




UNIKLINIK
KÖLN



Department of
Ophthalmology -
Performance Report
2008-2018

Department of Ophthalmology at the University Hospital Cologne

The Department of Ophthalmology at the University Hospital of Cologne is one of the largest in Europe. A team of over 40 physicians and over 20 scientists at the Department of Ophthalmology annually is treating about 7.000 in patients and 50.000 ambulatory patients in all subspecialties of ophthalmology. Thanks to our subspecialization, we work in many areas on a national and international top level. For our patients from Cologne, the Rhineland, Germany, Europe and the whole world, we offer the most advanced diagnostic methods and treatment options for a human and scientifically-based medicine 365 days a year and around the clock. As a sign of our high-level subspecialization, we are the University Ophthalmology Department in Germany with the highest number of top doctors listed on the FOCUS top physician list. As the only German university ophthalmology department, the Cologne Department of Ophthalmology has its own research group of the German Research Foundation (DFG). This group is developing new therapeutic approaches for ocular inflammatory diseases that can not yet be treated (www.for2240.de).

We are proud to announce the foundation of the Department of Ophthalmology at the University of Cologne in 1919 and the 100-year anniversary of its foundation. We look back on a history of successful university medicine in health care, teaching and research and look forward to shape the way into the future.

In the name of the whole team



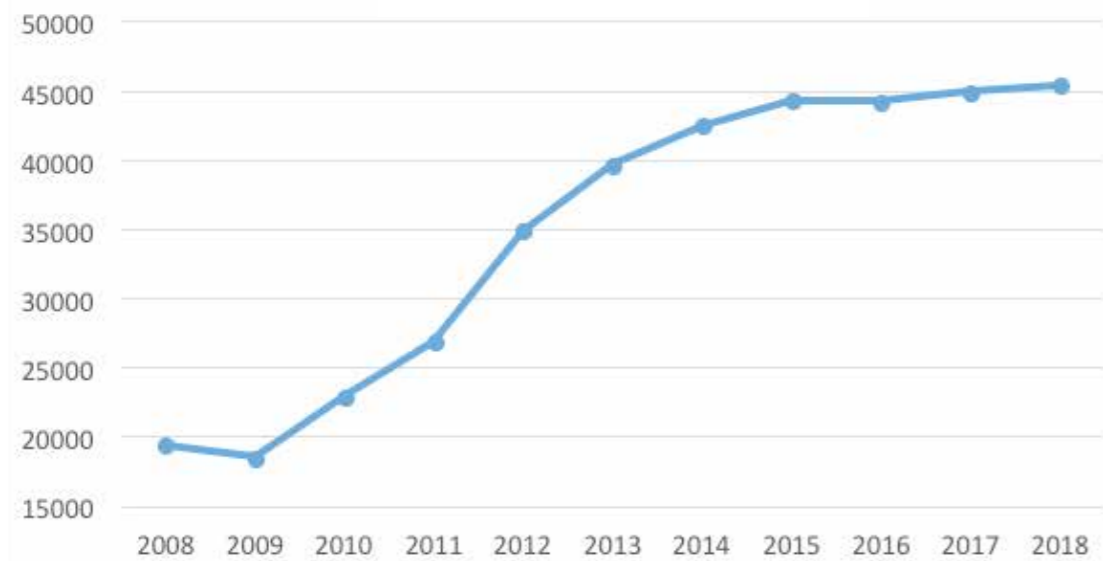
Prof. Dr. Claus Cursiefen
Chairman and Professor
Dept. of Ophthalmology
University of Cologne



Outpatient care and in patient case numbers

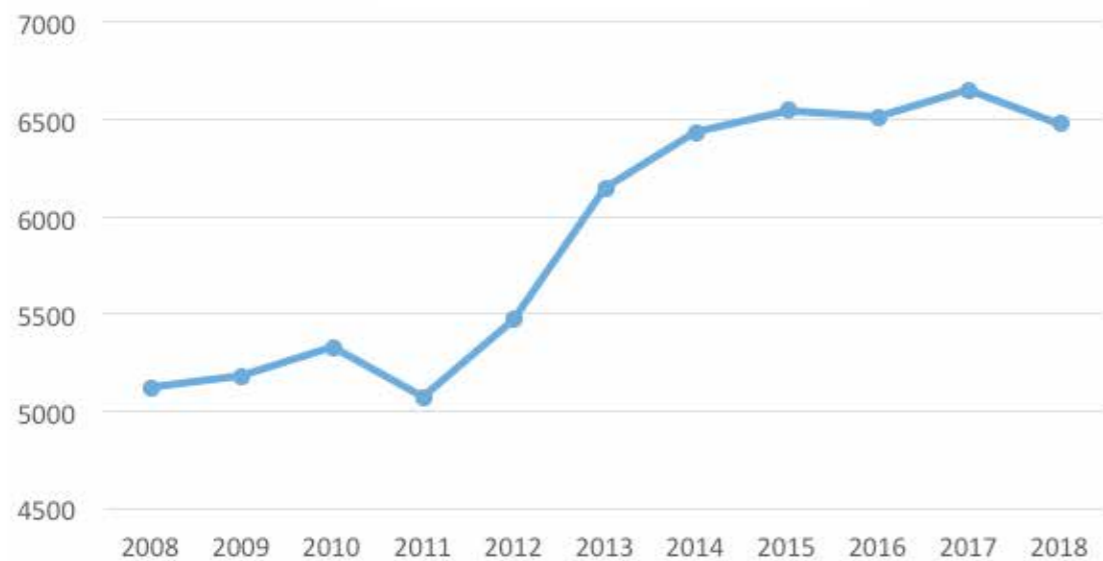
Over the last 100 years, the Department of Ophthalmology at the University Hospital of Cologne has expanded its range of medical services to include the most advanced treatment methods. In the outpatient special consultation hours and in the inpatient areas, ophthalmological diseases of all kinds are treated today at the highest medical level conservatively and surgically.

