, MD/ PhD, Ass Professor, UiO/ OUH
- Heidi Borge, MSpecial Needs
- Kjell Rasmussen, Leader of the CI team
- Leif Runar Opheim, Leader of the Ear section
- Lisbeth Wingaard, Leader of Audiologists
- Mariann Gjervik Heldahl, MSc/PhD, OUH
- Marie Bunne, MD/PhD, OUH
- Muneera Iftikar, MD, OUH
- Nina Melsomvik, MSpecial Needs
- Ona Bø Wie, Cand.Paed.Spec/PhD, Prof ISP/ OUH
- Ralf Greisiger, MSc/PhD, OUH
- Synne Norgren, MSpecial Needs, OUH
- Torquill Sørensen, MSc/PhD, OUH

Research profile and aims

The group's aim is to carry out research related to ear and hearing, and to investigate how patients benefit from intervention, treatment, rehabilitation and ear surgery including cochlear implantation. Research on diagnosis and treatment of superior semicircular canal dehiscence disorder has also become a main focus area of the research group.

The team is a multidisciplinary team consisting of medical doctors/ear surgeons, audio physicists (MSc/PhD), audio pedagogues (special needs pedagogues), and audiologists. This opens up for research within different disciplines and across disciplines.

Strengths of the research group:

- CI surgery and ear surgery
- National treatment center for children with CI
- Children with CI - one country's total population (an internationally unique population)
- Knowledge of speech perception and language development after cochlear implantation
- Special expertise in Auditory Verbal Therapy





- Adults with CI (50% of the adults with CI population in Norway)
- Radiological visualization during CI surgery (Facilities at the Intervention centre)
- Special expertise in measurements during cochlear implant (CI) surgeries with ongoing research projects with and without industrial collaborators
- Industrial collaborators and possible future innovations
- Diagnosis of hearing impairment of infants and small children, hearing aids to small children
- Special expertise in auditory evoked electrophysiologic measurements (ABR / ASSR)
- Special expertise in visual reinforcement audiometry (VRA) used for small children
- Special expertise in fitting hearing aids to small children and to patients with special needs
- Diagnosis of specific patient groups (e.g. Superior Canal Dehiscence)

Ongoing projects

- «Talespråklig habiliteringspakke med digital oppfølging», PI Marte Myhrum, 2021-2023. Funding from Dam Foundation (<https://dam.no/prosjekter/talespraklig-habiliteringspakke-med-digital-oppfolging/>)
- «Betre hørselshabilitering med detaljert språklydtesting», PI Arne Rødsvik, funding from Dam Foundation (<https://www.hlf.no/hvagjorhlf/prosjekter/betre-hoyselshabilitering-med-detaljert-spraklydtesting>)
- Torstein Grønseth, Otitis media chronica and cholesteatoma: bacteriology and antibacterial treatment, 2014– (PhD project). (Gronseth et al., 2017)
- Project funded from The Norwegian Directorate of Health: A survey of hearing, language and quality of life in persons who received cochlear implants as children, Collaboration Helsedir, OUS, UiO/Ona Bø Wie, 2012–2018
- Visualization of cochlear implant electrode and measurements of electrode insertion angle, Ralf Greisiger, Greg Eigner Jablonski
- Electrode position of electrode type CI532, Ralf Greisiger, Marie Bunne, Greg Eigner Jablonski, and Kjell Rasmussen
- Electrocochleography using cochlear implant electrode (- can it be used for trauma detection), Torquill Sørensen
- Speech perception in noise in CI participants, Marte Myhrum
- Visual statistical learning in typically developing children, children with specific language impairment and children with hearing impairment, Janne von Koss Torkildsen (UiO), Joanne Arciuli (University of Sydney), Christiane Lingås Haukedal, Marit Gismarvik and Ona Bø Wie, 2014–2017

Retrospective studies

Retrospective studies of different patient groups are included in the research group assignment. Therefore, many employees with 100% clinical employment at the Ear section are members of the research group, some more active than others.





Investigator initiated research clinical projects

We have collaboration with the three largest companies of cochlear implant technology: Advanced Bionics, Cochlear, Med-EL. Some of the projects are investigator initiated projects with external funding. The investigator initiated research clinical projects are within the areas of 1) Hearing preservation and electrocochlegraphy, and 2) Cochlear implant electrode position with intraop measurements and real-time X-ray imaging. Ongoing projects:

- Electrocochlegraphy and Fluoroscopy using Advanced Bionics cochlear implants, Torquil Macdonald Sørensen
- Intra-operativ Trauma Detection with help of Electrocochlegraphy an Fluoroscopy video, Ralf Greisiger primary investigator
- Effect of proximity for the Cochlear CI532 Slim Mod elect array in terms of ECAP and programming levels, Ralf Greisiger primary investigator

Robotic Cochlear implantation

Robotic Cochlear implantation study on cadavers (research and innovation projects) in cooperation with Cascination AG and Medel GmbH. The project started in 2018 with one cadaver study, and will continue in 2022.

Participation in external projects

- Collaboration PhD project, “Radiologic visualization of tuba audiiva”, with the Department of Radiology, Benedicte Falkenberg-Jensen, Greg Eigner Jablonski (co-supervisor), Juha Silvola (co-supervisor)
- Collaboration PhD project, “Tinnitus in Helicopter pilots”, Institute of Aviation Medicine and Institute for Health and Society, Greg Eigner Jablonski (co-supervisor)
- Working Conditions in the Control Room (WCCR) (“Arbeidsvilkår på operasjonssentralen” (APO)), Project leader Brita Bjørkelo, Norwegian Police University College, and Eva Oddrun Langvik, NTNU

Important national and international collaborators

National

- Dept of Special Needs Education, UiO
- Dept of Linguistics and Scandinavian studies, UiO
- Dept of Informatics, UiO
- Dept of Medical Genetics, OUH
- The Norwegian Directorate of Health
- Central Norway Regional Health Authority
- Northern Norway Regional Health Authority
- Norwegian Institute of Public Health

International

- Cochlear Corporation
- Advanced Bionics AG
- Medel GmbH, Austria
- University of Wisconsin, US (Ruth Litovsky)
- University of Sydney, Australia
- University of Tampere, Finland
- Harvard University, Boston, US (Dennis Poe)
- Linköping University, Sweden





Funding

- Dam Foundation
- Cochlear Corporation (investigator initiated projects with external funding)

Scientific production of the research group in 2021

PhD

Jakob Skalleberg; *“Long-term ototoxicity after cisplatin-based chemotherapy. A study of long-term hearing loss and tinnitus in patients after receiving cisplatinbased chemotherapy”* June 24, 2021

Peer reviewed original research articles: 3

Selected publications:

