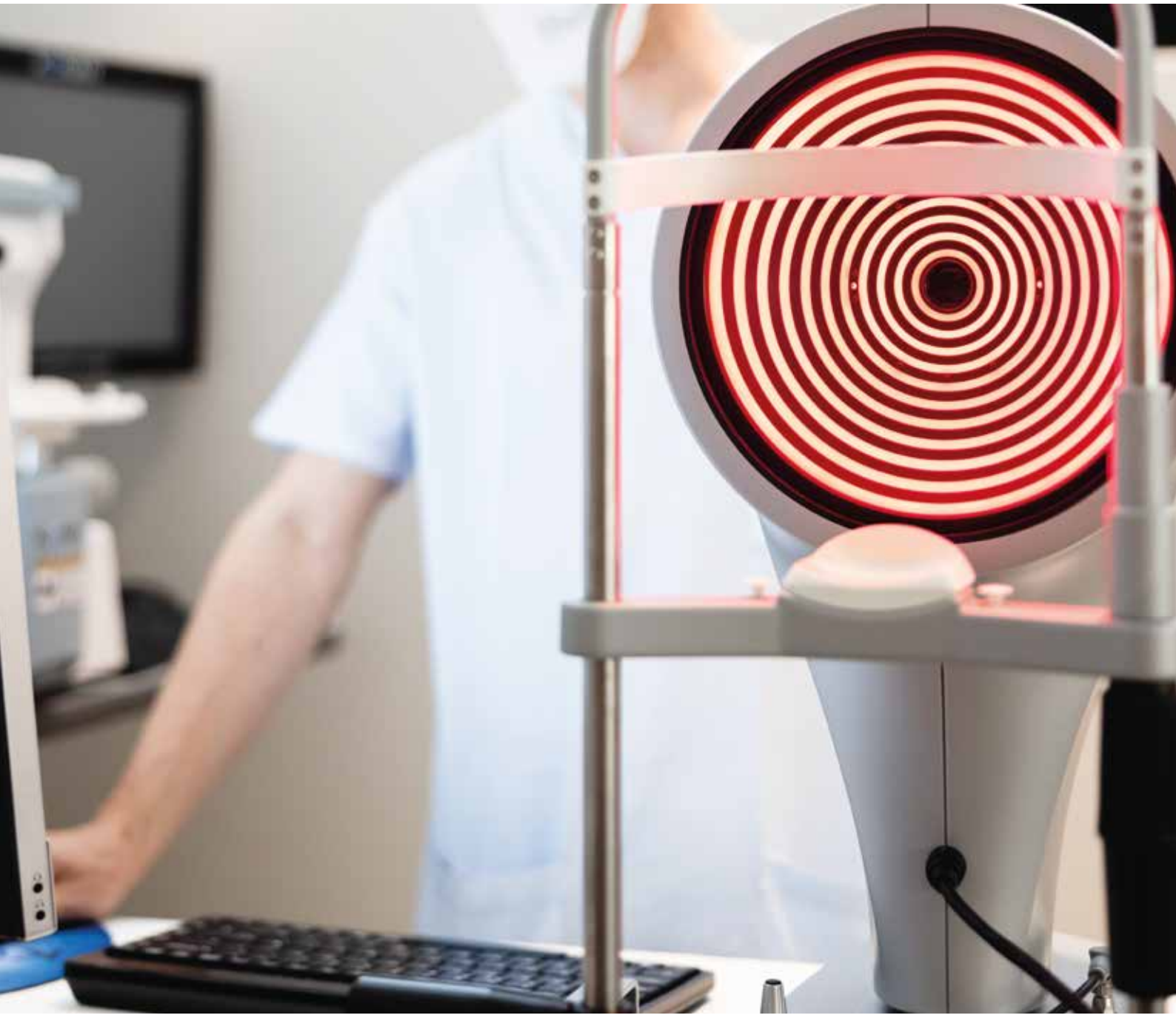
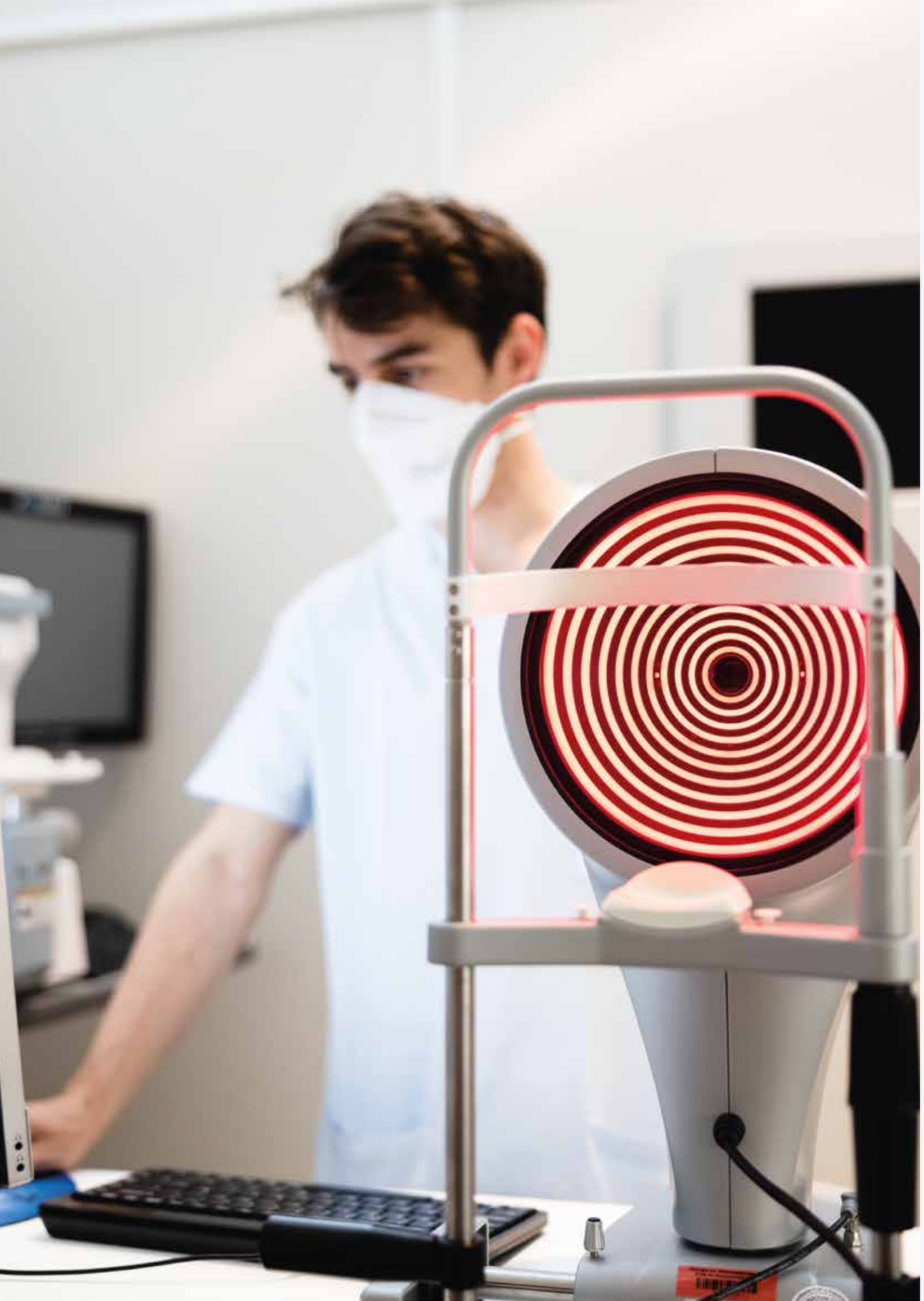
VIENNA INSTITUTE FOR RESEARCH IN OCULAR SURGERY
A KARL LANDSTEINER INSTITUTE