Outpatient case numbers



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
19405	18476	22906	26912	34862	39655	42548	44355	44253	44930	45399

Inpatient case numbers



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
5124	5184	5328	5068	5473	6150	6438	6551	6518	6658	6483

Development of surgical volume

The Department of Ophthalmology at Cologne University Hospital offers in five highly modern operation rooms glaucoma surgery, cataract and corneal surgery, treatment for diseases of the eyelid, orbita and tear ducts, retinal diseases as well as strabologic and neuroophthalmological diseases. In the field of corneal transplants we are using the newest methods of lamellar minimally invasive corneal transplantation (DMEK, DSAEK, DALK).

Development of surgical volume



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
10066	9895	11993	12107	12439	12982	13896	17004	17837	18363	19415

Overview of outpatient and inpatient surgeries 2018

	2018
Corneal transplantation	835
Operations on the eye muscles	1534
Operations on eyelid, lacrimal gland, tear duct, orbita	1511
Operations on the cornea and conjunctiva	884
Operations on iris, corpus ciliare, anterior eye chamber and sclera	2524
Operations on the lens	2227
Operations on retina choroid and vitreous, incl. retinal laser	3,520
Intravitreal medication injection into the vitreous body	6380
Total	19415

New femtosecond laser

Since 2018, the Department of Ophthalmology at Cologne University Hospital uses a femtosecond laser for corneal refractive surgery, corneal transplantation, intracorneal ring segment implantation in patients with corneal ectatic diseases as well as for Femtolaser-assisted cataract surgery.

The Centre for Ophthalmology at Cologne University Hospital was able to use the laser for the world's first Deep Anterior Lamellar Keratoplasty (DALK) with a "liquid interface". This ensures that the cornea during the laser procedure - in contrast to the other available laser models - is not applanated. This is essential to avoid trephination-related astigmatism after DALK.

In addition to corneal surgery, the Department of Ophthalmology also successfully uses the laser for femtosecond laser-assisted cataract surgery (FLACS). Appointments for patients who would benefit from FLACS (e.g. if the corneal endothelium is compromised) can be made via Mrs. Wirtz (0221 478-3425).

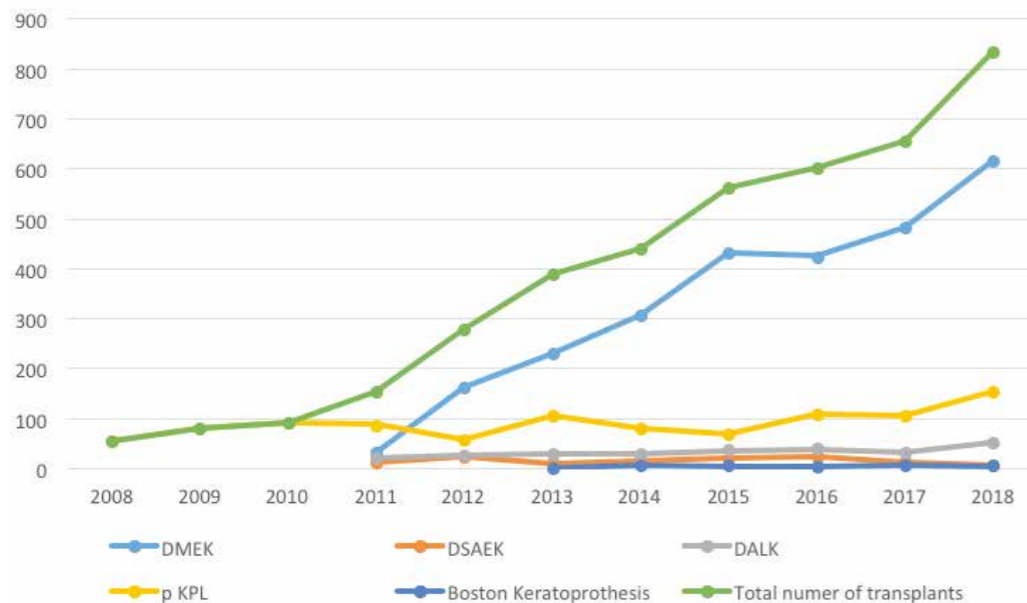


Reference: Ziemer

Corneal Transplantation

The Department of Ophthalmology at the Cologne University Hospital has its own eye bank. Headed by Priv.-Doz. Dr. Sigrid Roters where the donated corneas are examined and prepared under strict guidelines. With over 800 corneal transplants per year, experienced surgeons and corneal specialists Prof. Dr. Claus Cursiefen, director of the clinic, and Prof. Dr. Björn Bachmann, senior physician at the Department of Ophthalmology at the University Hospital of Cologne, perform approximately 10% of all corneal transplantations in Germany. More informations at www.dmek.de