Jablonski, G. E., Falkenberg-Jensen, B., Bunne, M., Iftikhar, M., Greisiger, R., Opheim, L. R., Korslund, H., Myhrum, M., . Sorensen, T. M. (2021)
“Fusion of Technology in Cochlear Implantation Surgery: Investigation of Fluoroscopically Assisted Robotic Electrode Insertion”
Front Surg, 8, 741401. doi:10.3389/fsurg.2021.741401

Rodvik, A. K., Myhrum, M., Larsson, E. L. A., Falkenberg, E. S., & Kvaerner, K. J. (2021)
“Sustained reduction of tinnitus several years after sequential cochlear implantation”
International Journal of Audiology, 1-7. doi:10.1080/14992027.2021.1939448

Skalleberg, J., Myhrum, M., Smastuen, M. C., Osnes, T. A., Fossa, S. D., & Bunne, M. (2021)
“Speech perception 30 years after cisplatin-based chemotherapy in adults: limited clinical relevance of long-term ototoxicity?”
Acta Oncologica, 60(4), 426-433. doi:10.1080/0284186X.2021.1887514



HPV in Head and Neck



Group Leader

Harriet Akre, MD/PhD, Consultant, dept. of Otorhinolaryngology & Head and Neck Surgery, OUH / Professor, UiO
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Group Members

- Terje Andreas Osnes, MD/PhD, Professor, UiO
- Jesper Bradstorp Boesen, MD/PhD, OUH
- Sinan Dheyaaldeen MD/PhD, Consultant, OUH
- Bianca Lorntzsen, MD, PhD student, UiO
- Jon Mork, MD/PhD, Consultant, OUH
- Johan Steineger, MD, PhD student, UiO
- Jakob Skalleberg, MD, Consultant, OUH
- Arild Østhus, MD/PhD student, OUH
- Ole Jakob Jørgensen, MD, PhD student, UiO

Ongoing projects

- Health Related Quality of Life in Thyroid Surgery Patients – a prospective Cohort
- Multicenter study regarding Health Related Quality of Life among Thyroid Cancer patients
- The establishment of a local head and neck cancer registry
- Retinoblastoma in Norway: health related quality of life and late effects
- Juvenile angiofibroma treated at OUS last 10 years
- Using Complex Event Processing for Low-threshold and Non-intrusive Sleep Apnea Monitoring at Home
- Responsible Explainable Machine Learning for Sleep-related Respiratory Disorders
- Angiogenic factors in hereditary hemorrhagic telangiectasia and their relation to epistaxis severity
- The effect of intranasal bevacizumab therapy for in hereditary hemorrhagic telangiectasia associated epistaxis on the quality of life
- The outcome of surgical correction of congenital choanal atresia. 10 years' experience
- Correction of Congenital nasal pyriform aperture stenosis. 10 years' experience
- Look into the association between Human Papilloma Virus (HPV) infections and head and neck cancers
- Treatment and quality of life in patient with hereditary hemorrhagic teleaniectasia-associated epistaxis
- Larynx cancer; clinical and epidemiological aspects
- Head and Neck Paraganglioma: 2004–2021
- High grade skull base malignancies, a multidisciplinary approach
- Sleep apnea syndrome in patients with paroxysmal atrial fibrillation
- Stridor in infants, diagnose and surgical treatment



Most important national and international collaborators

National

- Dept. of Biostatistics, OUH
- Dept. of Oncology, OUH
- Dept. of Genetics, OUH
- Dept. of Cardiology, OUH
- Dept. of Informatics, UiO
- Dept. of Neurosurgery, OUH
- Craniofacial team, OUH
- Sleep Unit, Lovisenberg Diakonale Hospital
- Dept. of Pathology, OUH

International

- Several departments, The Karolinska Institute, Stockholm, Sweden

Funding

- UiO

Scientific production of the research group in 2021

Public Defence:

MD Jakob Rasmussen Skalleberg: "Long-term ototoxicity after cisplatin-based chemotherapy. A study of long-term hearing loss and tinnitus in patients after receiving cisplatinbased chemotherapy" for the degree of PhD

Peer reviewed original research articles: 5

Selected publications:

Rana MU, Østhus AA, Heimdal K, Jebsen P, Revheim MR, Osnes TA (2020)

"Head and neck paragangliomas in Norway, importance of genetics, updated diagnostic workup and treatment"

Acta Otolaryngol, 141 (3), 303-308 DOI 10.1080/00016489.2020.1845397, PubMed 33320715

Øverland B, Berdal H, Akre H (2021)

"Surgery for obstructive sleep apnea in young children: Outcome evaluated by polysomnography and quality of life"

Int J Pediatr Otorhinolaryngol, 142, 110609

DOI 10.1016/j.ijporl.2021.110609, PubMed 33418205

Skalleberg J, Myhrum M, Småstuen MC, Osnes TA, Fosså SD, Bunne M (2021)

"Speech perception 30 years after cisplatin-based chemotherapy in adults: limited clinical relevance of long-term ototoxicity?"

Acta Oncol, 60 (4), 426-433

DOI 10.1080/0284186X.2021.1887514, PubMed 33617403



Center for Eye Research



Group Leader

Goran Petrovski, MD, PhD, Dr habil

Professor and Senior Consultant, Dept. of Ophthalmology, Oslo University Hospital and University of Oslo (goran.petrovski@medisin.uio.no)

Group Members

- Pål Andresen, MD
- Jovana Bisevac, MD, PhD student
- Gerard Boix-Lemonche, PhD, Postdoctoral Researcher
- Filippo Confalonieri, MD, Clinical Research Fellow
- Yolanda Lorenzo Corrales, PhD/Researcher
- Jon Roger Eidet, MD, PhD, Researcher
- Torleif T. Gjølberg, MSc, PhD student
- Santosh Gupta, PhD, Postdoctoral Researcher
- Hanna Haave, MD student/Researcher
- Silvia NW Hertzberg, MScPhD student
- John Kim Hiller, MD/PhD student
- Dag Krohn-Hansen, MD, PhD, Researcher
- Katrine Holen, MSc, PhD student
- Torleif T. Gjølberg, MSc, PhD student
- Henrik H. Jacobsen, MD PhD student
- Natasha Josifovska, PhD, Postdoctoral Researcher
- Mia Karabeg, MOptom, PhD student
- Kristoffer Larsen, MD student/Researcher
- Linn Lillevold, Registered Nurse
- Heidrun Elisabeth Lode, MSc, PhD student
- Morten C. Moe, MD, PhD, Professor
- Georgina Faura Munoz, Postdoctoral/affiliated Researcher
- Giang Huong Nguyen, Lab engineer
- Dragana Drobnjak Nes, MD PhD/Researcher
- Agate Noer, PhD, Researcher
- Geir A. Qvale, 1. Consultant
- Ellen S. Sauesund, MD, PhD student
- Alexander Sverstad, MD, PhD student
- Hanne Hvatum Sweeney, Registered Nurse
- Kristine Ustgård-Andersen, MSc
- Nina Charlotte Veiby, MD, PhD, Postdoctoral Researcher
- Cristina Zibetti, PhD, Postdoctoral Researcher



Research profile and aims

The Center for Eye Research and The Norwegian Eye Bank are part of the Department of Ophthalmology - one of the largest eye clinics in Scandinavia. The main objective of our research is to improve medical and surgical treatment, as well as innovative diagnostics of eye disorders through basic, translational and applied research.