VIROS
Annual Report 2020



Mein Hanusch-Krankenhaus

www.gesundheitskasse.at



VIENNA INSTITUTE FOR RESEARCH IN OCULAR SURGERY
A KARL LANDSTEINER INSTITUTE

VIROS

VIROS
Annual Report 2020

Our innovation, scientific integrity and reputation continues to be reaffirmed by our achievements. VIROS is among the top Ophthalmology research facilities in Austria and is world renowned for its expertise and in-depth studies in cataract surgery. This good standing should not be taken for granted, as the institute is not embedded in a university setting and it is obliged to put in considerable extra effort into attaining the necessary financial support in order to endure. It is also worth mentioning, that none of the doctors at the Hanusch hospital, who act as clinical investigators, have ever been paid for their work. All of the income goes directly to the institute and is only used to fund VIROS staff and equipment.

I would like to thank everyone for their help to support the institute including our industry partners for enabling us to engage in trials with prototype diagnostic equipment and novel medicinal products.

Today, with the backing of the Hanusch Hospital and the Österreichische Gesundheitskasse, as well as partners from the industry and our passionate researchers and staff, we continue on a journey to further develop our expertise in the field of Ophthalmology.

VIROS continues on its path to tackle some of the challenges that ophthalmic surgery still faces. This will hopefully result in the delivery of enhanced healthcare and add to the wellbeing of patients undergoing ophthalmic surgery. At VIROS, our patients are at the heart of everything we do.

Enjoy our report!

Univ. Prof. Dr. Oliver Findl
Founder and Director of VIROS

The past year with the pandemic was not only a difficult one for each of us individually, for our clinical work and our patients, but also for clinical research. Starting with March 2020 we had to dramatically reduce recruitment and follow-up examinations of trial patients, which resulted in significant delays for new trials as well as missing data in running trials.