Corneal Transplantation

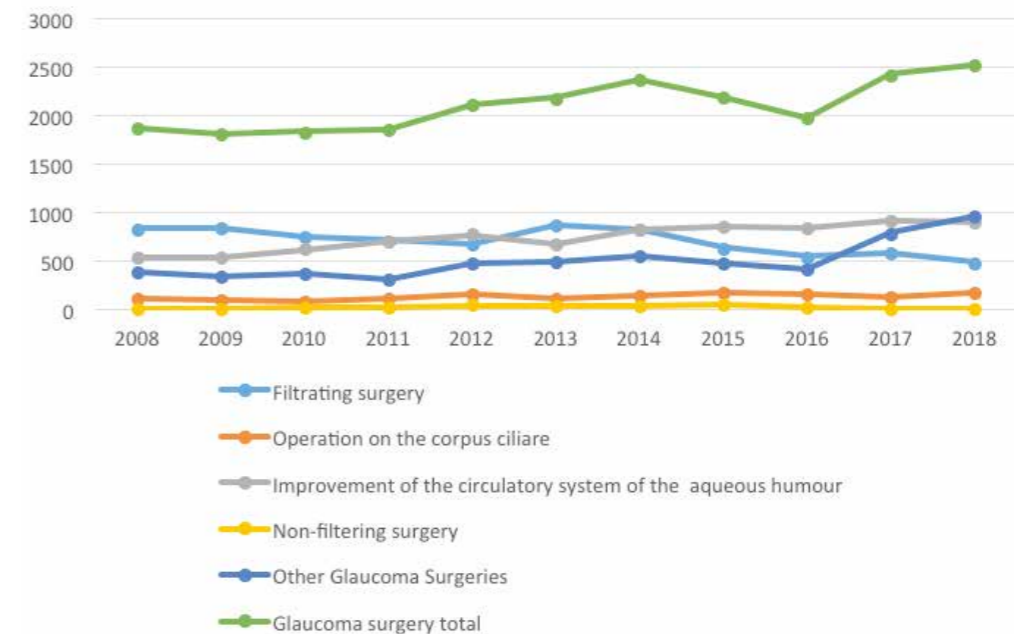


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
DMEK				33	163	231	306	431	425	482	616
DSAEK				13	25	12	17	21	24	14	7
DALK				20	28	30	30	37	40	32	53
p KPL	54	80	92	87	58	106	80	69	109	106	153
Boston Kerato prosthesis						2	8	6	5	8	6
Total number of transplants	54	80	92	155	280	389	442	564	603	656	835

Glaucoma Surgeries

Another focus area is the therapy of glaucoma: The Department of Ophthalmology at the University Hospital of Cologne offers a comprehensive diagnostic assessment using cutting-edge equipment. This is applied at initial presentations as well as annual check-ups in order to detect any progression of glaucoma. The 24-hour measurements of the intraocular pressure help decide on further therapy. Under the lead of Prof. Dr. Thomas Dietlein, the most recent micro-surgical methods are applied in addition to long-established surgical procedures.

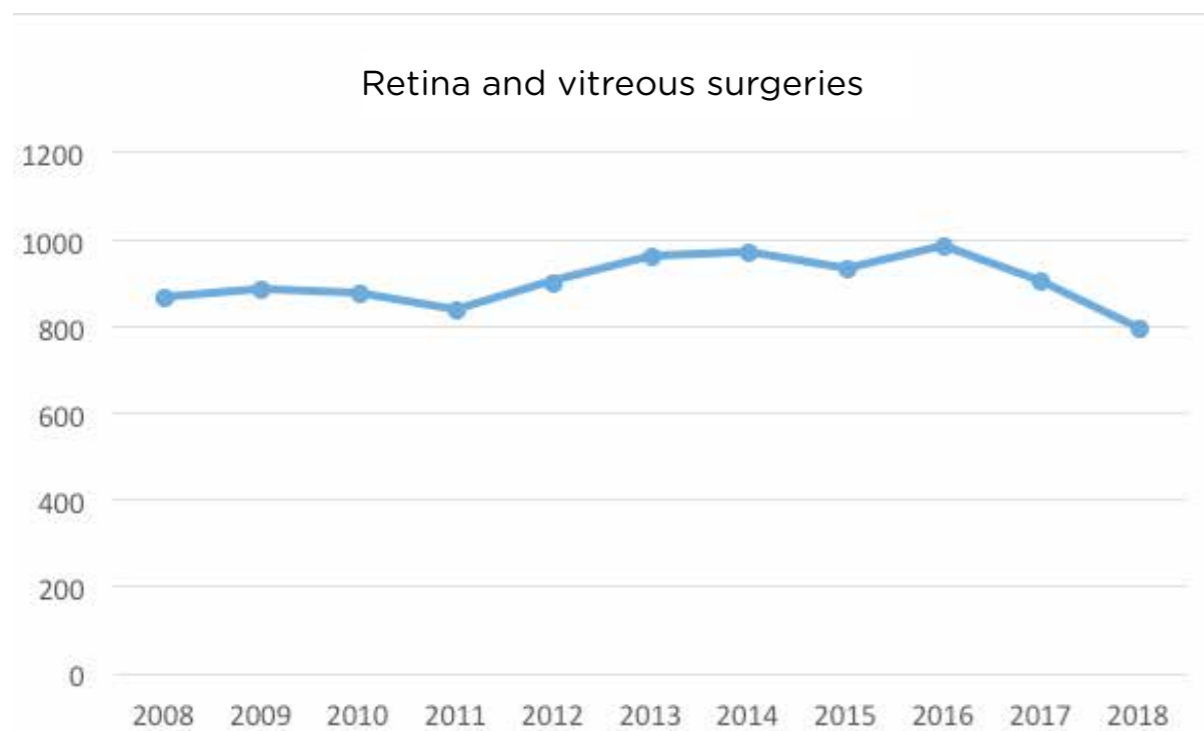
Glaucoma Surgeries



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Filtrating surgery	831	841	750	711	671	866	821	631	540	580	480
Operation on the corpus ciliare	115	99	83	115	154	114	143	166	154	128	171
Improvement of the circulatory system of the aqueous humour	541	530	622	706	777	678	829	864	848	922	908
Non-filtering surgery		4	15	21	44	38	34	52	22	8	5
Other Glaucoma Surgeries	388	338	363	302	473	489	546	480	412	788	960
Glaucoma surgery total	1875	1812	1833	1855	2119	2185	2373	2193	1976	2426	2524

Retina and vitreous surgeries

Under the interim direction of Dr. Claudia Dahlke, the Department of Ophthalmology at the University Hospital of Cologne offers a wide range of retinal and vitreous surgeries for complicated retinal diseases: In addition to plumbing surgery, gas and silicone oil tamponades, laser and cryo treatments, all vitrectomy procedures are used.



