

## **CYNTHIA J. ROBERTS, Ph.D.**

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REVISED  
05/15/2018

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Born: November 22, 1958 – Chicago, Illinois  
**CITIZENSHIP: U.S.A.**

### **EDUCATION:**

1979 Bachelor of Science in Nursing with distinction, University of Iowa  
1986 Master of Science, Electrical Engineering, The Ohio State University  
1989 Doctor of Philosophy, Biomedical Engineering, The Ohio State University

### **EMPLOYMENT HISTORY:**

1980-81 Registered Nurse, Urologic Nursing Division, The University of Iowa Hospitals and Clinics, Iowa City, Iowa.  
1981-83 Registered Nurse, Coronary Intensive Care Unit, The University of Iowa Hospitals and Clinics, Iowa City, Iowa.  
1982 Undergraduate Teaching Assistant, Materials Division, College of Engineering, The University of Iowa, Iowa City, Iowa (fall semester).  
1983-89 Graduate Fellow, Laboratory of Experimental Atherosclerosis (1983-87), Graduate Research Associate, Laboratory of Vascular Diseases (1988-89), Graduate Administrative Associate, The Biomedical Engineering Center (1988-89), The Ohio State University, Columbus, Ohio.  
1984 Biomedical Engineering Summer Intern, National Cancer Institute, National Institutes of Health, Bethesda, Maryland.  
1987-89 Researcher, Battelle Memorial Institute, Optical Systems and Technology Section, Columbus, Ohio  
1989-97 Assistant Professor, Biomedical Engineering and Surgery, The Ohio State University, Columbus, Ohio  
1994-97 Assistant Professor, Ophthalmology, The Ohio State University, Columbus, Ohio  
1997 to 2007 Associate Professor, Biomedical Engineering, Ophthalmology, and Surgery, The Ohio State University, Columbus, Ohio  
2003-2005 Associate Director, Biomedical Engineering Center and Program; The Ohio State University, Columbus, Ohio  
2005-2006 Associate Chair, Biomedical Engineering Department; The Ohio State University, Columbus, Ohio  
2003 to 2007 Torrence A. Makley Research Professor, Department of Ophthalmology, The Ohio State University, Columbus, Ohio  
2002 to 2014 President and Chief Technology Officer, Vision Optimization, LLC, Columbus, OH  
2007 to Present Martha G. and Milton Staub Chair for Research in Ophthalmology, The Ohio State University, Columbus, OH  
2007 to Present Professor of Ophthalmology and Biomedical Engineering, The Ohio State University, Columbus, OH

### **ACADEMIC HONORS, SCHOLARSHIPS AND FELLOWSHIPS:**

Presidential Fellowship, The Ohio State University, Sept. 1986 to August 1987  
G\*POP Fellowship, The Ohio State University, October 1983 to August 1986  
PHI ETA SIGMA, Freshman Honor Society, University of Iowa  
TAU BETA PI, National Engineering Honor Society  
OMICRON DELTA KAPPA, National Leadership Honor Society  
The Honor Society of PHI KAPPA PHI

Fred Stebler Scholarship, The University of Iowa, 1982 -1983

Founders Award 'for exhibiting Leadership and Service towards the Upliftment of Women' April 25, 1997

IEEE Third Millennium Award, 2000

Kersley Lecture, Medical Contact Lens and Ocular Surface Association (MCLOSA), London, England, November 17, 2006.

Inaugural Barraquer Medal and Lecture, Brazilian Society of Refractive Surgery, Goiânia, Brazil, May 16, 2008.

Fellow, American Institute for Medical and Biological Engineering (AIMBE), Class of 2009

Best Paper Award; "Conservation of Arclength: bending or bulging?" Session on Innovation: Keratoplasty; 2<sup>nd</sup> Joint International Congress Refractive.online & SICSSO, Rome, Italy, June 28, 2012.

American Academy of Ophthalmology Achievement Award, 2012.

2014 Power List of the 100 Most Influential People in Ophthalmology

Guest Professor, Aier School of Ophthalmology, Central South University, China, 2016-2021.

Distinguished Alumnus Award, Biomedical Engineering, College of Engineering, The Ohio State University, 2016

2018 Power List of the Top 100 Most Influential People in Ophthalmology

### **PROFESSIONAL SOCIETY MEMBERSHIPS:**

|          |  |
|----------|--|
| ARVO     | Association for Research in Vision and Ophthalmology, 1994 to present          |
| BMES     | Biomedical Engineering Society (past)  |
| IEEE     | The Institute of Electrical and Electronics Engineers (past)                   |
| LEOS     | Lasers and Electrooptics Society (past), Columbus Chapter Treasurer, 92 to 99  |
| EMBS     | Engineering in Medicine and Biology (past), Columbus Chapter Chair, 94 to 2008 |
| ASCRS    | American Society of Cataract and Refractive Surgery (past)                     |
| Sigma Xi | The Scientific Research Society (past)   |

### **SERVICE TO NATIONAL/INTERNATIONAL PROFESSIONAL SOCIETIES AND ORGANIZATIONS:**

Program Committee Member for Ophthalmic Technologies IV, Biomed Optics '94, SPIE

Program Committee Member for Ophthalmic Technologies V, Biomed Optics '95, SPIE

President, 'Optics of the Eye' Session, Optical Society of America Annual Meeting '94

Columbus Chapter Treasurer, IEEE Lasers and Electro-Optics Society, (LEOS); 1992 to 1999

Columbus Chapter Chair, IEEE Engineering in Medicine and Biology; 1994-2008

Session Chair, Lasers & Electro-Optics, 19th Annual International Conference, IEEE Engineering in Medicine and Biology Society, October 30, 1997

Moderator, *Cornea*, Corneal Topography, Association for Research in Vision and Ophthalmology, 1999

Moderator, Corneal Topography & Quality of Vision, 1999 Summer World Refractive Surgery Symposium - ISRS, 7/18/99

Moderator, Optical Aberrations & Visual Functions. 1999 Fall World Refractive Surgery Symposium - ISRS, 10/23/99

Moderator, Aberrometric Techniques. [Refr@ctive.on-line](#) Course, Milan, Italy,

Moderator, Aberrometry I Session. [Refr@ctive.on-line](#) Course, Milan, Italy, September 11, 2002.

Moderator, Corneal Biomechanics Session. [Refr@ctive.on-line](#) Course, Milan, Italy, September 11, 2002.

Moderator, Wavefront Analysis and Other Methods to Evaluate Visual Aberrations, ARVO, Ft. Lauderdale, FL, 2003

Moderator, Topography, Aberrometry, Corneal Biomechanics, [Refr@ctive.on-line](#) Course, Milan, Italy, September 23, 2004

Moderator, Photoablative Surgery II, [Refr@ctive.on-line](#) Course, Milan, Italy, September 25, 2004

Moderator, Paper Session, ARVO Annual Meeting, Ft. Lauderdale, FL, May 2, 2005

Moderator, Refractive Surgery Didactic Course, XXIII Congress of ESCRS, September 10, 2005

Moderator, Corneal Biomechanics Session, [Refr@ctive.on-line](#) Course, Milan, Italy, September 16, 2005

Moderator, Refractive Surgery Didactic Course, 10<sup>th</sup> ESCRS Winter Refractive Meeting, Monte Carlo, Monaco, Feb. 10, 2006

Moderator, Corneal Wound Healing Course, 2<sup>nd</sup> Ljubljana Refractive Surgery Meeting, Ljubljana, Slovenia, April 21, 2006

Organizer and Moderator, Corneal and Ocular Biomechanics Special Interest Group, ARVO Annual Meeting, May 3, 2006

"Measurement of Corneal and Ocular Biomechanical Properties," Cynthia Roberts, Ph.D., The Ohio State University;

"Central Corneal Thickness, Biomechanical Properties, and Glaucoma Risk," James Brandt, M.D., University of California, Davis;

"Corneal Biomechanics, Central Corneal Thickness, and Accurate Measurement of IOP," David Garway-Heath, M.D.,

Moorfields Eye Hospital, London,

Moderator, Refractive Surgery Didactic Course, Advanced Session, XXIV Congress of the ESCRS, London, Sept. 9, 2006.

Moderator, Corneal Cross-Linking Course, Sessions I and II, Milan, Italy, September 14, 2006

Moderator, Refr@ctive.on-line Course, Pre-Operative Diagnostics Session, Milan, Italy, September 15, 2006

Participant in Videoconference on Corneal Biomechanics with the Helmholtz Institute, Moscow, Russia, 9/28/2007.

Moderator, Refractive Surgery Didactic Course, 12<sup>th</sup> Winter Congress of ESCRS, February 8, 2008.

Measurement of IOP Poster Session, ARVO, 2008.

Moderator, Measurement and Characterization of IOP, Paper Session, ARVO 2008.

Moderator, Refractive Surgery Didactic Course, 13<sup>th</sup> Winter Congress of ESCRS, February 7, 2009.

Moderator, Free Paper Session, Part 2, 11<sup>th</sup> ARI and 10<sup>th</sup> WFC, Alicante, Spain, March 7, 2009.

Co-Chairperson, Session VII – Free Papers, United Kingdom & Ireland Society of Cataract & Refractive Surgeons (UKISCRS), Leeds, UK, October 9, 2009.

Organizer and Moderator of Ocular Imaging – Front to Back and Beyond, 53<sup>rd</sup> Annual Postgraduate Symposium in Ophthalmology, Columbus, OH, March 5, 2010.

Chair of Corneal Imaging Panel, ASCRS, Boston, April 13, 2010.

Moderator, Refractive Surgery Didactic Course, Part 2, XXVIII Congress of the ESCRS, Paris, September 4, 2010.

Co-Chair, Clinical Research Symposium; Corneal Biomechanics; XXVIII Congress of the ESCRS, Paris, September 4, 2010.

Moderator, Refractive Surgery Didactic Course, Part 2, 15<sup>th</sup> ESCRS Winter Meeting, Istanbul, February 19, 2011

Paper Session Panelist, Keratorefractive Imaging, Astigmatism Session, ASCRS, San Diego, March 28, 2011.

Session Chair, Crosslinking and Ectasia I, Refractive On-line and SICSSO, Grosseto, Italy, July 7, 2011.

Session Chair, Refractive Surgery II, Refractive On-line and SICSSO, Grosseto, Italy, July 7, 2011.

Moderator, Refractive Surgery III, Refractive On-line and SICSSO, Grosseto, Italy, July 8, 2011.

Moderator, Crosslinking and Ectasia II, Refractive On-line and SICSSO, Grosseto, Italy, July 8, 2011.

Session Chair, Crosslinking and Ectasia III, Refractive On-line and SICSSO, Grosseto, Italy, July 9, 2011.

Moderator, Refractive Surgery Didactic Course, Part 2, XXIX Congress of the ESCRS, Vienna, September 17, 2011.

Moderator, Biomechanics Session, XXIX Congress of the ESCRS, Vienna, September 18, 2011.

Scientific Board Member, Keratoconus Research Group Study (KRGs) founded in Bordeaux the 23<sup>th</sup> of September 2011, « Intra corneal ring segment enhancement by CXL in keratoconus », first prospective randomized masked multi-centric European study

Moderator, GALILEI Expert User Meeting, American Academy of Ophthalmology, October 23, 2011.

Moderator, Refractive Surgery Didactic Course, Part 2, 16<sup>th</sup> ESCRS Winter Meeting, Prague, Czech Republic, Feb. 4, 2012.

Paper Session Panelist, Keratorefractive LASIK (1-K), ASCRS, Chicago, April 24, 2012.

Moderator, Corneal Biomechanics II Poster Session, ARVO, May 10, 2012

Breakfast with the Experts: Corneal Biomechanics. 2<sup>nd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, 6/29, 2012.

Session Chairman: Keratoconus. 2<sup>nd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 29, 2012.

Moderator, Refractive Surgery Didactic Course, Part 2, XXIX Congress of the ESCRS, Milan, September 8, 2012.

Organizer, “The basics of corneal topography: finally understanding what you are seeing.” Instructional Course Organizer and Leader, XXIX Congress of the ESCRS, Milan, September 9, 2012.

Organizer, “The basics of corneal topography: finally understanding what you are seeing.” Instructional Course Organizer and Leader, XXIX Congress of the ESCRS, Milan, September 9, 2012.

Moderator, CorVis Study Group Research Meeting, AAO 2012, Chicago, November 9, 2012.

Moderator, Refractive Surgery Didactic Course, Part 2, 17<sup>th</sup> ESCRS Winter Meeting, Warsaw, Poland, Feb. 17, 2013.

Paper Session Panelist, KERATOREFRACTIVE Presbyopia (3-L), ASCRS, San Francisco, April 22, 2013.

Co-President of Cross-linking Session, 3<sup>rd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 28, 2013.

MODERATOR OF CORVIS RESEARCH MEETING, Amsterdam, October 3, 2013

Co-Moderator, Refractive Surgery Didactic Course, Part 2, XXXI Congress of the ESCRS, Amsterdam, October 5, 2013.

Course Organizer and Leader, Instructional Course on Corneal Biomechanics for the Clinician: understanding the basics, XXXI Congress of the ESCRS, Amsterdam, October 7, 2013.

Course Organizer and Leader, Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXI Congress of the ESCRS, Amsterdam, October 7, 2013.

Chairperson, Free Paper Session on Corneal Biomechanics, XXXI Congress of the ESCRS, Amsterdam, October 8, 2013.

MODERATOR of CorVis Research Meeting, London, September 11, 2014.