Mainly due to the flexibility and enthusiasm of our team, were we able to regain momentum concerning our research endeavors in the autumn of 2020. We used the time spent in home office to write manuscripts of studies already completed and this resulted in a significant increase of publications by VIROS in 2020, one of the very few positive aspects of the pandemic. It is very rewarding to see the results of the hard work as well as the passion and commitment of so many involved.

VIENNA INSTITUTE FOR RESEARCH IN OCULAR SURGERY
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VIROS

VIROS

The Vienna Institute for Research in Ocular Surgery (VIROS) is a highly motivated group of researchers that work in the fields of cataract surgery and its related topics, as well as myopia, medical and surgical retina, glaucoma, strabismus and corneal surgery. The institute was founded in 2010 by Oliver Findl as a Karl Landsteiner institute and has become the largest of all the 70 institutes in Austria. It is integrated into the Department of Ophthalmology at Hanusch Hospital in Vienna. Clinical studies are the main focus of research as well as some basic science and translational research projects. Most studies are investigator-initiated trials, some supported by medicinal product and pharmaceutical companies, others through public funding sources.

THE KARL LANDSTEINER SOCIETY

The society, which takes its name from the Lower Austrian Nobel Prize winner and discoverer of blood groups, is committed to supporting medical research at the highest level. It is an independent medical-scientific research institution, organised as a charitable association with independent institutes.

The Karl Landsteiner Society currently comprising 70 institutes covering almost all fields of medicine. The Institutes under the directorship of renowned personalities focus their activities on patient care, conduct their research work alongside their regular hospital work, thus ensuring direct practical relevance. Concrete aims and ongoing assessments ensure constantly high quality standards in all research projects.

OBJECTIVES

- Research
  Creative, independent, quality-assured
- Progress
  Patient-focused, networked, practice-related
- Support
  Innovative, transparent, successful

www.karl-landsteiner.at

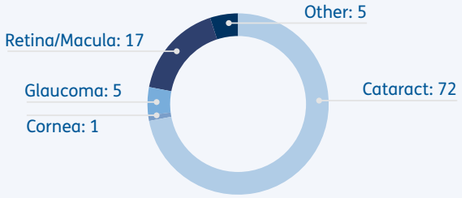
Trials 2020

57
Ongoing

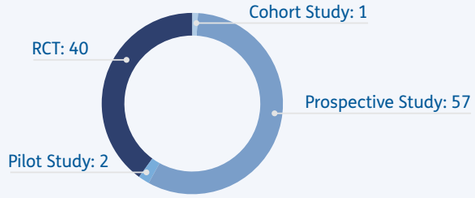
654
Number of patients in ongoing trials in 2020