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
869	886	877	839	903	961	973	936	986	907	797

Ophthalmic Oncology and Ophthalmic Plastics

In the fields of Ophthalmic Oncology and Ophthalmic Plastics, all forms of benign and malignant tumors of the eyelids, eye socket, conjunctiva, iris, the choroid and the ciliary body are treated under the direction of Prof. Dr. Ludwig Heindl. In close cooperation with the Center for Integrated Oncology (CIO), patients take benefit from interdisciplinary care. Furthermore, diseases of the eyelids, tear ducts and eye socket, as well as eyelid malpositions are treated.

Ophthalmic Oncology and Ophthalmic Plastics



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1025	1050	1037	777	969	1078	1055	1168	1257	1223	1511

Stereotactic Radiotherapy of Choroidal and Ciliary Body Melanomas with CyberKnife

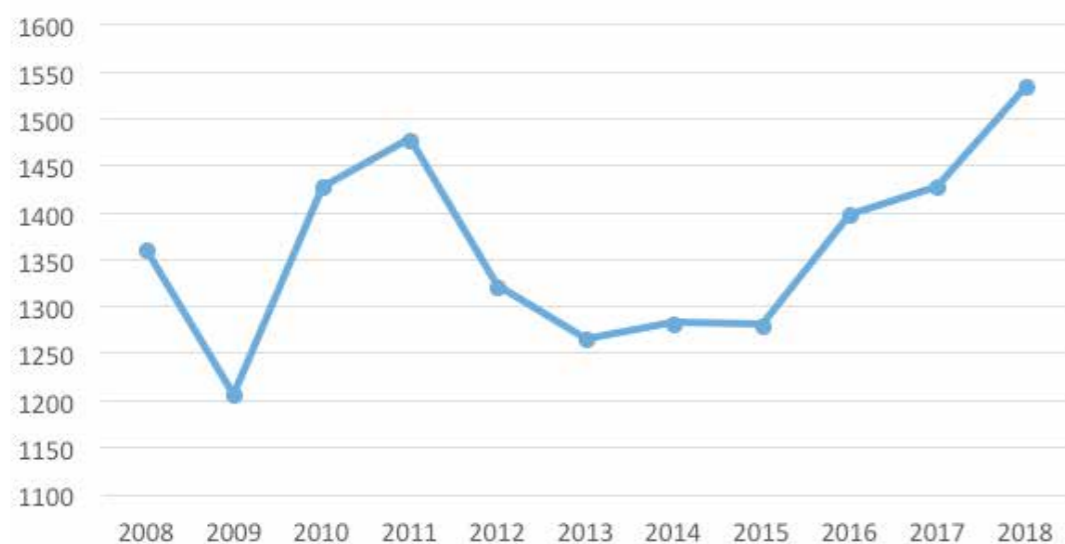
Since the beginning of 2016, we have been able to provide patients with choroidal and ciliary body melanomas radiation therapy by Cyberknife. The Cyberknife is a modern linear accelerator (LINAC) mounted on an industrial robot. This technology allows irradiating the tumor tissue from many hundreds of different radiation directions, while protecting the neighboring radiation-sensitive structures such as the optic nerve, the macula and the lacrimal gland to the widest possible extent. In contrast to the longer established alternative methods, operations to temporarily fix a radiation carrier (brachytherapy with ruthenium applicators) or tantalum markers (prior to teletherapy with proton beam) are not necessary. The irradiation takes place in an ambulatory setting. The application of the irradiation just requires a retrobulbar anesthesia.

In total, 31 patients have been irradiated since the introduction of the procedure in Cologne. With very good rates of primary tumor control of more than 90% and an eye retention in more than 90% of cases, our data correspond with the results of the largest patient collective treated with Cyberknife at the University Eye Clinic of the LMU Munich.

Strabology and Neuro-Ophthalmology

The treatment of strabologic and neuro-ophthalmologic diseases takes place under the direction of Prof. Dr. Antje Neugebauer and Dr. Fricke. In addition to congenital and acquired forms of strabism, complex neuro-ophthalmological clinical syndromes are diagnosed and treated. Patients with amblyopia, disorders of eye movements and eye trembling etc. receive their treatments supported by the orthoptists and the students of the Orthoptics Vocational School.

Operations on the eye muscles



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1360	1206	1427	1478	1322	1265	1282	1280	1398	1427	1534

Department of Ophthalmology – Key Figures 2018

Number of beds	70	Number of operations	19.415	Ophthalmologists	44
Wards	4	Number of operating rooms	5	Of which Consultant Specialists	
Number of inpatients	6.483	Outpatients	45.399	Surgeons	15
Utilization rate	> 80 %	Ambulances / Private Outpatient			
Average length of stay (days)	3	Consultation	20		

Research and Science

Since 2015, the Department of Ophthalmology at the University Hospital of Cologne has been the only University Eye Hospital in Germany with an own research group ("FOR 2240") of the German Research Foundation DFG (Speaker Prof. Dr. Cursiefen, Vice-Speaker: Prof. Dr. Thomas Langmann). The DFG Funding has been extended in 2018 for a further three years period. More information can be found at: www.for2240.de. This continued support will allow further research into new treatment options for blinding inflammatory diseases of the eye.