Co-Moderator, Refractive Surgery Didactic Course, Part 2, XXXII Congress of the ESCRS, London, September 13, 2014.  
 Course Organizer and Leader, Instructional Course on Corneal Biomechanics for the Clinician: understanding the basics, XXXII Congress of the ESCRS, London, September 14, 2014.  
 Course Organizer and Leader, Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXII Congress of the ESCRS, London, September 15, 2014.  
 Chairperson, Free Paper Session on Corneal Biomechanics, XXXII Congress of the ESCRS, London, September 15, 2014.  
 Course Organizer and Leader, Instructional Course on Corneal Biomechanics for the Clinician: understanding the basics, XXXIII Congress of the ESCRS, Barcelona, September 6, 2015.  
 Course Organizer and Leader, Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXIII Congress of the ESCRS, Barcelona, September 7, 2015.  
 Chair, Free Paper Session on Imaging the Anterior Segment, XXXIII Congress of the ESCRS, Barcelona, September 7, 2015.  
 Moderator, International Refractive Surgery Symposium, Guangzhou, China, May 28, 2016.  
 Moderator, Refractive Surgery Didactic Course, Part 1, XXXIV Congress of the ESCRS, Copenhagen, September 10, 2016.  
 Moderator, "EuroTimes Satellite Education Programme Pentacam AXL and Corvis ST: New Approaches for Combining Tomography with Biometry and Biomechanics. XXXIV Congress of the ESCRS, Copenhagen, September 11, 2016.  
 Moderator, Refractive Surgery Didactic Course, Part 2 and Part 3, 21<sup>st</sup> ESCRS Winter Meeting, Maastricht, The Netherlands, February 11, 2017.  
 Co-Chair, Biomechanics in glaucoma session; ; 7<sup>th</sup> World Glaucoma Congress, Helsinki, Finland, July 1, 2017.  
 Co-Moderator, Refractive Surgery Didactic Course, Part 1, XXXV Congress of the ESCRS, Lisbon, October 7, 2017.  
 Moderator, "EuroTimes Satellite Education Programme Pentacam AXL and Corvis ST: New Approaches for Combining Tomography with Biometry and Biomechanics. XXXV Congress of the ESCRS, Lisbon, October 7, 2017.  
 Moderator, Refractive Surgery Didactic Course, Part 2, 22<sup>nd</sup> ESCRS Winter Meeting, Belgrade, Serbia, February 10, 2018.  
 Chair, Planning Committee and Moderator for the Aging Eye Summit, "Understanding Vision Research – Hope for the Future." Ohio's Aging Eye Public/Private Partnership. Havener Eye Institute, April 13, 2018.

**PARTICIPANT IN ANSI CORNEAL TOPOGRAPHY STANDARDS DEVELOPMENT:** April 1994 to 1999

**CONSULTANT TO THE OPHTHALMIC DEVICES PANEL:** Department of Health and Human Services, Food and Drug Administration (August 2004 to 2008)

**PARTICIPANT IN THE GLOBAL IOP CONSENSUS REPORT AND MEETING,** May 5, 2007.

**LECTURES IN PROFESSIONAL COURSES TAUGHT FOR CONTINUING MEDICAL EDUCATION CREDIT:**

1. "Introduction to Corneal Topography" Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO). Nov. 1998.
2. "Introduction to Corneal Topography" Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO). Oct. 24, 1999.
3. "The impact of topographic algorithm in estimating optical zone size." [Refr@ctive.on-line](#) Course, Milan, Italy, October 6, 2000.
4. "The Cornea is not a piece of plastic." [Refr@ctive.on-line](#) Course, Milan, Italy, October 6, 2000.
5. "The Refractive effect of the LASIK flap." [Refr@ctive.on-line](#) Course, Milan, Italy, October 6, 2000.
6. "Biomechanics and customized ablation." [Refr@ctive.on-line](#) Course, Milan, Italy, October 7, 2000.
7. "Biomechanical Coupling in Laser Refractive Surgery" Use of Orbscan Anterior Segment Analysis in Clinical Practice Course, The American Academy of Ophthalmology, Dallas, Texas, October 22, 2000.
8. "Update on corneal biomechanics." [Refr@ctive.on-line](#) Course, Biomechanics Session, Milan, Italy, September 13, 2001.
9. "Analysis of the LASIK flap." [Refr@ctive.on-line](#) Course, Biomechanics Session, Milan, Italy, September 13, 2001.
10. "Characteristic corneal shape after refractive surgery." [Refr@ctive.on-line](#) Course, Biomechanics Session, Milan, Italy, Sept. 13, 2001.
11. "Biomechanics of the Cornea," XIX Congress of the European Society of Cataract and Refractive Surgery, Refractive Surgery Didactic Course, Amsterdam, Netherlands, September 1<sup>st</sup>, 2001.
12. "The measurement of biomechanical properties of the cornea in laser refractive surgery." [Refr@ctive.on-line](#) Course, Corneal Biomechanics Session, Milan, Italy, September 13, 2002.
13. "Corneal biomechanics: the key to predictability in conventional and customized procedures." [Refr@ctive.on-line](#)

Course, Corneal Biomechanics Session, Milan, Italy, September 13, 2002.

14. "Biomechanics of the Cornea." Refractive Surgery Didactic Course, XX Congress of the ESCRS, Nice, France, September 7<sup>th</sup>, 2002.
15. Keratoconus Course #259, American Academy of Ophthalmology, October 21, 2002, Orlando, FL
16. "Topographies of Biomechanical Changes," Clinical Corneal Topography for Refractive Surgeons, ASCRS Course, San Francisco, CA, April 14<sup>th</sup>, 2003.
17. "How many Zernike orders are necessary to represent the shape of the post-refractive cornea?" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 11, 2003
18. "Biomechanical ablation" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 11, 2003
19. "Posterior surface changes after LASIK: Stable remodeling or ecstasia?" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 11, 2003
20. "Biomechanics of the Cornea", Refractive Surgery Didactic Course – Advanced Session, XXI Congress of the European Society of Cataract and Refractive Surgery (ESCRS), Munich, Germany, September 8, 2003.
21. "WaveFront Analysis–Potential applications for Keratoconus" in the Keratoconus Course (Course Director: Yaron Rabinowitz) The American Academy of Ophthalmology, Anaheim, California, November 15, 2003
22. "Corneal Topography" Refractive Surgery Didactic Course –Basic Session, 8th ESCRS Winter Refractive Surgery Meeting, Barcelona, Spain, January 23, 2004.
23. "Biomechanics of the Cornea", Refractive Surgery Didactic Course – Advanced Session, 8th ESCRS Winter Refractive Surgery Meeting, Barcelona, Spain, January 23, 2004
24. "Aberrometry and Corneal Topography: A New Method for the Corneal Surface Representation?" 17<sup>th</sup> Annual Meeting of German Ophthalmic Surgeons, Nuremberg, Germany, June 24-27, 2004
25. "Functional optical zone: a new definition" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 23, 2004
26. "Corneal wavefront vs total wavefront" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 23, 2004
27. "Does LASIK alter biomechanical properties?" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Biomechanics Session, Milan, Italy, September 25, 2004
28. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, XXII Congress of the ESCRS, Paris, France, September 18, 2004
29. "Corneal Topography and IOL Power Calculation" Refractive Surgery Didactic Course, European Society of Cataract and Refractive Surgery, 9<sup>th</sup> Winter Meeting, Rome, Italy, February 4, 2005
30. "Quality of Vision Evaluation" Refractive Surgery Didactic Course, European Society of Cataract and Refractive Surgery, 9<sup>th</sup> Winter Meeting, Rome, Italy, February 4, 2005
31. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, European Society of Cataract and Refractive Surgery, 9<sup>th</sup> Winter Meeting, Rome, Italy, February 4, 2005
32. Course Director, State of the World in Refractive Surgery, OSU Department of Ophthalmology 48<sup>th</sup> Annual Postgraduate Symposium in Ophthalmology, March 4-5, 2005, Columbus, Ohio
33. "Biomechanics of Corneal Response to Laser Refractive Surgery" OSU Department of Ophthalmology 48<sup>th</sup> Annual Postgraduate Symposium in Ophthalmology, March 4, 2005, Columbus, Ohio
34. "The Influence of Corneal Biomechanics on IOP Measurement" New Tonometry/CCT/Continuous IOP Measurement Course, World Glaucoma Congress, Vienna, Austria, July 8, 2005
35. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, XXIII Congress of the ESCRS, Lisbon, Portugal, Sept. 10, 2005
36. "Q-factor vs. Curvature Gradient: a Closer Look at Planning and Evaluation Profiles" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Corneal Biomechanics Session, Milan, Italy, September 16, 2005
37. "Oblate vs. Prolate: A Closer Look Characterizing Corneal Shape" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Corneal Biomechanics Session, Milan, Italy, September 16, 2005
38. "Biomechanics of Topography" Advanced Clinical Corneal Topography for Refractive Surgeons Course, American Academy of Ophthalmology, Chicago, IL, October 18, 2005
39. "Everything You Wanted to Know About Corneal Topography" Allied Staff Course, EastWest Eye Conference,

Cleveland, Ohio, October 29, 2005

40. "Everything You Wanted to Know About Corneal Topography" O.D. Course, EastWest Eye Conference, Cleveland, Ohio, October 29, 2005
41. "Corneal Response to Refractive Surgery and Its Impact on Outcomes" O.D. Course, EastWest Eye Conference, Cleveland, Ohio, October 29, 2005
42. "The Difference Between Corneal Topography and Wavefront" Wavefront Basics Course, 7<sup>th</sup> International Congress of Wavefront Sensing & Optimized Refractive Corrections, Nassau, Bahamas, January 26, 2006
43. "Quality of Vision Evaluation" Refractive Surgery Didactic Course, 10<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Monte Carlo, Monaco, February 10, 2006
44. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, 10<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Monte Carlo, Monaco, February 10, 2006
45. "Biomechanics in Wavefront-Guided Ablations" Refractive Surgery: Wavefront-guided ablations: The Quest for no Aberrations Course, World Ophthalmology Congress, Sao Paulo, Brazil, February 21, 2006
46. "The Interaction of Corneal Biomechanics and Wavefront-Guided Correction" Refractive Surgery: Advances in Wavefront Technology for Corneal and Lenticular Surgery Course, World Ophthalmology Congress, Sao Paulo, Brazil, February 22, 2006
47. "Corneal Biomechanical Issues Involving Custom Treatments" Refractive Surgery Course: What Do We Need to Know About Corneal Biomechanics? World Ophthalmology Congress, Sao Paulo, Brazil, February 22, 2006
48. "The Biomechanics of Tonometry" Glaucoma: New Diagnostic Issues in Glaucoma - Tonometry, Pachymetry, Optic Nerve Imaging, Perimetry Course, World Ophthalmology Congress, Sao Paulo, Brazil, February 23, 2006
49. "Corneal Biomechanics After Surface Ablation: What are the Relevant Differences than LASIK" Refractive Surgery: Advanced Surface Ablation Course, World Ophthalmology Congress, Sao Paulo, Brazil, February 24, 2006
50. "Principles of Orbscan Topography and Practical Interpretation of Elevation and Curvature Maps" In Refractive Surgery Course, American Society for Cataract and Refractive Surgery, San Francisco, California, March 19, 2006
51. "Biomechanics of Keratoconus and Post LASIK Corneal Ectasia" In Course: Modern Diagnosis and Surgical Treatment for Keratoconus and Post LASIK Corneal Ectasia, American Society for Cataract and Refractive Surgery, San Francisco, California, March 19, 2006
52. "Integration of Corneal Biomechanics into the Treatments of Irregular Astigmatism" In Course: Customized Ablation in Surgical Management of Irregular Astigmatism, American Society for Cataract and Refractive Surgery, San Francisco, CA, March 20, 2006
53. "Biomechanics of Ectasia" In Course: Identifying Risk Factors for Ectasia: Practical Approach, American Society for Cataract and Refractive Surgery, San Francisco, California, March 20, 2006
54. "Topographies of Biomechanical Changes" Advanced Clinical Corneal Topography for Refractive Surgeons Course, American Society for Cataract and Refractive Surgery, San Francisco, California, March 21, 2006.
55. "Corneal Topography and IOL Power Calculation" Refractive Surgery Didactic Course, Basic Session, XXIV Congress of the ESCRS, London, England, Sept. 9, 2006.
56. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, XXIV Congress of the ESCRS, London, England, Sept. 9, 2006.
57. Instructional Course on Principles of Orbscan Topography and Practical Interpretation of Elevation and Curvature Maps with Regard to Refractive Surgery, XXIV Congress of the ESCRS, London, England, September 10, 2006.
58. Instructional Course on Customized Ablation in Management of Irregular Astigmatism, XXIV Congress of the ESCRS, London, England, September 11, 2006.
59. "CLMI: A New Keratoconus Index" Corneal Cross-Linking Course, Milan, Italy, September 14, 2006.
60. "Rasterstereography Corneal Topography: What was Old is New Again!" [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Pre-Operative Evaluation and Diagnostics Session, Milan, Italy, September 15, 2006.
61. "Curvature Gradient: the Advantages of a Higher Order Topographic Shape Analysis." [Refr@ctive.on-line](mailto:Refr@ctive.on-line) Course, Pre-Operative Evaluation and Diagnostics Session, Milan, Italy, September 15, 2006.
62. "Topographies of Biomechanical Changes," Advanced Clinical Corneal Topography for Refractive Surgeons Course, American Academy of Ophthalmology, Las Vegas Nevada, November 12, 2006
63. "Quality of Vision Evaluation" Refractive Surgery Didactic Course, Advanced Session, 11<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Athens, Greece, February 2, 2007.

64. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, 11<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Athens, Greece, February 2, 2007.
65. "Integration of Corneal Biomechanics into the Treatments of Irregular Astigmatism" In Course: Customized Ablation in Surgical Management of Irregular Astigmatism, American Society for Cataract and Refractive Surgery, San Diego, California, April 28, 2007
66. "Principles of Orbscan Topography and Practical Interpretation of Elevation and Curvature Maps" In Refractive Surgery Course, American Society for Cataract and Refractive Surgery, San Diego, California, April 29, 2007
67. "Topographies of Biomechanical Changes" Advanced Clinical Corneal Topography for Refractive Surgeons Course, American Society for Cataract and Refractive Surgery, San Diego, California, April 30, 2007.
68. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, XXV Congress of the ESCRS, Stockholm, Sweden, Sept. 8, 2007.
69. "Biomechanical Changes in the Pattern of Tissue Distribution during Healing." Instructional Course on Corneal Biomechanics and Refractive Surgery. XXV Congress of the ESCRS, Stockholm, Sweden, Sept. 11, 2007.
70. "Integration of Corneal Biomechanics into the Treatment of Irregular Astigmatism." Instructional Course on Customized Ablation in Management of Irregular Astigmatism, XXV Congress of the ESCRS, Stockholm, Sweden, Sept. 11, 2007.
71. "The Curvature Gradient Map." [Refr@ctive.on-line](#) Course, Milan, Italy, September 13, 2007.
72. "Spatial Resolution and Zernike Order in Wavefront Analysis." [Refr@ctive.on-line](#) Course, Milan, Italy, September 14, 2007.
73. "Biomechanics and Intraocular Pressure Measurement." [Refr@ctive.on-line](#) Course, Milan, Italy, September 14, 2007.
74. "CLMI: A New Index for Keratoconus." [Refr@ctive.on-line](#) Cross-Linking Course, Milan, Italy, September 15, 2007.
75. "Clinical Studies of the Ocular Response Analyzer." [Refr@ctive.on-line](#) Biomechanics Course, Milan, Italy, September 15, 2007.
76. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Basic Session, 12<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Barcelona, Spain, February 8, 2008.
77. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, 12<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Barcelona, Spain, February 8, 2008.
78. "Practical Interpretation of Elevation and Curvature Maps in Refractive Surgery" In Principles of Orbscan Topography and Interpretation of Elevation and Curvature Maps for Early Keratoconus Detection, ASCRS Course, Chicago, April 5, 2008.
79. Integration of Corneal Biomechanics into the Treatment of Irregular Astigmatism." In Customized Ablation in Surgical Management of Irregular Astigmatism, ASCRS Course, Chicago, April 7, 2008.
80. "Basics of the Ziemer Galilei." In Basic Course on Galilei: New System Combining Dual Scheimpflug and Placido Topography. ASCRS Course, Chicago, April 7, 2008.
81. "Clinical Applications of Corneal Biomechanical Measurements with the ORA for Refractive Surgery and Glaucoma." In Clinical Applications of Corneal Biomechanical Measurements with the ORA for Refractive Surgery and Glaucoma. ASCRS Course, Chicago, April 7, 2008.
82. "Topographies of Biomechanical Changes." In Advanced Corneal Topography for Refractive Surgeons. ASCRS Course, Chicago, April 8, 2008.
83. "Practical Interpretation of Elevation and Curvature Maps in Refractive Surgery" In Principles of Orbscan Topography and Interpretation of Elevation and Curvature Maps for Early Keratoconus Detection, XXVI Congress of the ESCRS, Berlin, Germany, Sept. 13, 2008.
84. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, XXVI Congress of the ESCRS, Berlin, Germany, Sept. 13, 2008.
85. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 13<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Rome, February 6, 2009.
86. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 13<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Rome, February 7, 2009.
87. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Advanced Session, XXVII Congress of the ESCRS, Barcelona, Spain, September 12, 2009.
88. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 14<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Budapest, February 12, 2010.

89. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 14<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, Budapest, February 13, 2010.
90. "Misconceptions & Misinterpretations in Corneal Topography," Ocular Imaging – Front to Back and Beyond, 53<sup>rd</sup> Annual Postgraduate Symposium in Ophthalmology, Columbus, OH, March 5, 2010.
91. "Effective Posterior Power" How is it Used for Prediction of IOL Power?" Ocular Imaging – Front to Back and Beyond, 53<sup>rd</sup> Annual Postgraduate Symposium in Ophthalmology, Columbus, OH, March 5, 2010.
92. "Dynamic Corneal Topography," Ocular Imaging – Front to Back and Beyond, 53<sup>rd</sup> Annual Postgraduate Symposium in Ophthalmology, Columbus, OH, March 5, 2010.
93. "Misconceptions and Misinterpretations in Corneal Topography," Corneal Topographic Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice, ASCRS Course, April 10, 2010.
94. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXVIII Congress of the ESCRS, Paris, September 4, 2010.
95. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 15<sup>th</sup> ESCRS Winter Meeting, Istanbul, February 18, 2011.
96. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 15<sup>th</sup> ESCRS Winter Meeting, Istanbul, February 19, 2011.
97. "Tissue Mechanics: Cornea" Biomedical Engineering 641 Course, Winter Quarter, February 23, 2011.
98. "Misconceptions and Misinterpretations in Corneal Topography," Corneal Topographic Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice, ASCRS Course, San Diego, March 27, 2011.
99. "The Future of Corneal Biomechanical Assessment," Enhanced Screening for Ectasia and Its Susceptibility: Role of Corneal Tomography and Biomechanical Characterization, ASCRS Course, San Diego, March 27, 2011.
100. "Prediction of Biomechanical and Topographic Response after Cornea Collagen Crosslinking," with abstract co-authors, Ashraf M Mahmoud, Elena Albe, Silvia Trazza, Paolo Vinciguerra, 1<sup>st</sup> Joint International Congress: Refractive On-Line and SICSSO (Italian Ocular Surface Society), Grosseto, Italy, July 7, 2011
101. "Prediction of Corneal Deformation as a Function of Intraocular Pressure, Biomechanical Properties, Thickness, and Curvature," with abstract co-authors, Ashraf M. Mahmoud, Isaac Ramos, Renata Siqueira, Renato Ambrósio; 1<sup>st</sup> Joint International Congress: Refractive On-Line and SICSSO (Italian Ocular Surface Society), Grosseto, Italy, July 7, 2011
102. "Biomechanical Decompensation in Keratoconus: A New Theory." 1<sup>st</sup> Joint International Congress: Refractive On-Line and SICSSO (Italian Ocular Surface Society), Grosseto, Italy, July 8, 2011
103. "Prediction of Ultraviolet Light Transmission with Epithelium-on
104. and Epithelium-off in Cornea Collagen Crosslinking," with abstract co-authors, Ashraf M Mahmoud, Paolo Vinciguerra, 1<sup>st</sup> Joint International Congress: Refractive On-Line and SICSSO (Italian Ocular Surface Society), Grosseto, Italy, July 9, 2011.
105. "Biomechanical Properties before and after Crosslinking," Instructional Course on Corneal Collagen Crosslinking – New Techniques and Biomechanics, XXIX Congress of the ESCRS, Vienna, September 17, 2011.
106. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXIX Congress of the ESCRS, Vienna, September 17, 2011.
107. "Corneal Biomechanical Assessment for Screening Refractive Candidates: Why and How?" Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXIX Congress of the ESCRS, Vienna, September 20, 2011.
108. "Basics of Biomechanics." EuroTimes Satellite Education Programme, XXIX Congress of the ESCRS, Vienna, Sept. 19, 2011.
109. "Misconceptions and Misinterpretations in Corneal Topography." Corneal Topography and Anterior Segment Imaging Course, American Academy of Ophthalmology, Orlando, October 24, 2011.
110. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 16<sup>th</sup> ESCRS Winter Meeting, Prague, Czech Republic, February 3, 2012.
111. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 16<sup>th</sup> ESCRS Winter Meeting, Prague, Czech Republic, February 4, 2012.
112. "Misconceptions and Misinterpretations in Corneal Topography." Corneal Topography Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. ASCRS Course 22-107, Chicago, April 22, 2012.
113. "Biomechanical and Topographic Analysis in Crosslinking." Corneal Collagen Crosslinking: New Techniques and Biomechanics. ASCRS Course 24-201, Chicago, April 24, 2012.



114. "Introduction to the CorVis ST and the Future of Corneal Biomechanical Assessment," Enhanced Screening for Ectasia and its Susceptibility: Role of Corneal Tomography and Biomechanical Characterization. ASCRS Course 24-213, Chicago, April 24, 2012.
115. "Curvature Gradient and Regression." Excimer Surface Ablation. 2<sup>nd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 28, 2012.
116. "Conservation of Arc Length in Keratoconus: Bending or Bulging?" Session on Innovation: Keratoplasty. 2<sup>nd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 28, 2012.
117. "Biomechanics of Corneal Collagen Crosslinking." Cross-Linking: New Developments. 2<sup>nd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 29, 2012.
118. "Biomechanics of Corneal Collagen Crosslinking." Instructional Course on Corneal collagen cross-linking: new techniques and biomechanics, XXX Congress of the ESCRS, Milan, September 8, 2012.
119. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXX Congress of the ESCRS, Milan, September 8, 2012.
120. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXX Congress of the ESCRS, Milan, September 9, 2012.
121. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXX Congress of the ESCRS, Milan, September 9, 2012.
122. "Introduction to the CorVis and the Future of Biomechanical Assessment" Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXX Congress of the ESCRS, Milan, September 10, 2012.
123. "Misconceptions and Misinterpretations in Corneal Topography." Corneal Topography and Anterior Segment Imaging Course, American Academy of Ophthalmology, Chicago, November 13, 2012.
124. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 17<sup>th</sup> ESCRS Winter Meeting, Warsaw, Poland, February 16, 2013.
125. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 17<sup>th</sup> ESCRS Winter Meeting, Warsaw, Poland, February 17, 2013.
126. "Misconceptions and Misinterpretations in Corneal Topography." Corneal Topography Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. ASCRS Course 21-305, San Francisco, April 21, 2013.
127. "Introduction to the CorVis ST and the Future of Corneal Biomechanical Assessment," Enhanced Ectasia Screening for Refractive Candidates: From Corneal Topography and Pachymetry to 3-D Tomography and Biomechanics. ASCRS Course 22-405, San Francisco, April 22, 2013.
128. "Evaluation of the Response of the Cornea to an Air Puff to Detect Biomechanical Changes," pre-ARVO Course on Biomechanics, Course Organizers: Farhad Hafezi, Eberhart Spoerl. May 4, 2013.
129. "CLMIX: a new index in the evaluation and monitoring of keratoconus," Keratoconus Lectures Session, 3<sup>rd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 27, 2013.
130. "Corneal deformation characteristics and IOP assessment." Cross-linking Session, 3<sup>rd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 28, 2013.
131. "Biomechanics and residual stromal bed." Custom Retreatment and Phototherapeutic Ablation Session, 3<sup>rd</sup> Joint International Congress Refr@ctive.on-line & SICSSO, June 29, 2013.
132. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXXI Congress of the ESCRS, Amsterdam, October 5, 2013.
133. Instructional Course on Intracorneal rings for keratoconus and post-LASIK ectasia, XXXI Congress of the ESCRS, Amsterdam, October 5, 2013..
134. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXXI Congress of the ESCRS, Amsterdam, October 6, 2013.
135. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXI Congress of the ESCRS, Amsterdam, October 7, 2013.
136. "Introduction to the CorVis and the Future of Biomechanical Assessment" Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXXI Congress of the ESCRS, Amsterdam, October 7, 2013..
137. "Basics and Misconceptions in Corneal Topography." Corneal Topographic Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. Instructional Course 403, American Academy of Ophthalmology, New Orleans,

November 18, 2013.

138. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 18<sup>th</sup> ESCRS Winter Meeting, Ljubljana, Slovenia, February 14, 2014.
139. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 18<sup>th</sup> ESCRS Winter Meeting, Ljubljana, Slovenia, February 15, 2014.
140. "Introduction to the CorVis ST and the Future of Corneal Biomechanical Assessment," Enhanced Screening for Ectasia Susceptibility: Going Beyond (Not Over) Topography and CCT Using Corneal Tomography and Biomechanical Assessment. ASCRS Course 27-204, Boston, April 27, 2014.
141. "Misconceptions and Misinterpretations in Corneal Topography." Corneal Topography Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. ASCRS Course 28-404, San Francisco, April 28, 2014.
142. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, XXXII Congress of the ESCRS, London, September 13, 2014.
143. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXXII Congress of the ESCRS, London, September 13, 2014.
144. "Biomechanical Concerns Hiding Behind the Rings," Instructional Course on Intracorneal rings for keratoconus and post-LASIK ectasia, XXXII Congress of the ESCRS, London, September 13, 2014.
145. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXXII Congress of the ESCRS, London, September 14, 2014.
146. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXII Congress of the ESCRS, London, September 15, 2014.
147. "Corneal Biomechanical Assessment for Screening Refractive Candidates: Why and How " Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXXII Congress of the ESCRS, London, September 15, 2014.
148. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 19<sup>th</sup> ESCRS Winter Meeting, Istanbul, February 20, 2015.
149. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 19<sup>th</sup> ESCRS Winter Meeting, Istanbul, February 21, 2015.
150. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, XXXIII Congress of the ESCRS, Barcelona, September 5, 2015.
151. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXXIII Congress of the ESCRS, Barcelona, September 5, 2015.
152. "Biomechanical Concerns Hiding Behind the Rings," Instructional Course on Intracorneal rings for keratoconus and post-LASIK ectasia, XXXIII Congress of the ESCRS, Barcelona, September 5, 2015.
153. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXXIII Congress of the ESCRS, Barcelona, September 6, 2015.
154. Measuring the Biomechanics of the Cornea. Workshop on Visual Optics. XXXIII Congress of the ESCRS, Barcelona, September 6, 2015.
155. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXIII Congress of the ESCRS, Barcelona, September 7, 2015.
156. "Corneal Biomechanical Assessment for Screening Refractive Candidates: Why and How " Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXXIII Congress of the ESCRS, Barcelona, September 7, 2015.
157. "Basics and Misconceptions in Corneal Topography." American Academy of Ophthalmology, Las Vegas, November 16, 2015.
158. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 20<sup>th</sup> ESCRS Winter Meeting, Athens, February 26, 2016.
159. Measuring the Biomechanics of the Cornea. Workshop on Visual Optics. 20<sup>th</sup> ESCRS Winter Meeting, Athens, February 26, 2016.
160. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 20<sup>th</sup> ESCRS Winter Meeting, Athens, February 27, 2016.
161. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, XXXIV Congress of the

ESCRS, Copenhagen, September 10, 2016.

162. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXXIV Congress of the ESCRS, Copenhagen, September 10, 2016.
163. "Biomechanical Concerns Hiding Behind the Rings," Instructional Course on Intracorneal rings for keratoconus and post-LASIK ectasia, XXXIV Congress of the ESCRS, Copenhagen, September 10, 2016.
164. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXXIV Congress of the ESCRS, Copenhagen, September 11, 2016.
165. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXIV Congress of the ESCRS, Copenhagen, September 11, 2016.
166. Measuring the Biomechanics of the Cornea. Workshop on Visual Optics. XXXIV Congress of the ESCRS, Copenhagen, September 11, 2016.
167. "Corneal Biomechanical Assessment for Screening Refractive Candidates: Why and How " Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXXIV Congress of the ESCRS, Copenhagen, September 12, 2016.
168. "Using Anterior Segment Imaging in Screening for Ectasia Risk." Corneal Topographic Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. American Academy of Ophthalmology, Chicago, October 18, 2016.
169. "Using Anterior Segment Imaging in Keratoconus." Corneal Topographic Analysis and Anterior Segment Imaging: Pearls for your Clinical Practice. American Academy of Ophthalmology, Chicago, October 18, 2016.
170. "Corneal Topography and IOL Calculations" Refractive Surgery Didactic Course, Part 1, 21<sup>st</sup> ESCRS Winter Meeting, Maastricht, The Netherlands, February 10, 2017.
171. "Measuring the Biomechanics of the Cornea." Basic Optics Course. 21<sup>st</sup> ESCRS Winter Meeting, Maastricht, The Netherlands, February 10, 2017.
172. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 21<sup>st</sup> ESCRS Winter Meeting, Maastricht, The Netherlands, February 11, 2017.
173. "Corneal Topography." Refractive Surgery Didactic Course, Part 1, XXXV Congress of the ESCRS, Lisbon, October 7, 2017.
174. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, XXXV Congress of the ESCRS, Lisbon, October 7, 2017.
175. "Biomechanical Concerns Hiding Behind the Rings," Instructional Course on Intracorneal rings for keratoconus and post-LASIK ectasia, XXXV Congress of the ESCRS, Lisbon, October 7, 2017.
176. "Biomechanics of Keratoconic Cornea." Instructional Course on Corneal biomechanics for the clinician: understanding the basics, XXXV Congress of the ESCRS, Lisbon, October 8, 2017.
177. "Basics and Misconceptions in Corneal Topography." Instructional Course on The basics of corneal topography: finally understanding what you are seeing, XXXV Congress of the ESCRS, Lisbon, October 8, 2017.
178. "Measuring the Biomechanics of the Cornea." Workshop on Visual Optics. XXXV Congress of the ESCRS, Lisbon, October 8, 2017.
179. "Biomechanics of Stabilizing the Keratoconic Cornea." Instructional Course: New concepts and research on keratoconus. XXXV Congress of the ESCRS, Lisbon, October 9, 2017
180. "Corneal Biomechanical Assessment for Screening Refractive Candidates: Why and How " Instructional Course on Enhanced Ectasia Screening for Refractive Candidates: from Corneal Topography and Pachymetry to 3D Tomography and Biomechanics, XXXV Congress of the ESCRS, Lisbon, October 9, 2017.
181. Anterior Segment Imaging for Biomechanical Analysis." Instructional Course Session 217, AAO 2017, New Orleans, November 12, 2017.
182. "Measuring the Biomechanics of the Cornea." Basic Optics Course. 22<sup>nd</sup> ESCRS Winter Meeting, Belgrade, Serbia, February 9, 2018.
183. "Corneal Topography" Refractive Surgery Didactic Course, Part 1, 22<sup>nd</sup> ESCRS Winter Meeting, Belgrade, Serbia, February 9, 2018.
184. "Biomechanics of the Cornea" Refractive Surgery Didactic Course, Part 2, 22<sup>nd</sup> ESCRS Winter Meeting, Belgrade, Serbia, February 10, 2018.

**SPONSORED RESEARCH:**

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| "Quantification and Analysis of Laser-Induced Injury of the Vascular Wall," The Ohio State University Seed Grant, Principal Investigator, 3/90-9/91.   | \$16,500             |
| "Spectrographic Comparison of Bone and Acrylic Bone Cement," The Ohio State University Department of Surgery MRDF Grant, Co-Principal Investigator (with Alan Litsky, M.D, Sc.D), 4/91-3/92.   | \$5,000              |
| "Computer-Assisted Quantification, Analysis, and 3-D Reconstruction of <i>in vitro</i> Laser-Induced Injury," The American Heart Association Grant-in-Aid, Principal Investigator, 7/91-6/93.  | \$22,500             |
| "Analysis and Quantification of Laser-Induced Vascular Injury using Image Processing and 3-D Reconstruction Techniques," The Whitaker Foundation, Principal Investigator, 9/91-2/95.   | \$180,000            |
| "Assessment of the Accuracy of Placido-based Corneal Topography Systems on simulated PRK surfaces," Summit Technologies, Principal Investigator, 10/1/94-3/31/95.  | \$10,004             |
| "The Effects of Low Energy Laser and Broadband White Light Irradiation on Articular Cartilage Metabolism and Matrix Synthesis <i>In Vitro</i> ," National Science Foundation, Principal Investigator, , 9/96 -5/98.                      | \$17,532 total costs |
| "Optimization of the Refractive Result following Penetrating Keratoplasty using the PAR Corneal Topography System," PAR Vision Systems, Inc., Principal Investigator, 9/1/96-6/30/98.  | \$35,700             |
| "Evaluation of Prototype Corneal Topography System," Albany Medical College, Principal Investigator, 1/8/98-5/1/99.  | \$15,000             |
| "Soft Toric Contact Lenses and Corneal Topography, Phase 1" subcontract from Case Western Reserve (primary: CooperVision, EyeSys Premier, Humphrey), Principal Investigator, 7/1/98 - 12/31/1999.  | \$15,750             |
| "Development of Clinical Applications for Optical Coherence Tomography and Algorithm Development for Nerve Fiber Layer Thickness Extraction," Zeiss Humphrey Systems, 8/1/98 - 12/31/99.   | \$75,000             |
| "Topographic Processing and Analysis for CLEK," subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), 9/1/99 – 8/31/2000.  | \$111,708            |
| "Topographic Processing and Analysis for CLEK," subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), , 9/1/2000-8/31/2001   | \$115,014            |
| "Corneal Topography Analysis Tool," subcontract from BIOMECH (Primary: National Eye Institute), 8/1/2001- 4/30/2002.   | \$37,950             |
| "Soft Toric Contact Lenses and Corneal Topography, Phase 2" subcontract from Case Western Reserve (primary: CooperVision), Principal Investigator, 6/1/2000 - 6/30/2001.   | \$14,400             |
| "Topographic Processing and Analysis for CLEK," subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), 9/1/2001 – 8/31/2002.  | \$123,428            |
| "Randomized Comparative Trial of the Technolas 217A Excimer Laser and the VISX S3 Excimer Laser," Bausch & Lomb, Principal Investigator, 2001-2003.  | \$198,125            |
| "Randomized Comparative Trial of the Technolas 217A Excimer Laser and the Autonomous LADARVision Excimer Laser," Bausch & Lomb, Principal Investigator, 2001-2003.   | \$198,125            |
| "Topographic Processing and Analysis for CLEK," subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), 9/1/2002-8/31/2003.  | \$130,573            |
| "Topographic Processing and Analysis for CLEK," subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), 9/1/2003-8/31/2004.  | \$134,490            |
| "Pressure Effect on Hydraulic Conductivity of TM Cells," American Health Assistance Foundation, Principal Investigator, 4/1/2002-3/31/2004.  | \$70,000             |
| "Automatic 3D Reconstruction of the Optic Nerve Head Topography and Nerve Fiber Layer Thickness Measurement from Optical Coherence Tomography for Improved Diagnosis", Columbus Foundation, Principal Investigator, 1/1/2003-12/31/2004. | \$45,000             |
| "Cellular Level Response to Laser Trabeculoplasty on Perfused Monolayers of Non-Glaucomatous Human Trabecular Meshwork Cells", Columbus Foundation, Co-Principal Investigator, 1/1/2003-   | \$75,000             |

12/31/2004.

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| “Topographic Processing and Analysis for CLEK,” subcontract from University of Illinois (Primary: National Eye Institute, National Institutes of Health), 9/1/2004-8/31/2005.  | \$68,728                                       |
| “Ultrasound Characterization of Ocular Biomechanical Properties for Glaucoma Screening”, Columbus Foundation, Co-Principal Investigator, 1/1/04-12/31/05.  | \$83,750                                       |
| “Evaluation of the utility of intra-operative topography to optimize corneal shape during penetrating Keratoplasty.” BIOMECH, Co-Investigator: Cynthia Roberts (Principal Investigator: Richard Lembach, M.D.), 09/27/2004 to 08/31/2007.  | \$189,663                                      |
| “A Study of MicroPulsed and low Fluence Diode Laser-Tissue Interaction with Cultured Human Trabecular Meshwork Cell Monolayers, Iridex, Principal Investigator: Cynthia Roberts, May 10, 2005 to August 31, 2008.  | \$30,000                                       |
| “Measurement and Evaluation of the Elastic and Viscous Properties of the Cornea in Glaucoma.” Columbus Foundation. Principal Investigator: Cynthia Roberts, 3/1/2006 to 8/31/2008.   | \$62,600                                       |
| “Functional image of visual cortex & retina tissue for vision pathophysiology.” Children’s Hospital/OSU Collaborative Research Award. Co-Principal Investigators: Ronald Xu, Cynthia Roberts and Lawrence Leguire., 6/2006 to 5/2008   | \$100,000                                      |
| “Biomechanical Characterization of the Cornea in Pathologic Eyes.” OSU Health Services Strategic Initiative Grant. Principal Investigator: Cynthia Roberts, Ph.D., Co-Investigators: Alan S. Litsky, M.D., Sc.D., Richard G. Lembach, M.D., Paul A. Weber, M.D., 8/1/07 to 7/31/08.                | \$70,000                                       |
| “The Impact of Corneal Elasticity on IOP and CCT Measurement in Glaucoma Management” Columbus Foundation. Principal Investigator: Jun Liu (Co-I: Cynthia Roberts), 1/1/2008 to 12/31/2009.   | \$91,996                                       |
| "Targeted delivery of biodegradable multifunctional nanoparticles, conjugated with Lucentis, for integrated imaging and therapy of age-related macular degeneration." GenenTech Reagent grant, PI: Ronald Xu, Co-I's: Cynthia Roberts, Alan Letson,.   | \$80,000 worth of Lucentis™ anti-VEGF antibody |
| “Nanoengineered <i>In Vitro</i> Trabecular Meshwork (TM) Model for Systematic Investigation of Aqueous Humor Outflow Resistance.” Glaucoma Research Foundation. Principal Investigator: Yi Zhao, Co-Investigators: Cynthia J. Roberts, Deborah M. Grzybowski, Paul A. Weber 3/1/2010 to 2/28/2011. | \$40,000                                       |
| Corneal Collagen Crosslinking in Keratoconus and Iatrogenic Ectasia, FDA Clinical Trial, Role: Co-Investigator, Sponsor: Topcon  |  |
| “Interaction of Ocular Pulse Amplitude (OPA) and the Difference between Intracranial Pressure (ICP) and Intraocular Pressure (IOP) as a Mechanism for Glaucomatous Damage.” Columbus Foundation, Role: Principal Investigator. 1/1/2012 – 12/31/2017.  | \$87,000                                       |
| “Biomechanical understanding of accommodation biomechanics with 3D Brillouin microscopy.” Massachusetts General Hospital. (Primary: NIH R21); Role: PI of Subcontract; 6/1/2013 – 5/31/2015.   | \$45,750                                       |
| “The Effect of Prostaglandins on the Biomechanical Properties of the Cornea.” Columbus Foundation, Role: Co-Investigator, (PI: Dr. Shelly Jain). 1/1/2014 – 12/31/2017.  | \$79,000                                       |
| “Ocular Pulse Elastography” NIH R01 EY025358, Role: Co-Investigator (PI: Jun Liu), 12/1/15 to 11/30/20   |  |
| “A New Mechanism of Damage in Glaucoma: Columbus Foundation, Role: Principal Investigator. 1/1/2016 to 12/31/2018.   | \$86,000                                       |
| “Corneal Biomechanics in Ocular Disease, NIH R01 EY027399, Role: Principal Investigator. 3/1/17 to 2/28/22   | \$1,200,000                                    |

#### **PATENTS:**

1. 10/332,891 “Methods and Instruments for Performing Refractive Corneal Surgery,” Priority Date 7/20/2000
2. 10/539,181, "Parametric model-based ablative surgical systems and methods," Priority Date 12/16/2002
3. 10/531,345, “Method and System for Designing an Improved Ablation Pattern,” Priority Date 10/15/2003
4. 60/611,828, "Microsensor system for applications in biomechanics," Priority Date 9/21/2004
5. 60/914,368, “Ultrasonic System and Method for Measurement of Ocular Biomechanics,” Priority Date 4/27/2007

**CONSULTING:**

1. Head, Advisory Board, Optimeyes, 2011 to present
2. Oculus Optikgerate GmbH, 2011 to present
3. Norwood Scientific Advisory Board, 2006
4. Reichert, 2006
5. Ziemer Ophthalmic Systems AG, 2005 to present
6. GALILEI Key Opinion Leader Meeting, 3/10/2012
7. Refracted, 2004-2005
8. Bausch & Lomb, 1998, 2000 to 2005
9. BIOMECH, 2000 to 2002
10. Sarver & Associates, 1999 to 2002
11. EyeSys Premier, 1999
12. Alcon Surgical, 1998
13. Summit Technologies Think Tank, 1994

**BIOMEDICAL ENGINEERING GRADUATE STUDENTS ADVISED/SUPERVISED:**

| <b>Current:</b>      | <b>Degree Sought:</b> |                 |
|----------------------|-----------------------|-----------------|
| <b>Monica Okon</b>   | PhD                   | 2012 SBMT       |
| <b>Ryan Somogye</b>  | PhD                   |                 |
| <b>Audrey Nguyen</b> | PhD                   | Comsol Modeling |