Trials 2010 - 2020

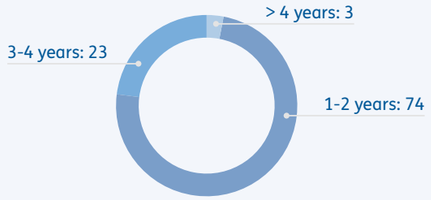
TOPIC



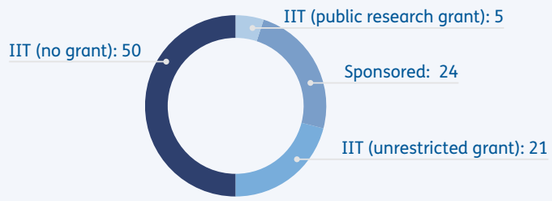
DESIGN



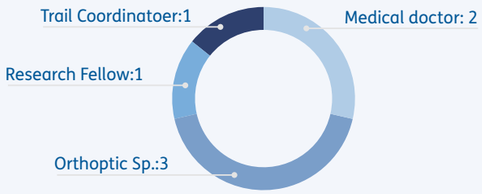
DURATION



FUNDING



STAFF



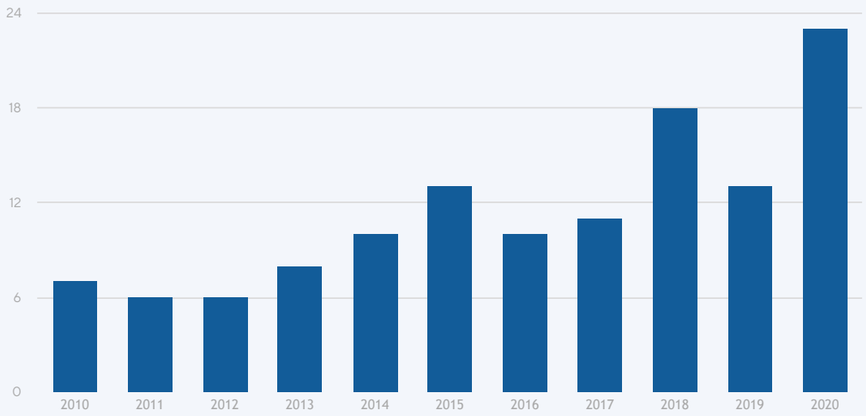
2
Master Students

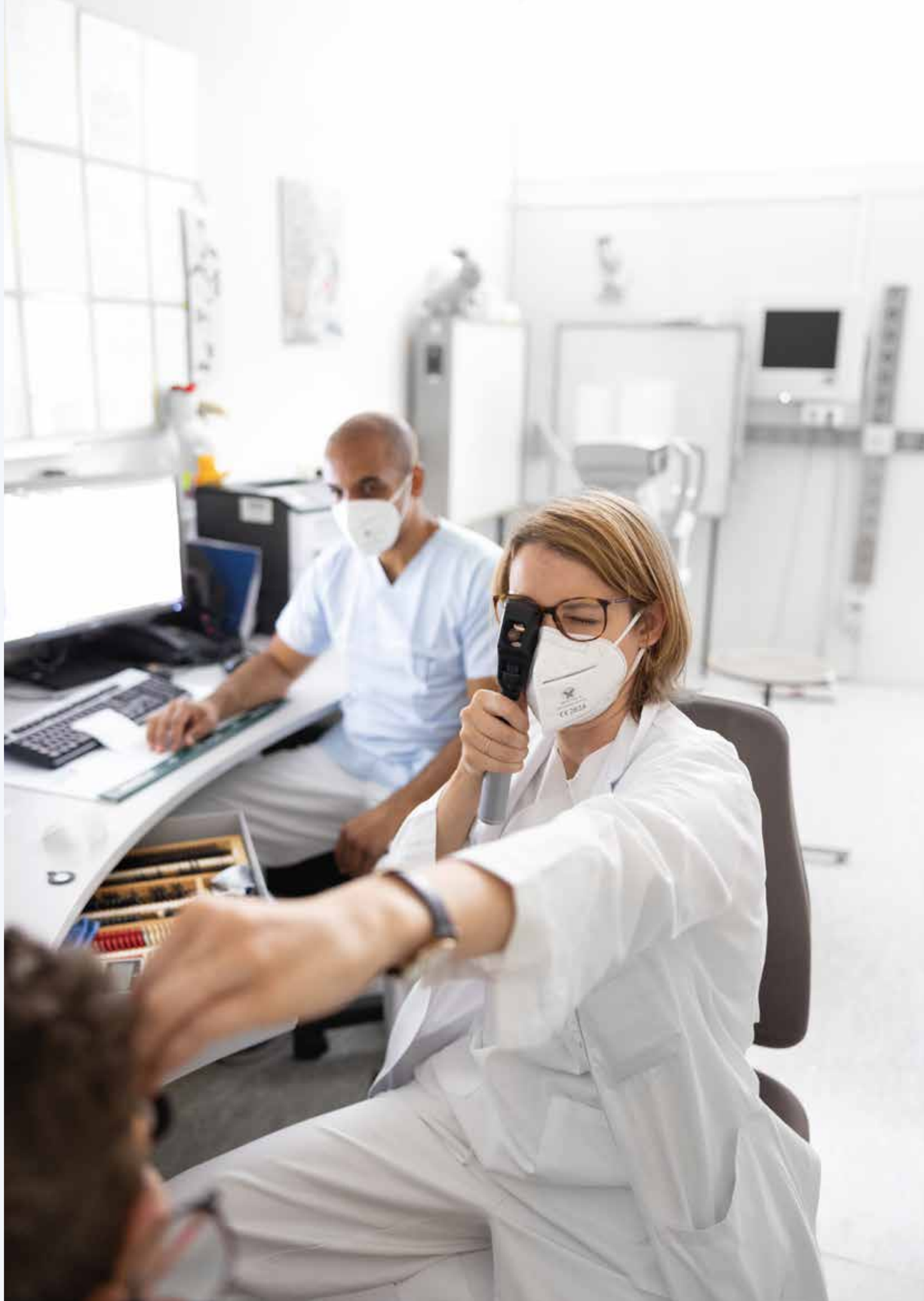
12
Phd Students

23
Peer-reviewed publications 2020

46,0
Impact factor 2020
Increase to 2019: +55%

VIROS Publicatons 2010-2020





ONGOING CLINICAL TRIALS

DRY EYE DISEASE – AUTOMATED LID MASSAGE

The Lipiflow® system (Johnson & Johnson) is a treatment device specifically designed for effectively removing blockages from Meibomian glands, allowing them to properly function. It combines warming of the eye lid and eye lid massage to improve dry eye symptoms, Meibomian gland function and tear film stability.
The present study seeks to investigate the effect of a Lipiflow® treatment on the keratometric readings during biometry in patients with meibomian gland dysfunction and cataract. The findings of the study will reveal if preoperative treatment of blepharitis has an impact on the IOL power selection made before surgery.
Specific findings of biometry like measurement of corneal astigmatism and the repeatability of measurements will be assessed prior, two weeks after and three months after treatment.
31 patients have been included in the study at the Hanusch hospital.