Various ophthalmologic "common diseases" such as dry eye, allergic conjunctivitis and age-related macular degeneration, but also diseases such as rejection after corneal transplantation, uveitis and eye tumors can lead to misdirected inflammatory reactions (inflammation) and the formation of new blood vessels. Many of these diseases are age-associated and due to demographic change, they will be more frequent in the next few years.

The DFG-funded research group on "Lymphangiogenesis and cellular immunity in inflammatory diseases of the eye" at the Department of Ophthalmology at the University Hospital of Cologne conducts fundamental scientific research to better understand the underlying causes of these inflammatory reactions and develop new therapeutic approaches. More information at: www.for2240.de; Contact: Prof. Dr. Claus Cursiefen (Claus.cursiefen@uk-koeln.de).



FOR2240

(LYMPH)ANGIOGENESIS AND CELLULAR IMMUNITY IN INFLAMMATORY DISEASES OF THE EYE

Clinical Studies

The Centre for Clinical Trials, under the direction of Prof. Dr. Philipp Steven, conducts clinical research in all fields of ophthalmology and phase I-IV clinical trials according to current ICH - GCP standards. This means that we can offer patients therapy procedures, which have not yet received approval as a medical standard.

By this new active substances, medical devices or therapeutic procedures are available in carefully controlled environments controlled by our highly trained team of doctors and study nurses.

Patients are currently treated with diagnoses of age-related macular degeneration, diabetic macular edema, retinal detachment, dry-eye disease, ocular GvHD, glaucoma, limbal stem cell deficiency, in condition after severe corneal injuries and with uveal melanoma. An updated list of studies is available on the homepage of the Department of Ophthalmology (<https://augenlinik.uk-koeln.de/forschung/klinische-studien/>).

In addition, the Ophthalmic Oncology Division is involved in 10 clinical Multicenter-Studies in the field of Oncology.

Division for Dry Eye and Ocular Graft-versus-Host Disease

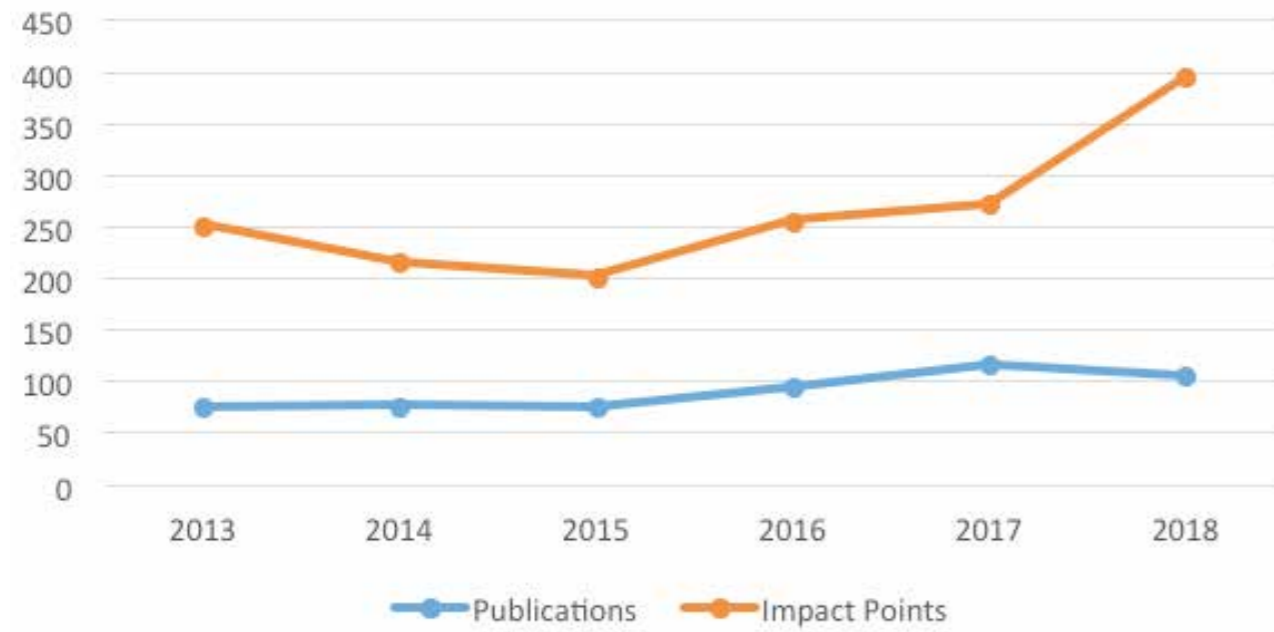
Emerging from the special dry eye consultation commencing in 2011 and the Competence Center for ocular GvHD founded in 2014, the Division for Dry Eye and ocular GvHD has been established in 2018 under the direction of Prof. Dr. Philipp Steven, thanks to generous donations from Novaliq GmbH, URSAPHARM Arzneimittel GmbH and Jürgen and Monika Ziehm.

We offer comprehensive and individual diagnostics and therapy including serum eye drops through interdisciplinary care of severely affected patients together with the Clinics for Dermatology, Internal Medicine (hematopoietic stem cell transplantation), the Pain Centre and the Institute for Transfusion Medicine. We are the only clinic worldwide with an ophthalmological examination unit on the transplantation ward for the examination of isolated blood cancer patients.