IMPORTANT NOTE: THE WORK IN THE YEAR 2021 HAS BEEN SIGNIFICANTLY IMPACTED BY THE COVID-19 OUTBREAK AND THE NATIONAL AND INTERNATIONAL RESTRICTIONS IMPOSED

Clinical research

This line of research aims at improving treatment of eye diseases, such as those of the cornea, conjunctiva, cataract and retina, through advanced methods for tissue engineering, transplantation and innovative diagnostics.

In different projects during 2021, besides the continued COVID-19 limitations, the focus of the research group expanded from corneal transplantation and cataract surgery research, towards innovative diagnostics and clinical research in glaucoma and retinal diseases. New procedures were introduced, involving *ex vivo* expansion and transplantation of layers of corneal tissue stored in the eye bank and of tissue engineered in our laboratory facilities.

During 2021, the *ex vivo* expansion of human primary retinal pigment epithelium in GMP conditions was fully established, as well as the transplantation into animals (pigs), in collaboration with a partner in Czech Republic – this research line has importance for the future treatment of retinal disorders, such as age-related macular degeneration (AMD). Furthermore, research on human hematopoietic- and fibroblast- derived iPSCs continued for differentiation into RPE cells.

The Group continued doing uveitis and uveal melanoma research, using clinical/molecular characterization of these diseases.

In addition, a diffusion model for studying molecular dynamics in the anterior and posterior segments of the eye was completed, and the samples for metabolomic analysis using mass spectrometry were collected.

The Group applied oximetry and continued the vascular diameter and oxygen saturation research (all being non-invasive diagnostic/research tools) as early markers in diabetes and diabetic retinopathy (DR) (as part of a longitudinal study), as well as multiple sclerosis, vitreo-macular disorder patients and (pre-) eclampsia patients. The health economy research line continued in the fields of ocular surgery, as well as the medical retina treatment research line to optimize the use of resources and, thus, the outcome.

The research line of OCT Angiography using Zeiss Plex Elite 9000 continued to be applied to posterior segment disorders in the fields of medical and surgical retina.

In addition, glaucoma, cataract, AMD and DR research using virtually reality- and artificial intelligence-based diagnostic methods were introduced, as well as research in DR screening applying risk stratification modelling.





Particular focus has been placed on developing collaborative research with industrial partners and start-ups, which ended up in us signing collaborative agreements and an increased number of DOFIs submitted to Inven2.

Interdisciplinary research

This line of research aims to identify how different factors affect cells, tissues and molecules including DNA and mtDNA in healthy tissue and in various eye disorders. In 2021, we introduced molecular analysis using Fourier transform infrared spectroscopy (FTIR) technology to further study cells under stress conditions (collaboration with the ALBA Synchrotron Center, Barcelona, Spain). Such information may allow for improvements in the treatment of eye diseases.

Tissues for transplantation may be cultured or produced in laboratories. We examined how various conditions influence the cells and their molecules, including DNA and mtDNA, in order to modify and improve the current methods, and ultimately the quality of tissues destined for transplantation. In addition, our Group was working on developing new tissue engineering methods for treating corneal ulcers using mesenchymal (bone marrow- and corneal stroma- derived)- as well as adipose-tissue derived stem cells. Furthermore, we developed 3D printed corneal tissue for use in organ culture studies for corneal transplantation. These were now transplanted into a pig cornea organ culture model using femtolaser technology (FLISK technique) and fully analyzed using OCT and immunocharacterization.

Basic research

Stem cells are central in tissue repair. In different projects, the characteristics of the stem cells derived from normal and diseased tissues were examined, and factors that regulate their ability for production of differentiated cells and for tissue repair were mapped. In the laboratory, differentiated cells may be stimulated to develop into stem cells, and this opens for entirely new treatment options. The mechanisms that regulate such a development and the potential use of the cells in treatment of eye diseases have been further explored in 2021.

Basic research in cornea limbal, retinal pigmented epithelium, uveal melanoma genomics and epigenomics research have been performed in the Group with the aim of developing methods for enriching stem cells or stopping tumor cell growth, respectively.





Most important national and international collaborators

National

- Linda H. Bergersen, PhD, Prof., UiO
- Hanne Scholz, PhD, Group Leader, OUH
- Håvard J. Haugen, PhD, Prof., UiO
- Hans Christian Dalsbotten Aass, PhD, Day Leader, OUH
- Group of National Center for Stem Cell Research
- Jan Terje Andersen, PhD, Ass. Prof., UiO/OUH

International

- Prof. Sarah Coupland, Liverpool Ocular Oncology, University of Liverpool, UK
- Prof. Martine Jæger, Leiden University medical center, Netherlands
- Prof. Kai Kaamiranta, Dept. of Ophthalmology, University of Eastern Finland, Finland
- Assoc. Prof. Miriam Kolko, Chief Glaucoma Specialist, Dept. of Ophthalmology, University of Copenhagen, Denmark
- Prof. Heli Skottman/Prof. Hannu Uusitalo, BioMediTech/Dept. Ophthalmology, University of Tampere, Finland
- Prof. Einar Stefánsson, Dept. of Ophthalmology, University of Iceland, Iceland
- Dr. Xiaohu Yan, University of Jinan, Dept. of Ophthalmology, Shenzhen, China
- Prof. Jan Motlik, Czech Academy of Sciences, PIGMOD Center, Libechov, Czech Republic
- Dr. Lyubomyr Lytvynchuk, Dept. of Ophthalmology, University of Giessen, Germany
- Assoc.Prof. Xhevat Lumi, Dept. Of Ophthalmology, University of Ljubljana, Slovenia

Funding/ Funding sources

- Blindemissionen IL
- The Norwegian Association of the Blind and Partially Sighted
- South-Eastern Norway Regional Health Authority
- The Norwegian Ophthalmological Society
- UNIFOR LEGACY
- Aase og Knut Tønjums oftalmologiske fond
- Futura Fond
- Grant to promote cancer research
- Dr. Jon S. Larsen's Foundation
- EEA Norway Grants
- The Research Council of Norway