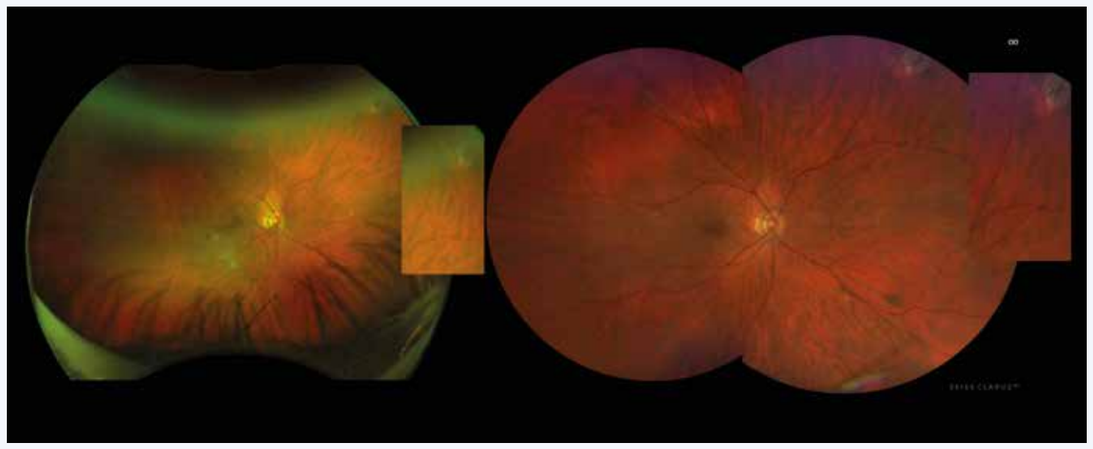
Automated lid massage

MYOPIA IN CHILDREN

VIROS is one of 45 international study sites investigating the use of SYD -101 (atropine eye drops) aiming to slow the progression of myopia in children.
Myopia (nearsightedness) is the most common eye disorder in Europe, Asia and the USA. Severe myopia is associated with an increased risk of developing other eye conditions such as glaucoma, cataracts and retinal detachment. Early treatment of myopia in children could help slow the progression of the condition and minimize the risk of complications later in life.
The Phase III clinical trial includes 840 male and female pediatric patients and will be conducted within 57 months.

WIDEFIELD IMAGING SYSTEMS

Wide-field fundus imaging has become an integral tool in retinal diagnosis. The first device on the market was the Optos (Optos PLC, Dunfermline, UK) followed by the Clarus 500 (Carl Zeiss, Meditec AG, Jena, Germany) several years later. The Optos imaging system is a scanning laser ophthalmoscope that uses a combination of monochromatic red and green laser scanning imaging, thus producing a semi-realistic fundus image, whilst the Clarus 500 uses true color imaging technology.
In this prospective study, fundus photography was performed by the same investigator in 30 patients using these two ultra-wide-field imaging systems. Comparison of the extent of peripheral imaging and the quality of the image in the periphery are the main goals of this ongoing study. The preliminary analysis indicates that the Optos has a slightly larger field of view, however, the quality of imaging is better with the Clarus.



Wide field fundus imaging. Optos (left) versus Clarus (right)

PUBLISHED TRIALS

VISUAL PERFORMANCE AFTER BILATERAL TORIC EXTENDED DEPTH-OF-FOCUS IOL EXCHANGE TARGETED FOR MICROMONOVISION.

GEORGIEV S, PALKOVITS S, HIRNSCHALL N, DÖLLER B,DRASCHL P, FINDL O.
J Cataract Refract Surg. 2020;46:1346-1352.

Toric extended depth-of-focus intraocular lenses (EDOF IOLs), targeted for micromonovision, promise good functional visual acuity and high patient satisfaction. The study included 52 eyes of 26 patients with regular corneal astigmatism between 0.75 and 2.60 diopters. The postoperative visual acuities at all distances were good. The mean refractive cylinder was 0.47 ± 0.46 diopters at the last follow-up visit. The predictability of the orientation and the centration of the IOL was high. 77% of the patients reported spectacle independence, while 95% of the patients were satisfied with their vision at all distances. Halos, starbursts, and glare were observed in less than 25% of the cases.