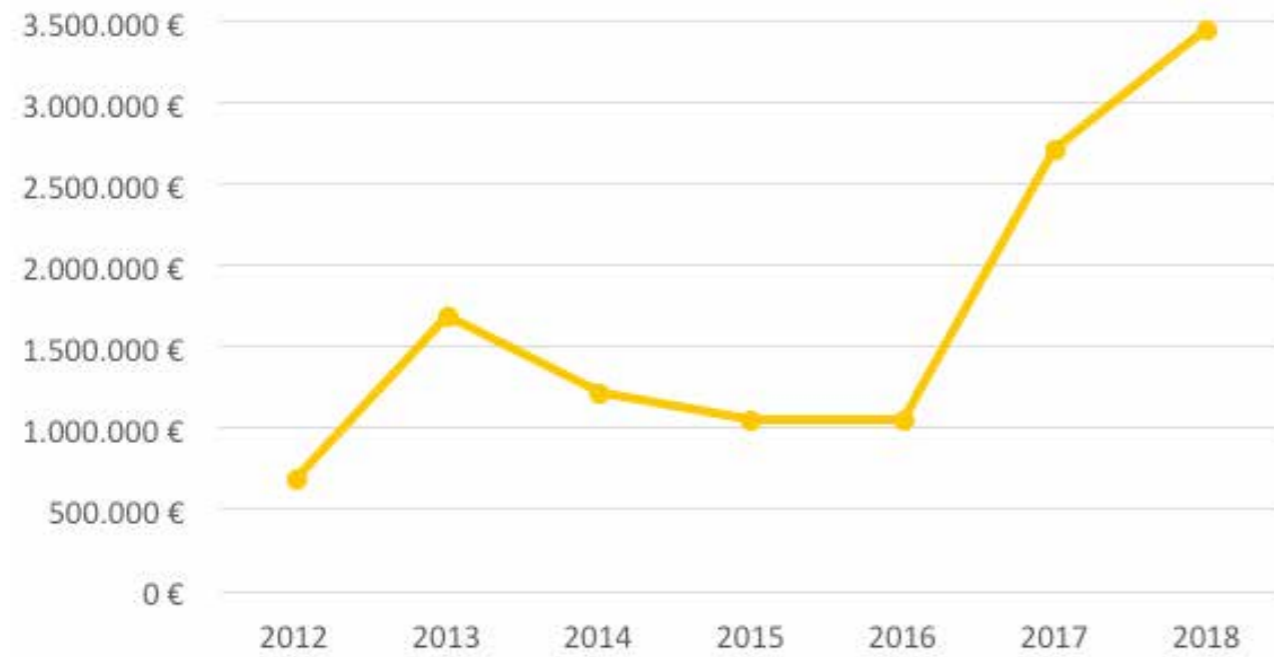
The division is significantly involved in the establishment of guidelines for ocular surface disease and in the training of residents and specialists. It's Ocular Surface Research Group focusses on the approval of new therapeutic and diagnostic procedures and is funded by industry, national and international sources. Dr. Michael E. Stern (USA) was appointed as visiting professor of the division and is actively involved in all teaching and research activities. A close cooperation exists with the Institute for Applied Ophthalmobiology, IOBA of the University of Valladolid, Spain.

The main clinical focus is on the treatment of about 1000 patients per year with severe dry eye and over 250 patients with ocular GvHD after hematopoietic stem cell transplantation. Our patients origin from all over Germany, neighboring Benelux countries, Middle East and the USA.

Publications and Impact Points

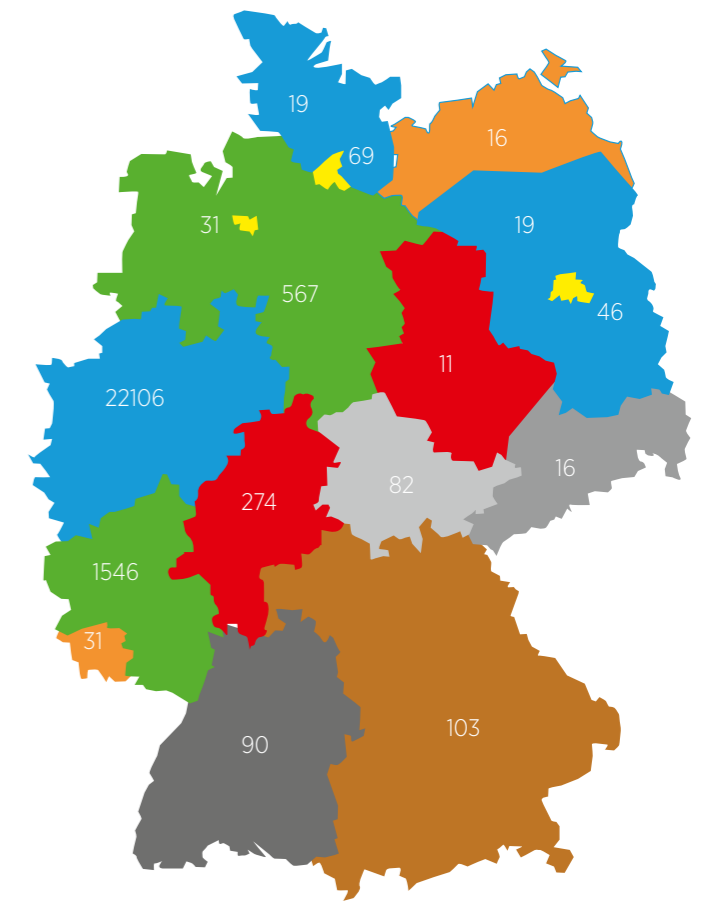


Third-party revenues (all project types)



Origin of national GKV patients by federal state (based on referring physicians)

State	Number of referrals
Nordrhein-Westfalen	22106
Rheinland-Pfalz	1546
Niedersachsen	567
Hessen	274
Bayern	103
Baden-Württemberg	90
Thüringen	82
Hamburg	69
Bremen	54
Berlin	46
Saarland	31
Schleswig-Holstein	31
Brandenburg	19
Sachsen	16
Mecklenburg-Vorpommern	16
Sachsen-Anhalt	11
International patients	223
Total	25284