Scientific production of the research group in 2021

Peer reviewed original research articles: 29

Selected publications:

Eszes DJ, Szabó DJ, Russell G, Lengyel C, Várkonyi T, Paulik E, Nagymajtényi L, Facskó A, Petrovski G, Petrovski BÉ (2021)

“Diabetic Retinopathy Screening in Patients with Diabetes Using a Handheld Fundus Camera: The Experience from the South-Eastern Region in Hungary”

J Diabetes Res, 2021, 6646645

DOI 10.1155/2021/6646645, PubMed 33628836

Lytvynchuk LM, Petrovski G, Dam A, Hiemstra J, Wimmer T, Savytska I, Binder S, Stieger K (2021)

“Novel Needle for Intravitreal Drug Delivery: Comparative Study of Needle Tip Aspirates, Injection Stream and Penetration Forces”

Clin Ophthalmol, 15, 723-734

DOI 10.2147/OPHTH.S297139, PubMed 33642853

Veiby NCBB, Simeunovic A, Heier M, Brunborg C, Saddique N, Moe MC, Dahl-Jørgensen K, Petrovski G, Margeirsdottir HD (2021)

“Retinal venular oxygen saturation is associated with non-proliferative diabetic retinopathy in young patients with type 1 diabetes”

Acta Ophthalmol, 100 (4), 388-394

DOI 10.1111/aos.15018, PubMed 34668632



Clinical Retina Research



Group Leader

Ragnheiður Bragadóttir, MD/PhD, Professor II, Dept. of Ophthalmology, OUH /
UiO (ragnheib@medisin.uio.no)

Group members

- Anca Roald, MD PhD
- Carol Rivera Sumague ophthalmic nurse, research nurse
- Jon Roger Eidet MD, PhD
- Goran Petrovski MD, PhD
- Anne Kjersti Erichsen MD
- Jesintha Navaratnam. MD, PhD
- Josephine Prener Holtan, MD, PhD
- Kathrine Blom, MD, PhD fellow
- Live Lund Hareide MD, PhD fellow
- Magne Sand Sivertsen MD, PhD
- Dag Fosmark MD, PhD
- Torleif Tollefsrud Gjølberg PhD
- Algirdas Grevys PhD
- Thora Jonsdottir MD
- Anna-Katharina Litzen Jørstad optometrist
- Marianne Strøm MD, PhD fellow
- Sonja Lerdal technician
- Heidrun Elisabeth Lode PhD fellow
- Morten Carstens Moe MD, PhD
- Ellen Sauesund MD, PhD fellow
- Panagiotis Salvanos, MD PhD fellow
- Alexander Sverstad MD
- Øystein Jørstad MD, PhD
- Yngvil Solheim Husum, MD, PhD

Research profile and aims

Clinical implementation and evaluation of new treatment – and diagnostic modalities for vitreoretinal disorders.

Ongoing projects

- **Artificial intelligence for diagnosing retinal diseases**
Rigmor Baraas, Hilde Røgeberg Pedersen, Elise Dees Krekling, Stuart Gilson, Lene Aarvelta Hagen, Josephine Prener Holtan, Ragnheidur Bragadottir
- **The Z-AMD study: A randomized controlled pilot study of zoledronic acid as adjuvant treatment for nAMD**
Yngvil Solheim Husum, Øystein Kalsnes Jørstad, Erik Fink Eriksen, Morten Carstens Moe

- **The TenCRAOS study: a randomized controlled international multicenter study of thrombolysis for central retinal artery occlusion**
Stephen Ryan, Øystein Kalsnes Jørstad, Morten Carstens Moe, Anne Hege Aamodt
- **StrokeVIS: a study of prevalence and screening for visual problems in stroke**
Stephen Ryan, Anna-Katharina Litzen Jørstad, Øystein Kalsnes Jørstad, Morten Carstens Moe, Fiona Rowe, Anne Hege Aamodt
- **An evidence-based approach to the European visual requirements for driving**
Thora Jonsdottir, Thea Melsen Sudmann, Tomas Bro, Fiona Rowe, Øystein Kalsnes Jørstad
- **Individually adjusted screening program for diabetic retinopathy by using different non-invasive measurements and symptoms**
Ellen Sauesund, Goran Petrovski, Øystein Kalsnes Jørstad, Maja Gran Erke, Carol Sumague, Dag Fosmark
- **Development of an adjustable glaucoma stent**
Alexander Sverstad, Inven2, Øystein Kalsnes Jørstad
- **Intravitreal injections and the development of prefilled syringes for anti-VEGF treatment**
Øystein Kalsnes Jørstad, Magne Sand Sivertsen, Heidrun Elisabeth Lode, Torleif Tollefsrud Gjølborg, Stian Foss, Algirdas Grevys, Jan Terje Andersen, Invent2, SJJ Solution, Morten Carstens Moe
- **Endophthalmitis: epidemiology and treatment**
Kathrine Blom, Øystein Kalsnes Jørstad, Nils Olav Hermansen, Marie Elisabeth Vad, Mona Holberg-Petersen, Ragnheidur Bragadottir
- **Project RP11; A collaborating study between Dept. of Microbiology and Dept. of Ophthalmology, OUH. Includes the Natural history study of retinitis pigmentosa type 11 (ReSa study) investigating both clinical and pathophysiological features and progression of retinitis pigmentosa type 11 with the aim of treating the disorder**
Ragnheidur Bragadottir, Josephine Prener Holtan, Morten C Moe, Magnar Bjørås
- **Genotype characterization with MIP genetic testing in patients with retinitis pigmentosa and lebers congenital amaurosis**
Josephine Prener Holtan, Ragnheidur Bragadottir, Frans Cremers
- **Clinical and genetic characterization of BEST1-retinal dystrophy in South-East Norway**
Masterstudent: Erlend Sæther, UNN, Josephine Prener Holtan, Ragnheidur Bragadottir
- **PERCEIVE study; International multicenter study for post approval evaluation of the effect and safety of voretigene neparvovec**
Josephine Prener Holtan, Ragnheidur Bragadottir, Novartis
- **CELESTE study; A Double-Masked, Randomized, Controlled, Multiple-Dose Study to Evaluate the Efficacy, Safety and Tolerability of QR-421a in Subjects with Retinitis Pigmentosa (RP) due to Mutations in Exon 13 of the USH2A Gene with Early to Moderate Vision Loss (phase 2/3)**
Ragnheidur Bragadottir, Josephine Prener Holtan, ProQR Netherlands
- **SIRIUS study; A Double-Masked, Randomized, Controlled, Multiple-Dose Study to Evaluate the Efficacy, Safety and Tolerability of QR-421a in Subjects with Retinitis Pigmentosa (RP) due to Mutations in Exon 13 of the USH2A Gene with Advanced Vision Loss (phase 2/3)**
Ragnheidur Bragadottir, Josephine Prener Holtan, ProQR, Netherlands
- **Uveitis registry at OUH**
Jon Roger Eidet, Thora Jonsdottir, Anne Kjersti Erichsen
- **Registry of inherited retinal diseases in Norway**
Ragnheidur Bragadottir, Josephine prener Holtan, Sonja Lerdal
- **Automatic grading of retinal images (artificial intelligence)**
Dag Fosmark, Greg Russel