**MASTER OF SCIENCE ADVISEES:**

|                           |            |  | <b>Graduation Da</b> |
|---------------------------|------------|--|----------------------|
| <b>Tim Pelkowski</b>      | Advisor    | “Interface pressure distribution sensor.”  | MS, AU 1992          |
| <b>Pablo Olmos</b>        | Advisor    | “Development of a device for the measurement of thermal sensation thresholds in patients with non insulin-dependent diabetes mellitus to select those at risk of foot ulceration.” | MS, WI 1993          |
| <b>Janice Allard</b>      | Co-Advisor | “The effect of an automated anesthesia recordkeeper on intraoperative recordkeeping time and anesthetist vigilance.”   | MS, SP 1993          |
| <b>Anton Bartolo</b>      | Co-Advisor | “A technique for the reduction of ECG contamination from the diaphragmatic EMG signal.”  | MS, WI 1993          |
| <b>Asif Ahmad</b>         | Advisor    | “High resolution MR imaging and quantification of laser induced thermal injury in the vascular wall.”  | MS, SP 1994          |
| <b>Elias Fayad</b>        | Advisor    | “Efficient three-dimensional surface tracking of laser-induced thermal injury within an MRI volume data set.”  | MS, AU 1994          |
| <b>Charles Hwang</b>      | Co-Advisor | “The quantification of outlet strut offset in radiographic images of the bjork shiley convexo-concave heart valve.”  | MS, WI 1994          |
| <b>William J. Dupps</b>   | Advisor    | “Peripheral stromal expansion and anterior corneal flattening in phototherapeutic keratectomy: An in vitro study in human donor globes.”   | MS, AU 1995          |
| <b>Chi Lee</b>            | Co-Advisor | “Use of a Continuous Wave Argon Ion Laser to Ablate Dyed Polymethymethacrylate (PMMA) and Polybutylmethymethacrylate   | MS, WI 1996          |
| <b>Brian Rivera</b>       | Advisor    | “A specialized perfusion testing apparatus for in-vitro laser-tissue interaction studies using cultured endothelial cell monolayers of the anterior chamber,”                      | MS, WI 1998          |
| <b>Stuart Kitt Farrar</b> | Advisor    | “Optical properties of human trabecular meshwork in the visible and near infrared regions.”  | MS, SU 1998          |

|                                 |                  |  |             |
|---------------------------------|------------------|--|-------------|
| <b>Songsdit Chongsiriwatana</b> | Advisor          | “Correction of surface tilt in intra-operative corneal topography”   | MS, SU 1998 |
| <b>Artemas Herzog</b>           | Co-Advisor in EE | “Computer Vision Analysis of Optical Coherence Tomography Images of the Optic Nerve Head”                              | MS, AU 2004 |
| <b>Huikai Luu Karol</b>         | Advisor          | Two Ocular Models Incorporating Blood Flow and Ocular Properties”  | MS, SP 2007 |
| <b>Kim Metzler</b>              | Advisor          | The Influence of IOP, Corneal Stiffness, and Sclera on Corneal Deformation Response to an Air Puff Using the CorVis ST | MS, SP 2015 |
| <b>Priyanka Illipani</b>        | Mentor           | Non-Thesis Option  | MS, SP 2015 |
| <b>Yiming Xu</b>                | Mentor           | Non-Thesis Option  | MS, SP 2016 |

**MASTER OF SCIENCE COMMITTEES:**

**Exam Date:**

|                                    |   |             |
|------------------------------------|---|-------------|
| <b>Xiao Qiu Wang</b>               | “Computerized temperature control instrumentation for a spectrofluorometer.”  | Spring 1991 |
| <b>Ling Sun</b>                    | “Design and optimization of a new breast coil for magnetic resonance imaging.”  | Summer 1991 |
| <b>Omer Demirkaya</b>              | “Topographic study of atherosclerotic lesions in carotid arteries by image analysis.”   | Spring 1992 |
| <b>Kui Ying</b>                    | “Development of a flash photolysis apparatus and numerical analysis of kinetic data.”   | Spring 1992 |
| <b>Subha Raman</b><br>(Elec Eng)   | “Building structural descriptions from coronal magnetic resonance images.”  | Summer 1992 |
| <b>Rong Xue</b>                    | “Distribution of atherosclerotic lesions in the human thoracic and abdominal aorta.”  | Winter 1993 |
| <b>Intesar Ahmed</b><br>(Elec Eng) | “An investigative study of the dynamics of human spine.”  | Spring 1993 |
| <b>Michelle Price</b>              | “Analysis of carboxyhemoglobin absorbance bands in the amide region at low temperature.”  | Autumn 1993 |
| <b>Anthony Aletras</b>             | “Interfacing a research console to a clinical magnetic resonance tomograph for acquisitions of functional images of the human motor cortex by means of blood oxygenation level dependent contrast.” | Autumn 1993 |
| <b>Erdogan Cesmeli</b>             | “Translational and Rotational Correction of Björk-Shiley Convexo Concave 60 degree and 70 degree Heart Valves.”   | Spring 1995 |
| <b>Srinivas Jayaraman</b>          | "Acoustic Wave Generation During Photoablation of Corneal Tissue"   | Spring 2001 |
| <b>Emiko Okuma</b><br>(Mech Eng)   | “   | Summer 2001 |
| <b>Keith Marsolo</b>               | "Spatial Modeling and Classification of Corneal Shape"  | Winter 2005 |
| <b>Fang Yuan</b>                   | “Interactive Volume Rendering Using Layered X-Ray Convolutions in Biomedical Applications”  | Autumn 2005 |
| <b>Kim Metzler</b>                 | “The Influence of IOP, Corneal Stiffness, and Sclera on Corneal Deformation Response to an Air Puff Using the CorVis ST”  | Spring 2015 |

**DOCTOR OF PHILOSOPHY IN BIOMEDICAL ENGINEERING ADVISEES:****Graduation Date:**

|                            |                        |  |                                 |
|----------------------------|------------------------|--|---------------------------------|
| <b>Yan Gao</b>             | Advisor                | “Polynomial modeling of the corneal surface to improve the measurement of the topography.”   | PhD,Autumn 1994                 |
| <b>Daniel Ebert</b>        | Advisor                | “Effect of near-infrared laser irradiation on equine articular cartilage matrix metabolism in vitro.”                                      | PhD,Summer 1997                 |
| <b>William J. Dupps</b>    | Advisor,<br>Ph.D./M.D. | “Chemo-mechanical modification of the corneal response to photokeratectomy.”   | PhD, Autumn 1998                |
| <b>Yih-Tyng Wu</b>         | Advisor                | “Magnetic resonance imaging at ultra high field: Initial experience with a 8 Tesla whole body system”                                      | PhD,Summer 2000                 |
| <b>Dara Koozekanani</b>    | Co-Advisor             | “Repeatability Characterization and Computer Vision Based Analysis of Optical Coherence Tomography”  | PhD, Spring 2001                |
| <b>Antonio Algaze</b>      | Advisor                | “Characterization of the blood oxygen level dependent functional magnetic resonance imaging response in amblyopia”                         | PhD, Autumn 2002                |
| <b>Maolong Tang</b>        | Co-Advisor             | “Corneal Mean Curvature Mapping Applications in Laser Refractive Surgery”  | PhD, Autumn 2004                |
| <b>Vivek Wallimbe</b>      | Advisor                | “Interactive, Quantitative 3D Stress Echocardiography and myocardial perfusion SPECT for Improved Diagnosis of Coronary Artery Disease”    | PhD,Summer 2006                 |
| <b>Dianne Henry Glass</b>  | Advisor                | PBO Fellowship for Women in Vision Research.<br>“Characterization of the biomechanical properties of the in vivo human cornea.”            | Summer 2007<br>PhD, Spring 2008 |
| <b>Nasser Husam Kashou</b> | Co-Advisor             | “Development of functional studies and methods to better understand visual function.”  | PhD, Spring 2008                |
| <b>Bongsu Kim</b>          | Co-Advisor             | “Multidisciplinary engineered approaches to investigate human trabecular meshwork endothelial cells in regulation of intraocular pressure” | PhD,Summer 2011                 |
| <b>Leilei Zhang</b>        | Co-Advisor             | “Drug loaded multifunctional microparticles for anti-VEGF therapy of exudative age-related macular degeneration”                           | PhD, Fall 2012                  |

**PH.D. DISSERTATION COMMITTEES:****Graduation Date:**

|                         |   |                    |
|-------------------------|---|--------------------|
| <b>Ling Sun</b>         | “3D Melissa : a new three dimensional fat/water image acquisition technique for magnetic resonance imaging” | Ph.D., Spring 1994 |
| <b>Mohinder Merchea</b> | “"Refractive error shift with continuous use (RESCU) lenses”  | Ph.D., Spring 2003 |
| <b>Jim Ibinson</b>      | “The study of pain with blood oxygen level dependent functional magnetic resonance imaging”                 | Ph.D., SU 2004     |

**PH.D. CANDIDACY COMMITTEES:****Exam Date:**

|                         |            |             |
|-------------------------|------------|-------------|
| <b>Xia Li</b>           | Advisor    | Summer 1992 |
| <b>Yan Gao</b>          | Advisor    | Spring 1993 |
| <b>Anton Bartolo</b>    | Co-Advisor | Autumn 1995 |
| <b>Dan Ebert</b>        | Advisor    | Autumn 1995 |
| <b>William J. Dupps</b> | Advisor    | Autumn 1997 |
| <b>Yih-Tyng Wu</b>      | Advisor    | Spring 1998 |



|                             |                                |             |
|-----------------------------|--------------------------------|-------------|
| <b>Marjorie Jeandervin</b>  | Graduate School Representative | 4/20/99     |
| <b>George Markakis</b>      | Advisor in Biophysics          | Winter 2000 |
| <b>Sudhir Thakur</b>        | Graduate School Representative | Autumn 2001 |
| <b>Amy Wanken</b>           | Graduate School Representative | Autumn 2001 |
| <b>Kim</b>                  | Graduate School Representative | Autumn 2003 |
| <b>Zheng</b>                | Graduate School Representative | Winter 2003 |
| <b>Jim Ibinson</b>          | Committee Member               | Summer 2004 |
| <b>Maolong Tang</b>         | Co-Advisor                     | 9/7/2004    |
| <b>Vivek Walimbe</b>        | Advisor                        | 3/10/2005   |
| <b>Lauren Kennell</b>       | Graduate School Representative | Summer 2005 |
| <b>Bongsu Kim</b>           | Co-Advisor                     |             |
| <b>LeiLei Zhang</b>         | Co-Advisor                     | Summer 2009 |
| <b>Sarah Jean Getzelman</b> | Graduate School Representative | Spring 2014 |
| <b>Blair A. Williams</b>    | Graduate School Representative | Spring 2016 |

**INTERNATIONAL GRADUATE STUDENT MENTOR:**

|                                  |   |                             |
|----------------------------------|---|-----------------------------|
| <b>Francisco Rodriguez-Marin</b> | “Corneal Biomechanics.”<br>Home Program: Physics, University of Granada, Spain; funded by the Spanish Government, Mentor for Fulbright Fellow | <b>Date:</b><br>Autumn 2006 |
| <b>Ashutosh Richhariya</b>       | Nehru-Fulbright Doctoral And Professional Fellow  | 2010-2011                   |

**UNDERGRADUATE HONORS THESIS COMMITTEE MEMBER:**

|   |  |                                   |
|---|--|-----------------------------------|
| <b>Yi Juin Liew</b><br>(Advisor: Jun Liu)             | “Effect of Prostaglandins on Corneal Stiffness and Intraocular Pressure Measurement.”  | <b>Graduation:</b><br>BS, SP 2013 |
| <b>Mengyu Liu</b><br>(Advisor: Jun Liu)               | “Effects of Eye Rubbing on Corneal Biomechanical Properties”   | BS, SP 2013                       |
| <b>Christian Blough</b><br>(Co-Advisor: Robert Small) | “Measuring Cerebrospinal Fluid Pressure With a Fluid Manometer”<br>4 <sup>th</sup> Place in College of Engineering 2017 Undergraduate Research Forum | BS SP 2017                        |
| <b>Preethi Chidambaram</b>                            | “Corneal Biomechanics as a Function of Race”<br>Presented at 2017 Denman Undergraduate Research Forum  | BS SP 2017                        |

**UNDERGRADUATE RESEARCH:**

|   |   |             |
|---|---|-------------|
| <b>Maggie Cron</b><br>Co-Advisor: Ron Xu            | “3-D Printing of an Eye Model.”<br>Received OSA Scholarship for Collaborative Research in China | BS, SP 2015 |
| <b>Preethi Chidambaram</b>                          | “The Influence of Race on Corneal Biomechanics”<br>Denman Undergraduate Research Forum 2017     |             |
| <b>Christian Blough</b><br>Co-Advisor: Robert Small |   |             |

“Developing Transfer Functions of Lumbar Puncture Needles”