Center for Pediatric Ophthalmology

Since January 2019, the new Center for Pediatric Ophthalmic Surgery has been offering special consultation hours for ophthalmological diseases in the child age. Specialists from the fields of ophthalmology, anesthesiology and pediatrics aim for the optimal conservative and operative care of children and adolescents. The mission of the interdisciplinary cooperation is a particularly safe and high-quality treatment and care of young patients. Special expertise in the anesthesiologic care of newborns, infants and babies makes the often-necessary general anesthesia even safer. Specialist expertise in pediatrics can also help in questions of systemic therapy and in the context of syndromic diseases. Contact person: : PD Dr. med. Lappa. More information at: <https://augenlinik.uk-koeln.de/zentrum/zentrum-fuer-paediatrischeaugenchirurgie>.

Quality alliance

As a regional quality alliance, the "Qualitätsverbund Augenheilkunde Köln/ Rheinland/ Plus- Universitäres Qualitätsnetzwerk" has initiated the discussion for an optimization of processes for the close collaborative care for joint patients between private practice and the Eye Hospital during a meeting back in September 2018.

The Quality Alliance is a network in which the Department of Ophthalmology at the University Hospital of Cologne works together with regional and national ophthalmologists at the highest medical level to optimize patient care.

Thanks to the quality alliance, the right contact person for every patient and the individual clinical picture can be found.

Thanks to the most modern diagnostic methods and treatment options, the Department of Ophthalmology at Cologne University Hospital offers human and scientific medicine. More information under: www.augennetzwerk-rheinland.de.

Economic efficiency

In 2018, the Department of Ophthalmology at the University Hospital of Cologne was again the largest singular university eye clinic in Germany in terms of inpatient revenues. The Eye Hospital treated about 10% of all patients at the University Hospital of Cologne, had the largest number of outpatients and inpatients as well as the largest number of supraregional patients. The total third-party funding for the Department of Ophthalmology from 2015-2017 was at third place in the University Hospital of Cologne.

Clinic partnerships –Ukraine

Since May 2017, the Department of Ophthalmology at the University Hospital of Cologne has been involved in a clinic partnership with the Filatov Institute for Eye Diseases and Tissue Therapy of the National Academy of Science of the Ukraine, continuing a cooperation that began in 2015.

The topic of the clinic partnership is "Optimized corneal transplantation surgery against corneal blindness in the Ukraine" (<https://www.klinikpartnerschaften.de/projects/optimierte-transplantationschirurgie-der-hornhaut-counter-corneal-blinding-in-the-Ukraine>). The clinic partnership is sponsored by the Federal Ministry for Economic Cooperation and Development (BMZ) together with the Else Kröner-Fresenius-Stiftung (EKFS). The Ukrainian partners travel to Cologne and the German partners to Odessa in order to learn innovative methods in corneal transplantation, which are very relevant in the context of the local situation in Ukraine. Activities include trainings, hospitations and joint publications.

Information for employees:

Awards and prizes 2018

Prof. Dr. Claus Cursiefen, Fellow of the Association for Research in Vision and Ophthalmology (ARVO), USA

Prof. Dr. Thomas Langmann, Dr. Gaide AMD Award

Prof. Dr. Björn Bachmann, best reviewer "Der Ophthalmologe" of the "Deutschen Ophthalmologischen Gesellschaft" (DOG)

Prof. Dr. Claus Cursiefen, Prof. Dr. Thomas Dietlein, Prof. Dr. Björn Bachmann, Prof. Dr. Antje Neugebauer, Dr. Julia Fricke, Award "TOP Mediziner 2018" by the editors of „FOCUS Gesundheit“

Dr. med. Deniz Hos, Helmholtz Research Prize of the "Deutschen Ophthalmologischen Gesellschaft" (DOG)

Dr. med. Alexander Rokohl, Richard Collin Award- Junior Award of E.S.O.P.R.S.

Dr. med. Joel Mor, ICO Examenspreis of the Dr. Rolf-M.-Schwieta Foundation for the category "Basic Science"

Dr. med. Sebastian Siebelmann, Travel Bursary Award of ESCRS congress

Dr. med. Sebastian Siebelmann, ESCRS Young Ophthalmologist Observership Grant

Yanhong Hou MD MBBS, ARVO (The Association for Research in Vision and Ophthalmology) Foundation/Women in Eye and Vision Research Travel Grant

FEBO, ICO nominees 2018

Dr. med. Julia Lemke, participation in the ICO examination for the category "Optic and Refraction"

Priv.-Doz. Dr. med. Philip Enders, participation in the ICO exam for the category "Advance"

Dr. med. Joel Mor and Volkan Tahmaz, participation in the ICO exam for the category "Basic Science"

Dr. med. Florian Wabnig and Dr. med. Robert Siggel, participation in the European Specialist Examination "Fellow of the European Board of Ophthalmology" (FEBO)