- **Risk stratification in diabetic retinopathy**
Dag Fosmark, Einar Stefansson, Mojca Globocnik-Petrovic
- **Randomized pilot trial comparing efficacy of adalimumab and tocilizumab in non-infectious uveitis (the @-uveitis study)**
Jon Roger Eidet, Anne Kjersti Erichsen, Thora Jonsdottir, Marianne Martinussen, Morten C. Moe
- **The application of ultra-widefield fundus autofluorescence in the diagnosis and monitoring treatment effect of various retinal diseases and choroidal melanoma**
Jesintha Navaratnam, Panagiotis Salvanos, Demetrios G. Vavvas, Thomas Bærland, Nils A. Eide, Rowan Faber, Jin Ma, Morten Moe, Bernt L. Rekstad, Ragnheidur Bragadottir
- **Characterizing the genotype, phenotype, health issues, physical functioning and quality of life in adults with Bardet Biedl syndrome**
Charlotta von der Lippe, Solrun Sigurdardottir, Jeanette Ullman Miller, Susanne Weedon-Fekjær, Ragnheidur Bragadottir, Johan Arild Evang, Cecilie Rustad, Trine Prescott, Sjur Lindbæk, Hilde Nordgarden, Pamela Åsten

Most important national and international collaborators

National

- Anne Hege Aamodt, OUH
- Jan Terje Andersen, UiO/OUH
- Rigmor Baraas, University of South-Eastern Norway/USN
- Inven2, UiO
- Elise Dees Krekling, USN
- Sjur Lindbæk, Statped
- Charlotta von der Lippe, OUH
- Jeanette Ullman Miller, OUH
- Hilde Nordgarden, the TAKO-centre
- Hilde Røgeberg Pedersen, USN
- Trine Prescott, Telemark Hospital Trust
- Cecilie Rustad, OUH
- Stephen Ryan, OUH
- Solrun Sigurdardottir, OUH
- Erlend Sæther, UNN (mastergradsstudent)
- Marie Elisabeth Vad, OUH
- Susanne Weedon-Fekjær, OUH
- Pamela Åsten, the TAKO-centre
- Johan Arild Evang, OUH
- Stian Foss, UiO
- Stuart Gilson, USN
- Lene Aarvelta Hagen, USN
- Nils Olav Hermansen, OUH
- Mona Holberg-Petersen, OUH

International

- Tomas Bro, Lund University, Sweden
- Frans Cremers, Radboud University, Nijmegen, the Netherlands
- Mojca Globocnik-Petrovic, Ljubljana, Slovenia
- Novartis, Switzerland
- ProQR Therapeutics, the Netherlands
- Fiona Rowe, University of Liverpool, UK
- Greg Russel, EyeNuk inc., Cheshire, UK
- SJJ Solution, the Netherlands
- Einar Stefansson, EyeRisk, Reykjavik, Iceland
- Demetrios G. Vavvas, Harvard Medical School, Massachusetts Eye and Ear, Boston, USA



Funding

- South-Eastern Norway Regional Health Authority
- OUH and UiO
- The Norwegian Association of the Blind and Partially Sighted (NABP)
- Blindemissionen IL
- Jon S. Larsen Foundation

Scientific production of the research group in 2021

Peer reviewed original research articles: 7

Selected publications:

Eidet JR, Akopian M, Olstad OK, Jørstad ØK, Moe MC, Petrovski G, Pepaj M (2021)

“The acute phase response protein SERPINA3 is increased in tear fluid from the unaffected eyes of patients with unilateral acute anterior uveitis”

J Ophthalmic Inflamm Infect, 11 (1), 19

Husum YS, Moe MC, Bragadóttir R, Jørstad ØK (2021)

“Switching to aflibercept versus continuing bevacizumab for treatment-resistant neovascular age-related macular degeneration: a one-year comparative observational study”

Acta Ophthalmol, 99 (8), e1354-e1359

Jørstad ØK, Wigert AR, Marthinsen PB, Evang JA, Moe MC (2021)

“The Value of Macular Optical Coherence Tomography in Watchful Waiting of Suprasellar Masses: A 2-Year Observational Study”

J Neuroophthalmol, 41 (4), e516-e522



Anterior segment of the eye

Group Leader

Liv Drolsum, Professor, Department of Ophthalmology, UiO (l.k.drolsum@medisin.uio.no) / OUH (liv.drolsum@ous-hf.no)

Group Members

- Olav Kristianslund
- Ingvild Helle Medin
- Anne Kari Kvernebo
- Gunhild Falleth Sandvik
- Marius Dalby
- Mari Sand
- Marit Sæthre
- Turid Skei Tønset
- Andreas Thorsrud
- Atle Østern
- Ingeborg Slørdahl Hjort Kure
- Safia Esmail Hassaf
- Mia Karabeg
- Marianne Råen
- Marthe Velle-Skretteberg
- Anders Djupesland Bøhler
- Symira Cholidis
- Hanne Hvatum Sweeney
- Jon Petter Daling

Research profile and aims

We aim to contribute with increased knowledge within the field of ophthalmology. Our research projects include glaucoma and diseases and conditions related to the cornea and the lens. We specifically aim to improve treatment in the anterior segment of the eye, based on our clinical research.