**ABSTRACT JUDGE** for Edward F. Hayes Graduate Research Forum, 1998, 1999, 2000

**FACULTY ADVISOR** to Student Biomedical Engineering Society (1990 to 1993, 1996- 1999)

**RESIDENTS:**

|                             |                         |  |
|-----------------------------|-------------------------|--|
| <b>James Harris, MD</b>     | Primary Research Mentor | “Topographic Evaluation of Keratoconus”<br>“An Update of the Evaluation of Keratoconus using the Orbscan Corneal Topographer”  |
| <b>Susmitha Kolli, MD</b>   | Research Mentor         | “The Accuracy of the PAR Corneal Topography System Under Conditions of Misalignment and Defocus”   |
| <b>Petra vonKulajta, MD</b> | Primary Research Mentor | “The Stability of Central Cornea Curvature as a Function of Intra Ocular Pressure and Scleral Support”<br>“Repeatability of Corneal Topography Measurements Using the PAR CTS on Cadaver Globes”<br>“The Stability of Posterior Corneal Curvature Pre- and Post-LASIK”               |
| <b>Robert Wang, MD</b>      | Primary Research Mentor | “Repeatability of Retinal Thickness Measurements In Optical Coherence Tomography”<br>“Reproducibility of Retinal Thickness Measurements Using Optical Coherence Tomography”  |
| <b>Dino Klisovic, MD</b>    | Research Mentor         | “Human Extraocular Muscle Imaging: Three Dimensional Reconstruction and Volumetrics”   |
| <b>Kevin Kegler, MD</b>     | Research Mentor         | “Cyclo-Rotation of Astigmatic Meridian between the Sitting and Supine Position”  |
| <b>Chris Bruno, MD</b>      | Primary Research Mentor | “Posterior Corneal Surface Changes After LASIK”<br>“Topographic Analysis of Posterior Corneal Surface Changes After LASIK”   |
| <b>Raj Rangaraj, MD</b>     | Research Mentor         | “Measurement of Nerve Fiber Layer Thickness in Glaucoma Using OCT”   |
| <b>James McHale, MD</b>     | Primary Research Mentor | 1.“Comparative Optical Wavefront Analysis of Uncorrected Versus Contact Lense Corrected Vision”; 2.“Pupil Size and Higher-Order Aberrations in Keratoplasty, Keratoconus and Myopic-Astigmatism”; 3.“Optical Wavefront Analysis of Uncorrected Versus Contact Lens-Corrected Vision” |
| <b>Vivek Raizada, MD</b>    | Primary Research Mentor | “Comparative Aberrometric Analysis of Two Brands of Intraocular Lenses in Post-Cataract Surgery Patients”<br>“Comparative Aberromatic Analysis of Three Brands of Intraocular Lenses in Patients Post-Cataract Surgery: A Pilot Study”   |
| <b>Nicholas Rogers, MD</b>  | Research Mentor         | “Analysis of Corneal Biomechanics Based Upon Central and Peripheral Corneal Thickness in Normal and Post-Refractive Surgery Eyes”  |
| <b>Conley Call MD</b>       | Research Mentor         | “Ocular Structural Integrity Related to Airbag Trauma: A LASIK Model”<br>“Globe Structural Integrity in Cadaver Eyes After Corneal Flap: A LASIK Model”  |
| <b>William Anninger, MD</b> | Primary Research Mentor | “Comparison of the Nerve Fiber Layer and Total Retinal Thickness in Glaucoma Patients and Normals Using Optical Coherence Tomography”  |
| <b>Amy Kopp, MD</b>         | Primary Research Mentor | “Evaluation of Objective Parameters Determined by OCT and their Correlation to Clinical Exam Findings in Glaucoma”   |
| <b>Nick Rogers</b>          | Primary Research        | “Analysis of corneal biomechanics based upon central and peripheral corneal  |

|                        |                         |  |
|------------------------|-------------------------|--|
|                        | Mentor                  | thickness, topography and wavefront aberration in normal and post refractive surgery eyes”   |
| <b>Julie Lange</b>     | Primary Research Mentor | “Assessing the usefulness of the OQAS: a new device designed to measure vision quality”  |
| <b>Carrie Lembach</b>  | Primary Research Mentor | “Comparison of Neutral verses Conventional Pressure in Conductive Keratoplasty.”<br>“Long term follow-up of the Biomechanical Response to LASIK in subjects treated with two laser platforms in a contralateral study design.” |
| <b>Kris Kelly</b>      | Primary Research Mentor | “Calculating corneal curvature from surface height; Is it possible without a placido?”   |
| <b>Amy Kopp</b>        | Primary Research Mentor | “A comparison of IOP measurements in pre- and post-trabeculectomy patients using different measurement instruments.”   |
| <b>Anne Elbiaadi</b>   | Research Mentor         | “Clinical Comparison of Corneal and Scleral IOP Measurements When Measured by the Tonopen in Relation to Corneal Thickness”  |
| <b>Kathy Baker</b>     | Research Mentor         | “A comparison of IOP measurement in the central corneal, peripheral cornea and sclera using the tonopen.”  |
| <b>Thomas Dingle</b>   | Research Mentor         | “Objective Measurement of Crystallens Accommodation and Its Relationship to IOL Movement”  |
| <b>Carla Ford</b>      | Primary Research Mentor | “Comparison of Goldmann Applanation Tonometry and Pascal Dynamic Tonometry in a Glaucomatous Population”   |
| <b>Bryan Costin</b>    | Research Mentor         |  |
| <b>Adam Cloud</b>      | Research Mentor         |  |
| <b>Amenze Osa</b>      | Research Mentor         | “Positional Changes in Optic Nerve Reflectivity on OCT Imaging” 2016-17  |
| <b>Zachary Mikolaj</b> | Research Mentor         | “Changes in IOP and Optic Nerve OCT Images Between Sitting and Supine Positions in Normal Subjects.” 2016-17   |
| <b>Kristen Mendoza</b> | Research Mentor         | “Comparison of Biomechanical Deformation Response after Myopic LASIK to Thin Normal Corneas” 2016-2017   |

#### **MEDICAL STUDENTS:**

|                        |  |                        |
|------------------------|--|------------------------|
| <b>Sean Kling</b>      | “Finite element analysis of the cornea in photorefractive keratectomy”                           | 1995                   |
| <b>Nirev Shah</b>      | “Comparison of Topographers in Photorefractive Keratectomy”                                      | 1996                   |
| <b>Douglas Washing</b> | “Repeatability of the Orbscan I in a Normal Population”  | 1997                   |
| <b>Shemal Scott</b>    | “Evaluation of the Posterior Corneal Surface after LASIK using the Orbscan Corneal Topographer”  | 1997                   |
| <b>Bruce Buerk</b>     | “Characterization of Normal Anterior and Posterior Surface Corneal Topography Using the Orbscan” | 1998                   |
| <b>Ron Sayers</b>      | “Accuracy of the PAR, Orbscan, and Placido ring corneal topographers”                            | Summer and Autumn 1998 |
| <b>Maggie Chen</b>     | “Measurement of retinal thickness as a function of age using OCT”                                | Summer and Autumn 1998 |
| <b>Michael Roh</b>     |  | Summer 1998            |

|                             |  |   |
|-----------------------------|--|---|
| <b>Richard Golden</b>       | “Measurement of Epithelial Defects with Orbscan, PAR, and Placido Systems  | 1999  |
| <b>G. Alexander Jones</b>   | “Characterization of Refractive vs Keratometric Astigmatism Mismatch”  | 1998-2000   |
| <b>William J. Dupps</b>     | “The biomechanical response of the cornea to laser refractive surgery”   | 1998-2000   |
| <b>Lee Birnbaum</b>         | “Development of a normal database on the Orbscan II”<br>“Variability of the Orbscan II Corneal Topographer in a Normal Population”   | 2000<br>2000  |
| <b>Patrick Schumacher</b>   | “Keratometric/Refractive Astigmatism Mismatch”   | 2000  |
| <b>Ryan Niederkohr</b>      | “The effect of trephination depth on corneal curvature response”   | 2002  |
| <b>Dara Koozekanani</b>     | “Retinal Imaging with OCT”   | 2002  |
| <b>Sunil Hari</b>           | “OCT2 vs OCT3 and follow-up of diabetic macular edema”   |   |
| <b>Roger Duncan Johnson</b> | “The Influence of Corneal Properties and the Geometry on the Severity of Glaucoma”   | 2004  |
| <b>Jennifer Wilding</b>     | “Generation and analysis of a normative topographic database for donated human corneas”  | 2005  |
| <b>Jared Peterson</b>       | “Impact of biomechanical properties and bloodflow on outcomes after trabeculectomy in the glaucomatous population.”  | 2005  |
|                             | National AOA Fellowship for Research   | Summer 2006   |
|                             | Fight-for-Sight Student Fellowship   | Summer 2007   |
|                             | “Longitudinal Goldmann applanation tonometry measurement and age: A new explanation.”  | OSUMC Research Day,<br>4/10/08<br>ARVO, 2007, 2008                            |
| <b>Duane Schonlau</b>       | “The effect of shut-down pressure on the measurement of corneal hysteresis”<br>“Determining the Viscous and Elastic Properties of the Cornea in Normal and Glaucomatous Eyes.” | Winter 2007, Spring 2008,<br>Roessler, 2007<br>OSUMC Research Day,<br>4/10/08 |
| <b>Andrew Schneier</b>      | “The effect of Pre-Conditioning on Corneal Hysteresis Measurement in Glaucoma and Ocular Hypertension”   | Winter 2007-2008  |
| <b>Lance Shilliam</b>       | “Measurement of Accomodation with the Maxwell Wavefront Sensor.”   | Winter 2007, Spring 2008  |
| <b>David Shiple</b>         | “The effect of Pre-Conditioning on Corneal Hysteresis Measurement in Normal Subjects.”   | Winter 2007 - 2009  |
| <b>Zeeshan Qureshi</b>      | “Evaluation of the effect of the Restore psuedo-accomodating IOL on retinal imaging.”  | Winter 2007 - 2009  |
| <b>Steve Price</b>          | “The effect of cyclic pressure loading on elastin morphology.”   | 2007  |
| <b>Sarah Mirza</b>          | “The Impact of Prostaglandin-analogs on Measured Corneal Properties and IOP”   | Winter 2007, Spring 2008  |
| <b>Srinivas Kondapalli</b>  | “The Effect of Race on Various Ocular Biomechanical Properties”<br>“The effects of diabetes mellitus on the biomechanical properties of the                                    | OSUMC Research Day,<br>4/10/2008, ARVO 2008<br>Fight for Sight Student        |

|                            |  |  |
|----------------------------|--|--|
|                            | eye.”  | Fellowship, Summer 2008                      |
| <b>Kendra Clemons</b>      | “Corneal Biomechanical Characteristics as a Function of Age in a Healthy African American Population.”<br>Roessler Scholarship, Summer 2008(Additional Mentors: Gloria Fleming, MD and Paul Weber, MD)<br>Poster presentation at the OSU Post-Graduate Research Day, 2009  | ARVO 2009                                    |
| <b>Linden Lee</b>          | "Corneal biomechanics in hyperopia and myopia"<br>Roessler Scholarship<br>Poster presentation at the OSU Post-Graduate Research Day, 2009  | Summer 2008<br>ARVO 2009                     |
| <b>Kevin Overmann</b>      | "Quantification of hysteresis and subsequent determination of corneal properties through data obtained by Reichert Ocular Response Analyzer with Pachymeter and Dynamic Contour Tonometry,"<br>Roessler Scholarship.   | Summer 2008                                  |
| <b>Rueben Nair</b>         | "Effects of prostaglandins on the biomechanical properties of the cornea." (Additional Mentor: Paul Weber, MD)<br>Roessler Scholarship.  | 2008   |
| <b>David Ricks</b>         | "Using Air Puff Tonometry for Accurate Measurement of Intraocular Pressure in Keratoconus Patients” NIH-sponsored Road Map Training in Clinical Research Summer Program (Additional Mentor: Richard G. Lembach, MD); Poster Presentation at OSU Post-Graduate Research Day; “Effect of applied air pressure variation on intraocular pressure measurement in keratoconic eyes using the Ocular Response Analyzer”  | 2009   |
| <b>Zarina Sharalaya</b>    | “Measurement and validation of the biomechanical properties of the in vivo human cornea,” Roessler Scholarship<br>OSUMC Trainee Research Day; “Corneal Biomechanics in Glaucoma”   | Summer 2011<br>Spring 2012                   |
| <b>Sue Shaio</b>           | Characterizing the impact of position on air puff pressure with CorVis   | Fall 2011<br>ARVO 2012                       |
| <b>Keerthana Bolisetty</b> | DCT before and after treatment in IIH (Winter-Spring)<br>Prevent Blindness Ohio Summer Fellowship– “Correlation of change in ocular pulse amplitude with change in intracranial pressure to prevent vision loss in idiopathic intracranial hypertension patients”<br>Fight for Sight Summer Fellowship– “Correlation of change in ocular pulse amplitude with change in intracranial pressure to prevent vision loss in idiopathic intracranial hypertension patients”<br>“Correlation of the Change in Ocular Pulse Amplitude to the Change in Intracranial Pressure after Lumbar Puncture.” <u>Keerthana Bolisetty</u> , Cynthia Roberts, Ashraf M. Mahmoud, Monica Okon, Steven E. Katz. Presented at the 12 <sup>th</sup> Annual OSUWMC Trainee Research Day | Summer 2012<br>Summer 2012<br>April 11, 2013 |
| <b>Jillian Cong</b>        | Corneal Properties with Prostaglandin Treatment  | Summer 2013                                  |
| <b>Heather Stiff</b>       | Corneal Biomechanics in Diabetes   | Summer 2014                                  |
| <b>Frini Makadia</b>       | Corneal Biomechanics in Diabetes   | Summer 2015                                  |

**UNDERGRADUATE ENGINEERING AND PRE-MEDICAL STUDENTS:**

1. Maybell Adjunta, 1991
2. Steven Cuff, (Summer), 1996
3. Chris Eppley, (Summer), 1997

4. Alicia Moreno, (Spring), 1998
5. Anjana Vagarali, (Summers), 1998, 1999
6. Andrew Schrader  
2005 Mayers Summer Research Internship in the amount of \$2600  
Dean's Undergraduate Research Fund award for winter, 2006, in the amount of \$300 to support undergraduate research  
Schrader A, Roberts CJ, Lannutti J, Lewis J: "Analysis of Surface Smoothness of Acrylic Plates and Lenses Following Excimer Laser Photoablation." *The Ohio State University Denman Undergraduate Research Forum*, May 18, 2005 (FIRST PLACE out of 31 participants)
7. Srinivas Sai Kondapalli (2005)
8. Elliot Rouse (2006)
9. Emily Swingle (2011-2012)
10. Jennifer Malik (2012-2013)  
"Predicting Ocular Fluid Structure Interactions in Response to Air Puff Tonometry Using Computational Modeling" Malik, Jennifer E; Metzler, Kimberly M.; Whitaker, Steven M; Lawrence, Michael J.; Bons, Jeffrey P.; Roberts, Cynthia J. Presented at the 4<sup>th</sup> Annual Undergraduate Research Forum for Engineering and Architecture, March 21, 2013.  
"Numerical Simulation of Ocular Biomechanics to Predict Corneal Responses to Air Puff Tonometry." Malik, Jennifer E; Metzler, Kimberly M.; Whitaker, Steven M; Lawrence, Michael J.; Bons, Jeffrey P.; Roberts, Cynthia J. 18<sup>th</sup> Annual Denman Research Forum, March 28, 2013. HONORABLE MENTION
11. Maggie Cron (2014) – Ophthalmic Drug Delivery and Designing and 3D printing an eye model for investigation of pulsatile translaminal pressure gradient; Optical Society of America Scholarship for summer study in China
12. Tony Wei (2014) – Designing a 3D Computer Eye Model
13. Preethi Chidambaram (2015-2017) The Influence of Race on Corneal Biomechanics
14. Christian Blough (2016-2017) Developing Transfer Functions of Lumbar Puncture Needles.