Medical specialist certificate (Facharzt) 2018

Priv.-Doz. Dr. med. Philip Enders

Dr. med. Georgia Avgitidou

Dr. med. Robert Siggel

Dr. med. Simona Schlereth

Dr. med. Florian Wabnig

Habilitations since 2012

Person	Year	Title of the habilitation thesis
Priv.- Doz. Dr. med. Sebastian Siebelmann, FEBO	2019	Intraoperative optical coherence tomography - An added value for ophthalmic surgery?
Priv.-Doz. Dr. med. Philip Enders, FEBO, FICO	2019	Influence of optic nerve cap size on the diagnostic accuracy of optical coherence tomography of the papilla nervi optici in glaucoma diagnostics
Priv.-Doz. Dr. med. Dr. nat. med. Deniz Hos, FEBO	2019	The function of the lymphatic system in inflammatory corneal diseases
Priv.-Doz. Dr. med. Alexandra Lappa	2018	Surgical therapy of exudative age-related macular degeneration by replacement of the submacular pigment epithelium
Priv.-Doz. Dr. med. Lebriz Altay	2018	Factors of risk for the development and progression of age-related macular degeneration
Priv.-Doz. Dr. med. Friederike Schaub, FEBO	2018	Descemet Membrane Endothelial Keratoplasty
Priv.-Doz. Dr. med. Mario Matthaei, FEBO	2017	Molecular studies on the pathogenesis of Fuchs endothelial dystrophy
Priv.-Doz. Dr. med. Franziska Bucher, FEBO	2017	Changes of the subbasal nerve plexus of the cornea in ocular and systemic diseases
Priv.-Doz. Dr. rer. nat. Marcus Karlstetter	2017	(Subject: Molecular Medicine) Microglia cells as therapy targets for degenerative retinal diseases
Priv.-Doz. Dr. rer. nat. Felix Bock	2016	The role of lymphangiogenesis in corneal rejection after corneal transplantation
Priv.-Doz. Dr. med. Robert Hörster	2016	Experimental and clinical aspects of ocular fibrovascular scarification
Priv.-Doz. Dr. med. Albert Caramoy	2015	Age-related macular degeneration
Priv.-Doz. Dr. med. Tina Schick, FEBO	2015	Risk factors and prognosis factors in age-related macular degeneration
Priv.-Doz. Dr. med. Rafael S. Grajewski	2014	Immunoregulatory mechanisms in murine experimental autoimmune uveitis (EAU)
Prof. Dr. med. André Rosentreter	2014	Innovative concepts in glaucoma surgery
Priv.-Doz. Dr. med. Manuel Hermann, FEBO	2013	Diagnostics and new principles in the treatment of glaucoma, age-related macular degeneration and other retinal diseases
Univ.-Prof. Dr. med. Ludwig M. Heindl	2012	The role of tumor-associated lymphangiogenesis in malignant tumors of the ocular surface
Prof. Dr. med. Philipp S. Mütther	2012	Pathologic ocular neovascularization

New employees

In 2018 the team of assistant doctors was expanded by Dr. Alexander Rokohl, Dr. Alexander Händel and Dr. Vasilena Sitnilska.

The Department of Ophthalmology had to say goodbye to Dr. med. Robert Siggel, Dr. med. Florian Wabnig and Dr. med. Stefanie Weise.

Teaching, training and further education

Teaching:

Study course human medicine:

- › Management and exam ophthalmology: Lecture, seminar and internship for 192 students per semester
- › Management and examination in the field of visual disorders (with participation of the Institute of Physiology)
- › Special examinations: Internship eye examinations for 192 students per semester
- › Management of elective seminar ophthalmology
- › Lead key qualification course: From bench to bedside - How to develop a translational research project
- › Participation Competence Field lecture
- › Participation in Research Track, lecture series

B. sc. in Neurosciences:

- › Participation in lecture series

M.sc. in Neuroscience:

- › Management of Module Retinal Immunology and Gene Regulation, Lecture, Seminar, Internship, 8 Students per semester

Education:

- › Vocational school for orthoptics, integrated into the eye Hospital: 12 students are currently being trained to become certified orthoptists within the curriculum of 3 years.

Further training:

- › Examination Center of the International Council of Ophthalmology, ICO
- › Participation in the BVA Specialist Medical Repetitorium

Events 2019/2020 (details on www.augenklinik.uk-koeln.de)

- › 31st anniversary of the Department of Ophthalmology at Maternushaus 09.02.2019
- › Update Strabology in the auditorium of the Department of Ophthalmology 03.04.2019
- › 100th anniversary of the Department of Ophthalmology at Geißbockheim 12.07.2019
- › Update IVOM Course in the auditorium of the Department of Ophthalmology 27.11.2019
- › 32nd anniversary of the Department of Ophthalmology at Maternushaus 15.02.2020

Contact and Directions

- › 24h Emergency Outpatient Department for Ophthalmology
- › Department of Ophthalmology, University Hospital Cologne, Building 34
- › Phone Service Center +49 221 478-4313 (outpatient appointment)
- › Fax +49 221 478-3186

All contact details at a glance below:

<https://augenlinik.uk-koeln.de/informationen/ansprechpartner-auf-einen-blick/>

Directions to the university hospital

Bus: KVB line 146, bus stop "Leiblplatz".

Tram: KVB line 9, stop "Lindenburg (Universitätskliniken)".

Tram: KVB line 13, stop "Gleueler Str./Gürtel".

By car: Drive onto the university hospital ground: opposite Gleueler Str. 117, then left after the barrier and 250m straight ahead. Alternatively, direct access is possible from the north via Joseph-Stelzmann-Straße. There is a very limited parking possibility with costs (30 minutes free of charge). The use of underground garages and public transport is recommended during the day.

Underground garages: (walking distance to the eye clinic approx. 10 minutes)

Attention - maximum clearance height 2 meters

Entrance to the underground car park in the cardiological Hospital: opposite Kerpener Straße 85

Entrance to the underground car park in the mainbuilding: opposite Kerpener Straße 103

Further information about our Hospital can be found on the website:

<http://augenlinik.uk-koeln.de>

Imprint

Responsible:

Mrs. C. Nolden-Strack (Clinic Consultant, Process- and Quality Management)

Prof. Dr. C. Cursiefen (Director of the Department of Ophthalmology)