Ongoing projects

- Evaluation of patients with late in-the-bag IOL dislocation. Randomized clinical trial comparing patients suffering from late in-the-bag IOL dislocation having surgery either with repositioning of the dislocated lens by suturing it to the scleral wall, or replacing it for a new artificial lens. 2 PhD projects: PhD candidate Ingeborg Kure and PhD candidate Helle Medin. Supervisors: Liv Drolsum, Olav Kristianslund, Marius Dalby, Atle Østern

- Eye manifestations in patients with Marfan syndrome. Collaboration with regional network for heritable connective tissue diseases (OUH): Department of Medical genetics, Physical Medicine and Habilitation, Thoracic and Cardiovascular surgery, Radiology and Nuclear Medicine, Dermatology and Orthopedic surgery. TRS Resource Centre for Rare Disorders). PhD project Gunhild Sandvik. Supervisors: Liv Drolsum, Olav Kristianslund, Svend Rand-Hendriksen
- Corneal collagen crosslinking (CXL) in keratoconus. Prospective studies in CXL treatment comparing different treatment modalities. PhD project Anne Marie Hagem. Supervisors: Liv Drolsum, Andreas Thorsrud. Keratoconus epidemiology and risk factors and register studies: Liv Drolsum, Andreas Thorsrud, Olav Kristianslund, Atle Østern
- Conjunctival microcirculation for assessment of systemic and local eye circulatory failure. Project group: AM Kvernebo PhD student, Professor K Kvernebo, Department of Thoracic and Cardiovascular surgery (group leader), supervisors: Knut Kvernebo, Liv Drolsum, Morten Carstens Moe
- Cataract surgery with implantation of an IOL in children under the age of 12 weeks. PhD project Mari Sand. Supervisors: Liv Drolsum, Olav Kristianslund, Symira Cholidis
- Optimizing vision after corneal transplantation. Randomized prospective study comparing two different treatment modalities after corneal endothelial transplantation. PhD project Marthe Velle-Skretteberg. Supervisors: Olav Kristianslund, Liv Drolsum, Gunhild Sandvik
- Glaucoma surgery and minimally invasive glaucoma shunts (MIGS). Register based studies. PhD project Anders Bøhler. Supervisors: Olav Kristianslund, Turid Skei-Tønset, Anne Marie Hagem, Liv Drolsum

Most important national and international collaborators

National

- TRS Resource Centre for Rare Disorders, Sunnaas, Svend Rand-Hendriksen
- Dept. of Medical genetics, OUH, Benedicte Paus
- Dept. of Thoracic and Cardiovascular surgery, Knut Kvernebo

International

- Dept. of Ophthalmology, Lucerne, Switzerland, Michael Thiel, Frantisek Sanak

Funding

- The Norwegian Association of the Blind and Partially Sighted (NABP)
- South-Eastern Norway Regional Health Authority
- Jon S. Larsen Foundation
- The Glaucoma Research Foundation of the Norwegian Association of Ophthalmology
- Arthur and Odd Clausons Foundation



Scientific production of the research group in 2021

Peer reviewed original research articles: 15

Selected publications:

“Pupillary response in adults with Marfan syndrome and its effect on straylight”

Sandvik GF, Rand-Hendriksen S, Drolsum L, Kristianslund O.

Acta Ophthalmol. 2021 Dec 10. doi: 10.1111/aos.15079. Online ahead of print.PMID: 34890490

“Circumferential (360°) trabeculotomy in primary congenital glaucoma: 19-245 months of follow-up”

Tønset TS, Jakobsen JE, Tveit JH, Jørstad AL, Brevik TB, Sten LB, Drolsum L.

Acta Ophthalmol. 2021 Dec;99(8):e1449-e1457. doi: 10.1111/aos.14846. Epub 2021 Mar 19.PMID: 33742566

“Ocular surface microcirculation is better preserved with pulsatile versus continuous flow during cardiopulmonary bypass-An experimental pilot”

Kvernebo AK, Miyamoto T, Drolsum L, Moe MC, Måsøy SE, Sunagawa G, Dessoffy R, Karimov JH, Fukamachi K, Kvernebo K.

Artif Organs. 2021 Dec 6. doi: 10.1111/aor.14137



Unit for research-driven innovation



Group Leader

Tor Paaske Utheim, Professor, Institute of Oral Biology, Faculty of Dentistry,
University of Oslo (t.p.utheim@odont.uio.no)

Group Members

- Sjur Reppe
- Morten Magnø
- Anis Yazidi
- Amer Sehic
- Farrukh Chaudhry
- Øygunn Aass Utheim
- Catherine Jackson
- Erlend Sommer Landsend
- Kim Alexander Tønseth
- Morten Carstens Moe
- Pål Galteland
- Linda Hildegard Bergersen
- Janicke Liaaen Jensen
- Haakon Ringstad
- Markus Vicente Tørud Olsen
- Anne Victoria Lyngstadass
- Ketil Fjærvoll
- Haakon Fjærvoll
- Mads Istre
- Mathias Kaurstad
- Hamida Achour
- Nora Botten
- Markus Vicente Olsen
- Adil Yasin
- Jiaxin Xiao
- Marie Beining
- Behzod Tashbayev
- Fredrik Fineide
- Emily Moschowits
- Long Ngyuen

Research profile and aims

The group has a particular focus on artificial intelligence, clinical studies with extensive biochemical analyses from tears, saliva and blood, ophthalmology, innovation and interdisciplinary collaboration.

Ongoing projects

Main project:

- **Establishment of The Norwegian Innovation Consortium for Advanced Tear Film Analyses - NICATA** for developing improved tear substitutes for treating dry eye disease Biochemical analyses and artificial intelligence will be key to ensure successful completion of the project. NICATA will be working closely with pharmaceutical companies in the years to come to bring new technology to the market.

Other projects:

- Improvements in diagnostics and treatment of dry eye in collaboration with public hospitals and The Norwegian Dry Eye Clinic (Tørreøyneklinikken; torreoyneklinikken.no)
- Biochemical analyses of tears, saliva and blood using various technologies, including metabolomics, lipidomics and proteomics
- Electrostimulation in treating certain eye diseases (several projects, including rodent models, at Harvard Medical School)
- Bike injuries (led by Pål Galteland/Jon Ramm-Pettersen)

PhD projects

- Various projects related to dry eye and dry mouth
- Non-invasive electrostimulation as a novel treatment approach for treating retinal diseases
- Bike injuries

Selected international collaborators

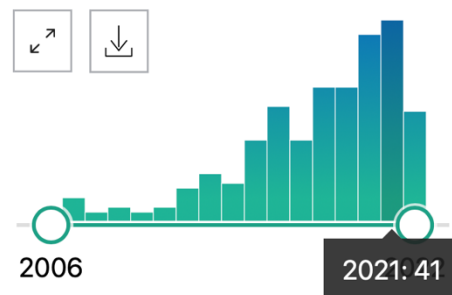
- Darlene A Dartt, Schepens Eye Research Institute/Massachusetts Eye and Ear, Dept. of Ophthalmology, Harvard Medical School, US
- Dong Feng Chen, Schepens Eye Research Institute/Massachusetts Eye and Ear, Dept. of Ophthalmology, Harvard Medical School, US
- Neil Lagali, Dept. of Clinical and Experimental Medicine, Linköping University, Sweden
- Kai Kaarniranta, Dept. of Ophthalmology, Institute of Clinical Medicine, University of Eastern Finland; Dept. of Ophthalmology, Kuopio University Hospital, Kuopio, Finland
- Jelle Vehof, Dept. of Ophthalmology, University of Groningen, University Medical Center Groningen, the Netherlands
- Chris Hammond, Dept. of Ophthalmology, King's College, London, UK
- Pirro Hysj, Dept. of Ophthalmology, King's College, London, UK

Scientific production of the research group in 2021

Research articles in PubMed:

MY NCBI FILTERS 

RESULTS BY YEAR



Selected publication:

“TheraPearl Eye Mask and Blephasteam for the treatment of meibomian gland dysfunction: a randomized, comparative clinical trial”

Olafsson J, Lai X, Landsend ECS, Olafsson S, Parissi E, Utheim ØA, Raeder S, Badian RA, Lagali N, Dartt DA, Utheim TP.