#### **AFFIRMATIVE ACTION AND MENTORING ACTIVITIES:**

1. Minority Engineering Award Banquet, 1993
2. Women in Engineering Recognition Dinners, 1992, 1994, 1995
3. Women in Science Program for 7<sup>th</sup> – 12<sup>th</sup> graders
4. Society of Women Engineers' Regional Conference, 1992, Gender Bias Panel
5. Guest Speaker, Women in Engineering Course (ENG 195), "Biomedical Engineering," 1992, 1994
6. Guest Speaker, Kenwood Elementary School, Columbus, OH, 1996, 1997, "Careers in Science"
7. Served as High School Science fair advisor for Geoff Ulman 1999, 2000, 2001
8. Prevent Blindness Ohio's Young Investigators Student Fellowship Award for Female Scholars in Vision Research Selection Committee Member 2005, 2006, 2007, 2008, 2010, 2011, 2012, 2013

#### **AD HOC JOURNAL REVIEWER FOR:**

1. *American Journal of Ophthalmology*
2. *Annals of Biomedical Engineering*
3. *Archives of Ophthalmology*
4. *IEEE T Med Imaging*
5. *Invest Ophth Vis Sci*
6. *Journal of the Optical Society of America*
7. *Optometry Vision Sci*
8. *J Refract Surg*
9. *J Cataract Refr Surg*

#### **EDITORIAL BOARD:**

*J Refract Surg*- current

*J Cataract Refr Surg*- current

*International Journal of Keratoconus & Ectatic Corneal Disease* - current

#### **GUEST EDITOR:**

*Special Issue of the J Refract Surg on Corneal Biomechanics*, January 2005

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#### **SECTION CO-**

#### **EDITOR:**

*Special Section on Corneal Biomechanics for the J Refract Surg*

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125. Chen K-J, Eliasy A, Vinciguerra R, Vinciguerra P, Ambrósio Jr R, Roberts CJ, Elsheikh A. Development and Validation of a new intraocular pressure estimate for patients with keratoconus, Submitted to *Ophthalmology* 1/18.
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12. James D. Brandt, Cynthia J. Roberts, Mark B. Sherwood, and Clinton W. Sheets. "The Impact of Central Corneal Thickness and Corneal Biomechanics on Tonometry." Chapter 16 in *Glaucoma: Medical Diagnosis and Therapy*, Volume 1. Elsevier; 2009:207-212.
13. Fournie P, Gordon GM, Leede DR, Roberts CJ, Fini ME. "Corneal Stroma: Shape, Structure and Biomechanical Properties." Chapter 5 in: Brightbill FS, McGhee CNJ, McDonnell PJ, Farjo AA, Serdarevic ON (eds). *Corneal Surgery: Theory, Technique, and Tissue*, 4<sup>th</sup> Edition, St. Louis, Mo: Mosby/Elsevier; 2009:33-44.
14. Roberts CJ. "[Biomechanics in Keratoconus](#)." In: Barbara A (ed). *Textbook of Keratoconus: New Insights*. 1<sup>st</sup> Edition, New Delhi: Jaypee Brothers Medical Publishers; 2012:29-32.
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17. Grzybowski DM, Rogers NA, Mahmoud AM, Roberts CJ. Corneal Topographic Response to Swelling in Normal and post-LASIK Corneas, in Kılıç A, Roberts CJ (eds). *Corneal Topography: from Theory to Practice*, Amsterdam: Kugler Publications; 2013: 271-288.
18. Renato Ambrósio, Jr., MD, PhD; Marcella Q. Salomão, MD; Cynthia J. Roberts, PhD. "Measuring the efficacy of Cross-linking (CXL): from corneal shape analysis to in vivo biomechanical characterization." Chapter 12 In Hafezi F, Randleman JB (eds). *Corneal Collagen Cross-Linking*. Thorofare, NJ: SLACK Incorporated, 2013: 81-88.
19. McQuaid R, Mrochen M, Vohnsen B, Spoerl E, Kling S, Roberts CJ. [Fundamentals of Corneal Cross Linking](#). Chapter 3 in Sinjab MM and Cummings AB (eds). *Corneal Collagen Cross-linking*. Springer International Publishing Switzerland 2017:63-86. DOI 10.1007/978-3-39775-7\_3
20. Nevyas-Wallace A, Roberts CJ, Weinstock R, Desai N. [Cornea-based Astigmatism Correction: Limbal Relaxing Incisions and Laser Astigmatic Keratotomy](#). In Wang MX, Swartz TS (eds) *Refractive Lens Exchange; A Surgical Treatment for Presbyopia*. Thorofare, NJ: SLACK Incorporated, 2015: 73-84.
21. Roberts CJ, Mahmoud AM, Mendoza AV, Ambrósio Jr R. Interpreting dynamic corneal response parameters of the Corvis ST. In Roberts CJ, Liu J (eds). *Corneal Biomechanics: from Theory to Practice*, Amsterdam: Kugler Publications; 2016.
22. Vinciguerra P, Vinciguerra R, Roberts CJ. Corneal collagen cross-linking. In Roberts CJ, Liu J (eds). *Corneal Biomechanics: from Theory to Practice*, Amsterdam: Kugler Publications; 2016.
23. Renato Ambrósio, Jr., MD, PhD; Marcella Q. Salomão, MD; Cynthia J. Roberts, PhD. "[Measuring the Efficacy of Corneal Cross-Linking Using Advanced Corneal Biomechanical Diagnostic Modalities](#)." Chapter 22 In Hafezi F, Randleman JB (eds). *Corneal Cross-Linking*. Thorofare, NJ: SLACK Incorporated, 2017: 143-149.
24. Roberts, CJ. Biomechanics of Stabilizing the Keratoconic Cornea. In Barbara, A (editor)

## **INVITED PRESENTATIONS:**

1. "Laser-Tissue Interactions," American Association for Dental Research, Columbus Section, Columbus, Ohio, April 9, 1990.
2. "Instantaneous Radius of Curvature" Expert Panelist Presentation for Corneal Topography Special Interest Group Meeting, ARVO, 1994.
3. "Concepts in Corneal Topography" College of Optometry Seminar, The Ohio State University, July 12th, 1994.
4. "Corneal Topography Update" Presented at Summit Technology, Inc., August 24, 1994.
5. "Corneal Topography: Defining Issues" Biomedical Optics Europe '94, Lille, France, September, 1994
6. "Are All Curvature Maps the Same?" CLAO, Las Vegas, Nevada, January 11, 1995
7. "Lasers in Ophthalmology" Central Ohio Technology Exposition, Columbus, OH, February 23, 1995
8. "Corneal Topography: Clearing the Confusion" The Seventh Annual Ohio Ophthalmic Technician Program for the Ophthalmic Personnel Society of Central Ohio, Columbus, Ohio, March 4, 1995.
9. "Lasers in Medicine" lecture at The Ohio State University Veterinary School, May , 1996
10. "Laser Refractive Surgery" IEEE Meeting, Columbus, OH, February 12, 1997.
11. "Shape of the post-Refractive Surgery Cornea" Seventh International Southern African Congress on Cataract and Refractive Surgery, September 27th, 1997
12. "Interpretation of Corneal Topography Elevation Data" Seventh International Southern African Congress on Cataract and Refractive Surgery, September 27th, 1997
13. "Power vs Curvature" Seventh International Southern African Congress on Cataract and Refractive Surgery, October 1, 1997
14. "Interpretation of Elevation Topography" OrbTek Breakfast Meeting, AAO, October 25, 1997
15. "Corneal Topography in Refractive Surgery" Pre-Academy ISRS, October 24, 1997
16. "Elevation Corneal Topography" American Academy of Optometry, Cornea and Contact Lens Section Program: Bits, Bytes, Maps, Flaps & Zaps: New technology to Reshape the Anterior Segment, December, 12, 1997.
17. "The Diagnosis, Classification, and Management of Keratoconus with Topography" XXVIIIth International Congress of Ophthalmology, Amsterdam, 1998.
18. "Corneal Topography: State of the Art" International Society of Refractive Surgery (ISRS), Orlando, July, 1998.
19. "Posterior Corneal Surface Astigmatism" Pre-Academy ISRS (International Society of Refractive Surgery), November, 1998.
20. "Paraxial Optics of Corneal Astigmatism" Orbscan Anterior Segment Analysis: Basic Map Reading Course, in conjunction with the American Academy of Ophthalmology, New Orleans, November, 1998.
21. "Zen and the Radius of Curvature." BobFest, Berkley, CA, November, 1998.
22. "What's New in Corneal Topography" in Corneal Topography & Quality of Vision. 1999 Summer World Refractive Surgery Symposium - ISRS, Miami, FL, 7/18/99.
23. "The Biomechanical Response of the Cornea to Laser Refractive Surgery." Maisonneuve Rosemont Research Center, Montreal, Canada, October 4, 1999.
24. "Using the Orbscan to Measure the Biomechanical Component of Corneal Response to Laser Refractive Surgery." Bausch & Lomb Surgical Orbscan II User Meeting, October 22, 1999.
25. "Understanding Topography in the 21<sup>st</sup> Century." in Optical Aberrations & Visual Functions. 1999 Fall World Refractive Surgery Symposium - ISRS, Orlando, FL, 10/23/99
26. "Corneal Topography in Refractive Surgery," Ohio Ophthalmological Society 2000 Annual Meeting, Ophthalmic Technician Program, January 29, 2000, Columbus, OH.
27. "Future Challenges to Creating the Aberration-free Ablative Corrections." 1<sup>st</sup> International Congress of Wavefront Sensing and Aberration-Free Refractive Correction, Optical Society of America, Santa Fe, NM, February 12, 2000.
28. "Biomechanics of Corneal Response to Laser Refractive Surgery," 4<sup>th</sup> Annual Congress of Researchers in Refractive Eye Surgery and Technology (CREST), April 29, 2000
29. "The Future of Customized Laser Refractive Surgery," Bausch & Lomb Refractive Alliance, held in conjunction with the European Society of Cataract and Refractive Surgery, Brussels, Belgium, September 2, 2000.
30. "Current use of corneal topography to design customized wavefront guided ablations." Wavefront Technology and Custom Ablation Session of the International Society of Refractive Surgery Fall World Refractive Surgery Symposium,

Dallas, TX, October 21, 2000.

31. "Customization and Corneal Response," Bausch & Lomb Refractive Alliance, held in conjunction with the American Academy of Ophthalmology, Dallas, Texas, October 22, 2000
32. "Future Challenges to Creating Aberration-free Ablative Corrections." American Academy of Optometry Research Symposium 2000: Wavefront Sensing and Ideal Refractive Corrections: Breaking the 20/15 Barrier," Orlando, Florida, December 9, 2000.
33. "Next Generation of Customized Ablative Procedures" 2001: A CORNEAL ODYSSEY, Cornea, External Disease, and Refractive Surgery in the New Millennium, 44<sup>th</sup> Annual Postgraduate symposium in Ophthalmology, March 10<sup>th</sup>, 2001, Columbus, OH.
34. "Corneal Ectasia after LASIK" Hong Kong Sanatorium and Hospital, March 15, 2001
35. "Corneal Biomechanics and the Future of Customized Ablation" Hong Kong Sanatorium and Hospital, March 15, 2001
36. "Current Status of Customized Laser Refractive Surgery," ConBio, Shanghai, P.R.China, March 20, 2001
37. "Corneal Biomechanics and their Role in Ablative Procedures," Eye Hospital, Wenzhou Medical College, P.R.China, March 21, 2001 (Host: Qinmei Wang)
38. "Corneal Biomechanics" Videorefrattiva 2001, Milan, Italy, March 24, 2001
39. "Biomechanics of Hyperopic LASIK treatment," 5<sup>th</sup> Annual Congress of Researchers in Refractive Eye Surgery and Technology (CREST), Ft. Lauderdale, FL, April, 2001
40. "Biomechanics of the Cornea," Winter European Society of Cataract and Refractive Surgery, Refractive Surgery Didactic Course, Barcelona, Spain, January 25, 2002
41. "Biomechanics of the Cornea and Wavefront-Guided Laser Refractive Surgery," 3<sup>rd</sup> International Congress on Wavefront Sensing and Aberration-Free Refractive Correction, Interlaken, Switzerland, February 16<sup>th</sup>, 2002
42. "Corneal Biomechanics and their role in Customized Ablation Procedures," Zyoptix Alliance, Session on the Science of Custom Ablation, International Congress on Ophthalmology, Sydney, Australia, April 20, 2002.
43. "Diagnostic Procedures in Refractive Surgery," Refractive Alliance, held in conjunction with the International Congress on Ophthalmology, Sydney, Australia, April 21, 2002.
44. "The impact of corneal biomechanics in Wavefront guided customized Refractive Surgery," 6<sup>th</sup> Annual Congress of Researchers in Refractive Eye Surgery and Technology (CREST), May 4<sup>th</sup>, 2002.
45. "The Quest for SuperVision in Customized Laser Refractive Surgery: Myth or Reality?" Biomedical Engineering Seminar, The Ohio State University, May 14<sup>th</sup>, 2002.
46. "Biomechanics and Topography after LASIK, PRK, and LASEK." Main Symposium, XX Congress of the ESCRS (European Society of Cataract and Refractive Surgery), Nice, France, September 10, 2002.
47. "Will Bio-Mechanics Prevent Ideal Corrections," 50<sup>th</sup> Anniversary Research Symposium, College of Optometry, University of Houston, March 1, 2003.
48. "Corneal Biomechanics in Wavefront-Guided Procedures: The key to Optimized Refractive Correction," The Bausch & Lomb Asia Zyoptix Alliance, Hong Kong, March 4, 2003.
49. "The Role of Corneal Biomechanics in Wavefront-Guided Procedures," Bausch & Lomb Global Symposium on Vision Correction, Monaco, April 5<sup>th</sup>, 2003
50. "The role of Corneal Biomechanics in Surgical Outcomes," 7<sup>th</sup> Annual Congress of Researchers in Refractive Eye Surgery and Technology (CREST), May 3<sup>rd</sup>, 2003.
51. "Corneal Biomechanics in Refractive Surgery" TELUM (Technolas Excimer Laser User Meeting), Port Douglas, Australia, July 17, 2003
52. "Maximizing efficiency in Ablation Profiles" TELUM (Technolas Excimer Laser User Meeting), Port Douglas, Australia, July 17, 2003
53. "Corneal Biomechanics in Refractive Surgery" AUSCRS 2003 Surgeons program, Port Douglas, Australia, July 21, 2003
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55. "Sodium Hyaluronate for Smoothing in Excimer Laser Surgery", XXI Congress of the ESCRS (European Society of Cataract and Refractive Surgery), Munich, Germany, September 8, 2003
56. "Biomechanics of the Cornea", XXI Congress of the ESCRS (European Society of Cataract and Refractive Surgery), Munich, Germany, September 8, 2003
57. "Fundamentals of Wavefront Optics: Optical and Biomechanical Consideration in LASIK." ISRS Japan, XXX, Japan, 2003.
58. "The Impact of Corneal Biomechanics on LASIK Outcomes" Taipei, Taiwan, October 19, 2003