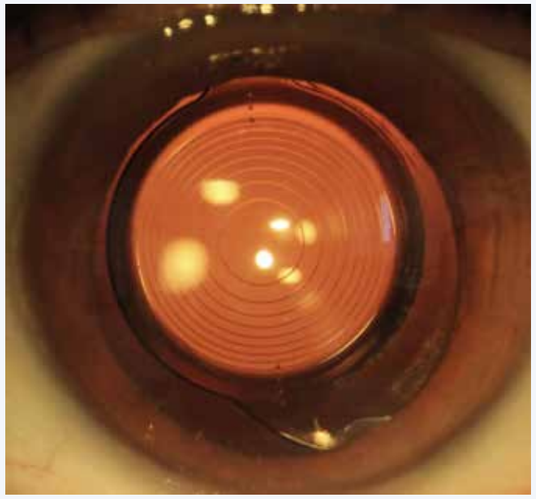


Figure: Retro-illumination image of a left eye after toric EDOF IOL implantation. The concentric rings on the optics characterizethe diffractive wavefront-shaped echelette design. The 3 points on each side of the optics indicate the axis of astigmatism correction

AGREEMENT AND VARIABILITY OF SUBJECTIVE REFRACTION, AUTOREFRACTION, AND WAVEFRONT ABERROMETRY IN PSEUDOPHAKIC PATIENTS.

RUISS M, FINDL O, DRASCHL P, HARRER-SEELY A, HIRNSCHALL N.
J Cataract Refract Surg. 2021; accepted.

One of the main goals of modern cataract surgery, besides removing the cataractous lens, is to achieve the patient's desired postoperative refraction. Targeting this postoperative refraction depends mainly on the prediction of the postoperative lens position, but also on the postoperative refraction itself. Hence, the aim of this study was to compare subjective refraction with objective refraction methods (autorefraction and wavefront aberrometry) in patients after uneventful cataract surgery. 90 eyes of 90 pseudophakic patients were included in this study. Subjective refraction measurements, performed by two examiners at two visits, showed good reproducibility and repeatability. No statistically significant differences were found between measurements of the 2 objective refraction methods. On the other hand, autorefraction and wavefront aberrometry measured the spherical equivalent more myopic than subjective refraction, whereas astigmatic vectors were comparable after uneventful cataract surgery.

COMPUTER-BASED TUTORIAL TO ENHANCE THE INFORMED CONSENT PROCESS FOR CATARACT SURGERY IN SERBIAN OR TURKISH SPEAKING PATIENTS.

RUISS M, FINDL O, PRINZ A, KAHRAMAN G, BARISIC S, MUFTUOGLU O, HIRNSCHALL N.
Ophthalmic Res. 2021; accepted, ahead of print.

Informing a patient about an invasive procedure and obtaining informed consent is a legal and ethical requirement. However, one main reason for patients being inadequately informed, among others, could be language barriers. According to the 2019 yearly migration report of the Federal Ministry for European and International Affairs of the Republic of Austria, Serbian and Turkish citizens are the largest group of non-native German-speaking people living in Austria. Some years ago, our department has developed a multimedia tool for informing patients about cataract surgery, the so-called "CatInfo tool" and its German version is already part of our daily routine. In this study, we have translated the CatInfo tool into Serbian and Turkish and validated its efficacy with the help of a knowledge questionnaire at two different visits.

Patients in the study group who were shown the CatInfo presentation, answered significantly more questions about cataract correctly compared to the patients in the control group, to whom a placebo presentation was shown. This information gain in the study group remained stable over a 1-week period. Furthermore, satisfaction with the translated version of the CatInfo tool was high in the Serbian (96%) and the Turkish group (84%).

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UMC Utrecht
Universiteit Antwerpen
UKS
Vardinoyannion Eye Institute of Crete

PUBLICATIONS 2010 - 2020

2020:

1) Dealing with negative reviews on physician-rating websites: An experimental test of how physicians can prevent reputational damage via effective response strategies.
ARENDT F, FORRAI M, FINDL O.
Soc Sci Med.2020 (266) 113422.

2) Repeatability of intraoperative Shack-Hartmann wavefront sensing in cataract surgery.
GEORGIEV S, HIRNSCHALL N, DANA-FISUS A, RUISS M, HIENERT J, LEISSER C, FINDL O.
J Cataract Refract Surg. 2020

3) Effect of phacoemulsification on outcomes after vitrectomy with membrane peeling regarding new intraretinal cystoid changes and transient macular edema.
LEISSER C, HIRNSCHALL N, FINDL O.
Ophthalmologica. 2020

4) Visual performance after bilateral toric extended depth-of-focus IOL exchange targeted for micromonovision.
GEORGIEV S, PALKOVITS S, HIRNSCHALL N, DÖLLER B, DRASCHL P, FINDL O.
J Cataract Refract Surg. 2020;46(10):1346-1352.

5) Single high-dose peroral caffeine intake inhibits ultraviolet radiation-induced apoptosis in human lens epithelial cells in vitro.
KRONSCHLÄGER M, RUISS M, DECHAT T, FINDL O.
Acta Ophthalmol. 2020

6) Sources of Error in Toric Intraocular Lens Power Calculation.
HIRNSCHALL N, FINDL O, BAYER N, LEISSER C, NORRBY S, ZIMPER E, HOFFMANN P.
J Refract Surg. 2020;36(10):646-652.