Sci Rep. 2021 Nov 17;11(1):22386.

Funding

- The National Research Council
- SimulaMet/OsloMet
- Private donations, including several PhD students and MNOK 5 to purchase new mass spectrometer
- The Southern Eastern Regional Health Authority
- Faculty of Dentistry, University of Oslo
- Aniridia Norway
- Dr. Jon S. Larsen’s Foundation
- Inger Holm’s Memorial Foundation
- The Norwegian Association of the Blind and Partially Sighted
- The Norwegian Ophthalmological Society
- Oslo University Hospital



Publication list HHA research groups 2021 (original articles or review articles)

Andersson H, **Jablonski GE**, Nordahl SHG, Nordfalk K, Helseth E, Martens C, Røysland K, Goplen FK (2021)

The Risk of Benign Paroxysmal Positional Vertigo After Head Trauma

Laryngoscope, 132 (2), 443-448

DOI [10.1002/lary.29851](https://doi.org/10.1002/lary.29851), PubMed [34487348](https://pubmed.ncbi.nlm.nih.gov/34487348/)

Andréasson M, Lagali N, Badian RA, **Utheim TP**, Scarpa F, Colonna A, Allgeier S, Bartschat A, Köhler B, Mikut R, Reichert KM, Solders G, Samuelsson K, Zetterberg H, Blennow K, Svenningsson P (2021)

Parkinson's disease with restless legs syndrome-an in vivo corneal confocal microscopy study

NPJ Parkinsons Dis, 7 (1), 4

DOI [10.1038/s41531-020-00148-5](https://doi.org/10.1038/s41531-020-00148-5), PubMed [33402694](https://pubmed.ncbi.nlm.nih.gov/33402694/)

Anisimova N, Arbisser L, Tzamalīs A, Petrovski BÉ, Shilova N, **Petrovski G**, Anisimov S, Malyugin B (2021)

Corectopia grading: A novel classification system

Semin Ophthalmol, 37 (1), 105-110

DOI [10.1080/08820538.2021.1926517](https://doi.org/10.1080/08820538.2021.1926517), PubMed [34057013](https://pubmed.ncbi.nlm.nih.gov/34057013/)

Badian RA, Andréasson M, Svenningsson P, **Utheim TP**, Lagali N (2021)

The pattern of the inferocentral whorl region of the corneal subbasal nerve plexus is altered with age

Ocul Surf, 22, 204-212

DOI [10.1016/j.jtos.2021.08.015](https://doi.org/10.1016/j.jtos.2021.08.015), PubMed [34450219](https://pubmed.ncbi.nlm.nih.gov/34450219/)

Badian RA, **Utheim TP**, Chen X, **Utheim ØA**, Ræder S, Ystenæs AE, Aakre BM, Sundling V (2021)

Meibomian gland dysfunction is highly prevalent among first-time visitors at a Norwegian dry eye specialist clinic

Sci Rep, 11 (1), 23412

DOI [10.1038/s41598-021-02738-6](https://doi.org/10.1038/s41598-021-02738-6), PubMed [34862425](https://pubmed.ncbi.nlm.nih.gov/34862425/)

Canonica GW, Klimek L, Acaster S, **Dollner R**, Kaulsay R, Lo SH, Price DB, Scadding GK, Valovirta E, Ziegelmayer P (2021)

Burden of allergic rhinitis and impact of MP-AzeFlu from the patient perspective: pan European patient survey

Curr Med Res Opin, 37 (7), 1259-1272

DOI [10.1080/03007995.2021.1911973](https://doi.org/10.1080/03007995.2021.1911973), PubMed [33840316](https://pubmed.ncbi.nlm.nih.gov/33840316/)

Chen X, Badian RA, Hynne H, Amdal CD, Herlofson BB, **Utheim ØA**, Westgaard KL, Fineide F, Jensen JL, **Utheim TP** (2021)

Alterations in meibomian glands in patients treated with intensity-modulated radiotherapy for head and neck cancer

Sci Rep, 11 (1), 22419

DOI [10.1038/s41598-021-01844-9](https://doi.org/10.1038/s41598-021-01844-9), PubMed [34789830](https://pubmed.ncbi.nlm.nih.gov/34789830/)

Christopoulos PF, **Gjølberg TT**, Krüger S, Haraldsen G, Andersen JT, Sundlisæter E (2021)

Targeting the Notch Signaling Pathway in Chronic Inflammatory Diseases

Front Immunol, 12, 668207

DOI [10.3389/fimmu.2021.668207](https://doi.org/10.3389/fimmu.2021.668207), PubMed [33912195](https://pubmed.ncbi.nlm.nih.gov/33912195/)



Dalby M, Drolsum L, Kristianslund O (2021)

Repositioning surgery of different intraocular lens designs in eyes with late in-the-bag intraocular lens dislocation

J Cataract Refract Surg, 47 (9), 1147-1152

DOI [10.1097/j.jcrs.0000000000000588](https://doi.org/10.1097/j.jcrs.0000000000000588), PubMed [33754659](https://pubmed.ncbi.nlm.nih.gov/33754659/)

Drolsum L, Kristianslund O (2021)

Implantation of retropupillary iris-claw lenses: A review on surgical management and outcomes

Acta Ophthalmol, 99 (8), 826-836

DOI [10.1111/aos.14824](https://doi.org/10.1111/aos.14824), PubMed [33683012](https://pubmed.ncbi.nlm.nih.gov/33683012/)

Døving M, Anandan S, Rogne KG, Utheim TP, Brunborg C, Galteland P, Sunde K (2021)

Cost Analysis of Open Surgical Bedside Tracheostomy in Intensive Care Unit Patients

Ear Nose Throat J, 01455613211018578

DOI [10.1177/01455613211018578](https://doi.org/10.1177/01455613211018578), PubMed [34006128](https://pubmed.ncbi.nlm.nih.gov/34006128/)

Ehrenstein V, Heide-Jørgensen U, Schiødt M, Akre O, **Herlofson BB**, Hansen S, Larsson Wexell C, Nørholt SE, Tretli S, Kjellman A, Glennane A, Lowe KA, Sørensen HT (2021)

Osteonecrosis of the jaw among patients with cancer treated with denosumab or zoledronic acid: Results of a regulator-mandated cohort postauthorization safety study in Denmark, Norway, and Sweden

Cancer, 127 (21), 4050-4058

DOI [10.1002/cncr.33802](https://doi.org/10.1002/cncr.33802), PubMed [34310704](https://pubmed.ncbi.nlm.nih.gov/34310704/)

Eidet JR, Akopian M, Olstad OK, Jørstad ØK, Moe MC, Petrovski G, Pepaj M (2021)

The acute phase response protein SERPINA3 is increased in tear fluid from the unaffected eyes of patients with unilateral acute anterior uveitis

J Ophthalmic Inflamm Infect, 11 (1), 19

DOI [10.1186/s12348-021-00249-z](https://doi.org/10.1186/s12348-021-00249-z), PubMed [34212267](https://pubmed.ncbi.nlm.nih.gov/34212267/)

Eszes DJ, Szabó DJ, Russell G, Lengyel C, Várkonyi T, Paulik E, Nagymajtényi L, Facskó A, **Petrovski G, Petrovski BÉ** (2021)

Diabetic Retinopathy Screening in Patients with Diabetes Using a Handheld Fundus Camera: The Experience from the South-Eastern Region in Hungary

J Diabetes Res, 2021, 6646645

DOI [10.1155/2021/6646645](https://doi.org/10.1155/2021/6646645), PubMed [33628836](https://pubmed.ncbi.nlm.nih.gov/33628836/)

Fineide F, Chen X, Bjellaas T, Vitelli V, Utheim TP, Jensen JL, Galtung HK (2021)

Characterization of Lipids in Saliva, Tears and Minor Salivary Glands of Sjögren's Syndrome Patients Using an HPLC/MS-Based Approach

Int J Mol Sci, 22 (16)

DOI [10.3390/ijms22168997](https://doi.org/10.3390/ijms22168997), PubMed [34445702](https://pubmed.ncbi.nlm.nih.gov/34445702/)

Fjaervoll H, Fjaervoll K, Magno M, Moschowits E, Vehof J, Dartt DA, Utheim TP (2021)

The association between visual display terminal use and dry eye: a review

Acta Ophthalmol, 100 (4), 357-375

DOI [10.1111/aos.15049](https://doi.org/10.1111/aos.15049), PubMed [34697901](https://pubmed.ncbi.nlm.nih.gov/34697901/)

Frich L, Hermann R, Berentzen Å, Ryder T (2021)

Randomized Study of Wound Drainage on Early Complications After Lymph Node Dissection for Melanoma

J Surg Res, 267, 467-476

DOI [10.1016/j.jss.2021.05.005](https://doi.org/10.1016/j.jss.2021.05.005), PubMed [34245960](https://pubmed.ncbi.nlm.nih.gov/34245960/)



Giunta RE, Hansson E, Andresen C, Athanasopoulos E, Benedetto GD, Celebic AB, Caulfield R, Costa H, Demirdöver C, Georgescu A, Hemelryck TV, Henley M, Kappos EA, Karabeg R, Karhunen-Enckell U, **Korvald C**, Mortillet S, Murray DJ, Palenčár D, Piatkowski A, Pompeo FSD, Psaras G, Rakhorst H, Rogelj K, Rosenkrantz Hölmich L et al. (2021)

ESPRAS Survey on Breast Reconstruction in Europe

Handchir Mikrochir Plast Chir, 53 (4), 340-348

DOI [10.1055/a-1424-1428](https://doi.org/10.1055/a-1424-1428), PubMed [33784792](https://pubmed.ncbi.nlm.nih.gov/33784792/)

Gullestad HP, Ryder T, Goscinski M (2021)

Survival after lymphadenectomy of nodal metastases from melanoma of unknown primary site

J Plast Surg Hand Surg

DOI [10.1080/2000656X.2021.2010739](https://doi.org/10.1080/2000656X.2021.2010739), PubMed [34878354](https://pubmed.ncbi.nlm.nih.gov/34878354/)

Gulseth E, Urdal A, Andersen MH, Diseth T, Aksnes G, Emblem R, Wæhre A (2021)

High satisfaction on genital self-perception and sexual function in healthy Norwegian male adolescents

J Pediatr Urol, 17 (4), 555.e1-555.e8

DOI [10.1016/j.jpurol.2021.02.015](https://doi.org/10.1016/j.jpurol.2021.02.015), PubMed [33750647](https://pubmed.ncbi.nlm.nih.gov/33750647/)

Hamdani EH, Popek M, Frontczak-Baniewicz M, **Utheim TP**, Albrecht J, Zielińska M, **Chaudhry FA** (2021)

Perturbation of astroglial Slc38 glutamine transporters by NH₄⁺ contributes to neurophysiologic manifestations in acute liver failure

FASEB J, 35 (7), e21588

DOI [10.1096/fj.202001712RR](https://doi.org/10.1096/fj.202001712RR), PubMed [34169573](https://pubmed.ncbi.nlm.nih.gov/34169573/)

Haukedal CL, **Wie OB**, Schaubert SK, Lyxell B, Fitzpatrick EM, von Koss Torkildsen J (2021)

Social communication and quality of life in children using hearing aids

Int J Pediatr Otorhinolaryngol, 152, 111000

DOI [10.1016/j.ijporl.2021.111000](https://doi.org/10.1016/j.ijporl.2021.111000), PubMed [34883326](https://pubmed.ncbi.nlm.nih.gov/34883326/)

Hedengran A, Begun X, Müllertz O, Mouhammad Z, Vohra R, Bair J, Dartt DA, Cvenkel B, Heegaard S, **Petrovski G**, Kolko M (2021)

Benzalkonium Chloride-Preserved Anti-Glaucomatous Eye Drops and Their Effect on Human Conjunctival Goblet Cells in vitro

Biomed Hub, 6 (2), 69-75

DOI [10.1159/000517845](https://doi.org/10.1159/000517845), PubMed [34616748](https://pubmed.ncbi.nlm.nih.gov/34616748/)

Hikage F, Lennikov A, Mukwaya A, Lachota M, Ida Y, **Utheim TP**, Chen DF, Huang H, Ohguro H (2021)

NF-κB activation in retinal microglia is involved in the inflammatory and neovascularization signaling in laser-induced choroidal neovascularization in mice

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