7) Capsular bag performance of a novel hydrophobic acrylic single-piece intraocular lens: Two-year results of a randomised controlled trial.
FI$JSAD, HIRNSCHALL ND, MAEDEL S, FICHTENBAUM M, DRASCHL P, FINDL O.
Eur J Ophthalmol. 2020

8) Incidence of rhegmatogenous retinal detachment in myopic phakic eyes.
ULLRICH M, ZWICKL H, FINDL O.
J Cataract Refract Surg. 2020

9) Impact of intraocular lens characteristics on intraocular lens dislocation after cataract surgery.
MAYER-XANTHAKI CF, PREGARTNER G, HIRNSCHALL N, FALB T, SOMMER M, FINDL O, WEDRICH A.
Br J Ophthalmol. 2020

10) Comparison of two swept-source optical coherence tomography-based biometry devices.
FI$JSAD, HIRNSCHALL ND, FINDL O.
J Cataract Refract Surg. 2020; 47(1):87-91

11) Visual performance after bilateral toric extended depth-of-focus intraocular lens exchange targeted for micro-monovison.
GEORGIEV S, PALKOVITS S, HIRNSCHALL N, DÖLLER B, DRASCHL P, FINDL O.
J Cataract Refract Surg. 2020

12) Re-Enclavation of a Dislocated Retropupillary Fixated Iris Claw Lens: A Case Report.
LEISSER C, FINDL O.
Case Rep Ophthalmol. 2020;11(2):174-176.

13) Refractive outcomes of 8 biometric formulas in combined phacovitrectomy with internal limiting membrane peeling for epiretinal membrane.
VOUNOTRYPIDIS E, SHAJARI M, MUTH DR, HIRNSCHALL N, FINDL O, PRIGLINGER S, MAYER WJ.
J Cataract Refract Surg. 2020;46(4):591-597.

14) Effect of iatrogenic traction during macular peeling surgery on postoperative microperimetry.
LEISSER C, PALKOVITS S, HIENERT J, ULLRICH M, ZWICKL H, GEORGIEV S, FINDL O.
Ophthalmic Res. 2020

15) Effect of cataract extraction on retinal sensitivity measurements.
PALKOVITS S, HIRNSCHALL N, GEORGIEV S, LEISSER C, FINDL O.
Ophthalmic Res. 2020

16) Remodelling intravitreal therapy pathways for macular disease during the COVID-19 pandemic and an Austrian national lockdown
HUEMER J., HIENERT J., HIRN C., HACKL C., RADDA S., FINDL O.
BMJ Open Ophthalmology 2020

17) Biometric changes of the crystalline lens during accommodation
HIRNSCHALL N., KISS B., GUER A., FINDL O.
Spektrum der Augenheilkunde 2020

18) Kaliberreduktion der A. ophthalmica in der Magnetresonanzangiografie bei Patienten nach retinalen arteriellen Verschlüssen.
LEISSER C., ZANDIEH S., HIRNSCHALL N., FINDL O.
Klin Monatsbl Augenheilkunde 2020, 237: 972-975

19) Ultraviolet Radiation Exposure of One Eye Stimulates Sympathizing Expression of Neurokinin-1 Receptor but Not Monocyte Chemoattractant Protein-1 in the Partner Eye.
GROSS J, WILLIMSKY E, WEGENER AR, KRONSCHLÄGER M, SCHÖNFELD CL, HOLZ FG, MEYER LM.
Ophthalmic Res. 2020;63(1):59-71.

20) UVR-B-induced NKR-1 Expression in Ocular Tissues is blocked by Substance P Receptor Antagonist Fosaprepitant in the Exposed as well as Unexposed Partner Eye.
GROSS J, WEGENER AR, KRONSCHLÄGER M, SCHÖNFELD CL, HOLZ FG, MEYER LM.
Ocul Immunol Inflamm. 2020 Feb 14:1-13.

21) Capsular fibrosis: a review of prevention methods and management.
FI$JSAD, FINDL O.
Eye (Lond). 2020 Feb;34(2):256-262.

22) Femtosecond laser-assisted vs conventional cataract surgery.
DAY AC, FINDL O.
Lancet. 2020 Jan 18;395(10219):170-171.

23) Caffeine Uptake into the Vitreous after Peroral Coffee Consumption.
LEISSER C, STIMPFL T, RUISS M, PILWACHS C, HIENERT J, FISUS A, BURGMÜLLER W, FINDL O, KRONSCHLÄGER M.
Ophthalmic Res. 2020;63(6):533-540.

24) Effekt von Chromovitrektomiefarbstoffen mit Lutein auf die verbesserte Darstellung von epiretinalen Pathologien im intraoperativen OCT [Effect of Dyes Containing Lutein on Enhanced Visibility of Epiretinal Pathologies in Intraoperative OCT].
LEISSER C, KRONSCHLÄGER M, FINDL O.
Klin Monbl Augenheilkd. 2020

PHD / DR: SCIENT. MED.

ONGOING

DR. SAHAND AMIR-ASGARI
Using an intra-operative spectral-domain optical coherence tomography device for predicting the intraocular lens position - Dr. scient. med.

DR. MARIA FICHTENBAUM
The human retinal autofocus – Choroidal thickness changes in response to defcous and elevation of intraocular pressure in myopia - PhD

DR. ANDREEA DANA FISUS
Bilateral and age-dependent differences in posterior capsule opacification in vivo compared to an in-vitro model - PhD

DR. STEFAN GEORGIEV
Digital wavefront sensing for depth resolved volumetric aberrometry - PhD

DR. JULIUS HIENERT
Assessing the astigmatism reducing effect with toric intraocular lenses in eyes with low astigmatism - Dr. scient. med.

DR. SOPHIE MÄDEL
Measuring capsular bag performance of different IOL designs after cataract surgery with different anterior segment devices - Dr. scient. med.

DR. ANDREAS SCHLATTER
Assessing the effect of therapeutic and diagnostic eyedrops on tear film thickness using ultra high-resolution optical coherence tomography - PhD

DR. MARLIES ULLRICH
Development of posterior vitreous detachment after lens surgery in myopic eyes - PhD

DR. RALPH VARSITS
Cataract quantification using swept source base optical coherence tomography: a pilot study - Dr. scient. med.

DR. HANNAH ZWICKL
Imaging of the vitreous body after cataract surgery using optical coherence tomography - PhD

MASTER THESES 2010 – 2019

ONGOING

ULRICH GRAF
Improvement of the refractive outcome after implantation of a toric intraocular lens

DAVID JOHLER
Analysis and comparison of axial length before and after cataract surgery

BACHELOR THESIES

KATHARINA MALEK (ORTHOPTICS)
Das Verhältnis zwischen der Augenlänge und der Dosierung der Schieloperation an den horizontalen Augenmuskeln.

VINZENZ RUDNAY
Efficacy and effectiveness of modern treatment options for patients with relapsing remitting multiple sclerosis.

EMILY FIDDAMAN (ORTHOPTICS)
Vertical retraction syndrome with Exotropia

LECTURES & TALKS

1) „IOL Berechnung nach refraktiver Chirurgie“,
HIRNSCHALL N,
ÖOG Snowcat Meeting 2020

2) “Comparison of two swept-source optical coherence tomography biometers”,
FISUS A ET AL.
Winter ESCRS 2020

3) “Peroral caffeine intake prevents ultraviolet radiation induced apoptosis in lens epithelial cells” (E-Poster),
RUISS M ET AL.,
Winter ESCRS 2020

4) „Swept source optical coherence aberrometry“
GEORGIEV S ET AL.
Winter ESCRS 2020

5) “Anterior chamber depth (ACD) variability between the Clareon and AcrySof IQ IOL: a randomised trial”,
ULLRICH M ET AL.
(E-Poster) Winter ESCRS 2020

6) „Anterior chamber depth fluctuation during cataract surgery in myopic eyes using an automated pressurized bottle system”,
STJEPANEK K ET AL.
Winter ESCRS 2020

7) “How to select the right IOL”,
PALKOVITS S ET AL.
ESONT Programme Winter ESCRS 2020

8) Important pearls for managing astigmatism with presbyopia IOL patients: From consultation to surgery”,
FINDL O
IME-Symposium Winter ESCRS 2020

9) “Caffeine uptake into the vitreous after peroral coffee consumption”,
LEISSER C ET AL.
Euretina 2020

10) “Measure of refraction and visual acuities”,
HIRNSCHALL N
Main symposium ESCRS 2020

11) “Agreement and variability of subjective refraction, autorefraction, and wavefront aberrometry in pseudophakic patients”,
RUISS M ET AL.
(E-Poster) ESCRS 2020

12) “Anterior chamber depth (ACD) variability between the Clareon and AcrySof IQ IOL: a randomised trial,
ULLRICH M ET AL.
(E-Poster) ESCRS 2020

13) „Repeatability of intraoperative Shack Hartmann wavefront sensing“,
GEORGIEV S ET AL.
ESCRS 2020

14) “Managing the unhappy postop presbyopia IOL patient”,
FINDL O.
IME-Sympsoium ESCRS 2020

15) “Dealing with a Compromised Lens Capsule after Intravitreal Injection”,
FINDL O.
ESCRS/EURETINA Symposium, ESCRS 2020

16) “Pseudphakic retinal detachment”, Myopia Workshop,
FINDL O.
ESCRS 2020

17) “Intrascleral IOL fixation”,
FINDL O.
Course ESCRS 2020

18) „Pseudophakie-Amotio“, Fortbildung für Ophthalmologie, „Einblicke in die Myopie“,
ULLRICH M ET AL.
Hanusch Krankenhaus 2020

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