59. "Rethinking Biomechanics" American Academy of Ophthalmology, Anaheim, California, November 14, 2003.
60. "Wave Front Analysis – potential applications for keratoconus" American Academy of Ophthalmology, Anaheim, CA, 2003.
61. "Biomechanics: the Key to Achieving the Ideal Correction OR Will Biomechanics Prevent Ideal Corrections?" 5<sup>th</sup> International Symposium on Refractive Surgery, Rotterdam, Netherlands, February 7, 2004.
62. "Corneal Biomechanics in Keratoplasty" Italian Society of Corneal Transplantation (SITRAC), Sienna, Italy, February 26-28, 2004
63. "Biomechanics of LASIK vs. Surface Ablation" Third International Congress on LASEK & EPI-LASIK, and Advanced Surface Ablation, Houston, Texas, March 20, 2004
64. "The Role of Corneal Biomechanics in Ablative Procedures" Reichert, Buffalo, New York, April 8, 2004
65. "Topographic and wavefront changes induced by flap creation" Moria Scientific Symposium ASCRS, San Diego, CA, April 30, 2004
66. "Biomechanics of the Cornea-How will it effect LASIK?" 17<sup>th</sup> Annual Meeting of German Ophthalmic Surgeons, Nuremberg, Germany, June 24-27, 2004
67. "Future Challenges to Aberration-Free Ablative Surgeries" XXII Congress of the ESCRS, Paris, France, September 18, 2004
68. "Can we Fool Corneal Biomechanics to Maintain a Physiological Shape After Excimer Treatment?" XXII Congress of the ESCRS, Paris, France, September 21, 2004
69. "Biomechanics: The next step in Optimizing Quality of Vision After Refractive Surgery" XXII Congress of the ESCRS, Paris, France, September 21, 2004
70. "The Importance of Corneal Biomechanics in Refractive Surgery: From Wavefront to Ectasia" Optometric Council on Refractive Technology, Inaugural Meeting, American Academy of Optometry, Tampa, Florida, December 8, 2004
71. "Will Corneal Biomechanics Prevent Wavefront Guided Refractive Surgery from Being Good Enough?" Association for Research in Vision and Ophthalmology/American Academy of Optometry-Vision Science and Cornea and Contact Lenses Section Joint Symposium, Tampa, Florida, December 10, 2004
72. "Biomechanics of Flap Creation" European Society of Cataract and Refractive Surgery, Future of the Flap, Main Symposium, 9<sup>th</sup> Winter Meeting, Rome, Italy, February 5, 2005
73. "The Influence of Corneal Biomechanics on IOP Measurement", PASCAL Seminar on Dynamic Contour Tonometry, Washington, D.C., April 16, 2005
74. "The Biomechanics of Surface Ablation vs LASIK: Which Might be Better Short Term vs Long Term" The 4th International Congress on EPI-LASIK, LASEK & Advanced Surface Ablation, Ft. Lauderdale, Florida, April 29, 2005
75. "Visual Field Defects and Dynamic Contour Tonometry" Ziemer Ophthalmics Symposia Dynamic Contour Tonometry and its Place in the Diagnostic Armamentarium, World Glaucoma Congress, Vienna, Austria, July 8, 2005
76. "The Influence of Corneal Biomechanics on IOP Measurement" Ziemer Ophthalmics Symposia, World Glaucoma Congress, Vienna, Austria, July 8, 2005
77. "Corneal Biomechanics, IOP, and OPA" Mini-panel, Speakers' Corner @ Ziemer-Ophthalmics booth with J. Brandt, American Academy of Ophthalmology, Chicago, IL, October 16, 2005
78. "IOP, OPA and Glaucoma Progression" Speakers' Corner @ Ziemer Ophthalmics booth, American Academy of Ophthalmology, Chicago, IL, October 17, 2005
79. "What's New in Ocular Biomechanics?", Scientific Advancements Session, 7<sup>th</sup> International Congress of Wavefront Sensing & Optimized Refractive Corrections, Nassau, Bahamas, January 28, 2006
80. "Biomechanical Customization for the Next Generation of Laser and Refractive Surgery", Topography or Wavefront-Based Ablation Symposium, 10<sup>th</sup> ESCRS Winter Refractive Surgery Meeting, February 10, 2006
81. "Conquering Corneal Biomechanics and Thickness in the Measurement of IOP" Pascal Symposium, World Ophthalmology Congress, Sao Paulo, Brazil, February 21, 2006
82. "Ocular Pulse Amplitude, Corneal Biomechanics, and Glaucoma", Pascal DCT Breakfast Symposium, American Society for Cataract and Refractive Surgery, San Francisco, California, March 18, 2006
83. "The Best of Two Worlds: Scheimpflug Photography and Placido Topography", Pascal DCT Breakfast Symposium, American Society for Cataract and Refractive Surgery, San Francisco, California, March 18, 2006
84. "Preliminary Characterization of the OQAS" Quality of Vision: OQAS (Optical Quality Analysis System) Symposium, American Society for Cataract and Refractive Surgery, San Francisco, California, March 18, 2006
85. "Biomechanical Customization and Epi-LASIK", Norwood Booth Presentation, American Society for Cataract and Refractive Surgery, San Francisco, California, March 19, 2006

86. "Corneal Biomechanics: the Next Generation" Reichert Breakfast Symposium, American Society for Cataract and Refractive Surgery, San Francisco, California, March 19, 2006.
87. "Scanning Slit and Scheimpflug Imaging" The J Cataract Refr Surg Symposium on Anterior Segment Imaging, American Society for Cataract and Refractive Surgery, San Francisco, California, March 20, 2006.
88. "Biomechanical Properties, Refractive Surgery, and IOP Measurement." 2<sup>nd</sup> Ljubljana Refractive Surgery Meeting, Slovenia, April, 21, 2006.
89. "The Corneal Biomechanical Response of LASIK vs Surface Ablation." 2<sup>nd</sup> Ljubljana Refractive Surgery Meeting, Slovenia, April, 21, 2006.
90. "Corneal Biomechanics." 112<sup>th</sup> Congress of the French Society of Ophthalmology, Paris, France, May 8, 2006.
91. "In Vivo Measurement of Corneal Biomechanical Properties." Cardiff University, Cardiff, United Kingdom, May 10, 2006
92. "Corneal Biomechanics." Rothschild Foundation, Paris, France, May 12, 2006.
93. "Corneal Optics and Biomechanics." Symposium on Wavefront Technology and the Quest for Super Vision, The American Ophthalmological Society, May 22, 2006
94. "The Importance of Corneal Biomechanics in Ophthalmology." The Brazilian Society of Refractive Surgery (BRSCRS), Belo Horizonte, Brazil, June 2, 2006.
95. "Corneal Biomechanics in Refractive Surgery," 9<sup>th</sup> Swiss Refractive Congress; featuring Corneal Biomechanics, from Artifact to Fact, Lucerne, Switzerland, June 10, 2006.
96. "Wavefront Analysis vs Corneal Topography," 9<sup>th</sup> Swiss Refractive Congress; featuring Corneal Biomechanics, from Artifact to Fact, Lucerne, Switzerland, June 10, 2006.
97. "Corneal Biomechanics and Intra-ocular Pressure" Italian Glaucoma Society, Sienna, Italy, June 16, 2006.
98. "Corneal Biomechanics in Refractive Surgery," British Society for Refractive Surgery, Oxford, England, July 2, 2006.
99. "Wavefront Analysis vs Corneal Topography," British Society for Refractive Surgery, Oxford, England, July 2, 2006.
100. "The Cornea is not a Piece of Plastic," New York Intra-Ocular Lens Implant Society (NYIOLIS), New York, NY, November 2, 2006.
101. "Corneal Biomechanics in Refractive Surgery and Glaucoma," Grand Rounds, New York Eye and Ear Infirmary, New York, NY, November 3, 2006.
102. "Biomechanical Considerations in Deciding between Surface Ablation or LASIK," Moria Booth, American Academy of Ophthalmology, November 11, 2006.
103. Kersley Lecutre, "Biomechanics of the Cornea," Medical Contact Lens and Ocular Surface Association (MCLOSA), London, England, November 17, 2006.
104. "Hysteresis and Biomechanics," Optometric Council on Refractive Technologies, American Academy of Optometry, Denver, December 6, 2006.
105. "Biomechanics of the Injured Cornea," ARVO/AAO Joint Symposium, Denver, December 8, 2006.
106. "Corneal Biomechanics and the Ocular Response Analyzer," Reichert Dinner Meeting, Buffalo, January, 30, 2007.
107. "Predictability of Refractive Surgical Procedures," Main Symposium on Fine-Tuning of Refractive Outcomes, Winter ESCRS, Athens, Greece, February 4, 2007.
108. "Corneal Biomechanics in Glaucoma," Rothschild Foundation, Bichat-Claude Bernard Hospital, Paris, France, March 19, 2007
109. "Laser-Tissue Interactions in Laser Trabeculoplasty," Diplôme Inter Universitaire LASER & Médecine, Université Bordeaux 1- Sciences et Technologies, Université Victor SEGALLEN, Sciences médicales, Bordeaux, France, March 22, 2007
110. "Biomécanique cornéenne: rencontre avec une experte," Bordeaux University, Ophthalmologic Department, France, March 22, 2007
111. "What's New in Corneal and Ocular Biomechanics" Medical Scientist Student Organization, April 19, 2007
112. "Biomechanics of the Cornea following Surface Ablation, SBK, and LASIK," Sixth International Congress on Advanced Surface Ablation & SBK, Ft. Lauderdale, FL, May 5, 2007.
113. "The Difference Between Corneal Topography and Wavefront." Sesión Calidad Visual y Aberraciones Oculares, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 25, 2007.
114. "Introduction to Corneal Biomechanics;" Sesión Biomecánica Corneal, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 25, 2007.
115. "What's New in Ocular Biomechanics?" Sesión Biomecánica Corneal, IX Congreso Internacional, Clínica de

- Oftalmologia de Cali 2007, Cali, Columbia, May 25, 2007.
116. "Biomechanics of Spherical Aberration." Sesión Biomecánica Corneal, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 25, 2007.
  117. "Biomechanical Customization: The Next Generation of Refractive Surgery." Sesión Biomecánica Corneal, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 25, 2007.
  118. "Corneal Topography in Keratoconus." Sesión Segmento de Cornea, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 26, 2007.
  119. "Hysteresis and Biomechanics of the Cornea." Sesión Segmento de Cornea, IX Congreso Internacional, Clínica de Oftalmología de Cali 2007, Cali, Columbia, May 26, 2007.
  120. "Scheimpflug Topography: Galilei." Clinical Research Symposium: Update on High Resolution Anterior Segment Imaging and Biometry. XXV Congress of the ESCRS, Stockholm, Sweden, Sept. 8, 2007.
  121. "Pros and Cons of Pentacam in Anterior Segment Diagnosis: CON." JCRS Symposium on Controversies in Cataract and Refractive Surgery. XXV Congress of the ESCRS, Stockholm, Sweden, Sept. 10, 2007.
  122. "What's New in Corneal and Ocular Biomechanics." The Ohio State University College of Optometry Seminar Series, Columbus, Ohio, February 19, 2008.
  123. "Basics Principles of the Galilei" Galilei Users Meeting, ASCRS, Chicago, April 4, 2008.
  124. "Biomechanical Basis of Keratoconus and Effects of Photoablation on Stability." In JCRS Symposium on High Risk Scenarios in Cataract and Refractive Surgery. ASCRS, Chicago, April 7, 2008.
  125. "LASIK Ectasia: What Every Refractive Surgeon Needs to Know." Symposium of the X International Congress of Cataract and Refractive Surgery: What's New in Refractive Surgery? Goiânia, Brazil, May 15, 2008.
  126. "Corneal Biomechanics: What Have we Learned from Refractive Surgery?" Symposium of the X International Congress of Cataract and Refractive Surgery: What's New in Refractive Surgery? Goiânia, Brazil, May 16, 2008.
  127. "Biomechanical Customization: The Next Generation of Refractive Surgery." José Barraquer Medal and Inaugural Lecture, X International Congress of Cataract and Refractive Surgery. Goiânia, Brazil, May 16, 2008.
  128. "Studies with the Pascal Dynamic Contour Tonometer." Symposium of the X International Congress of Cataract and Refractive Surgery: Pascal Dynamic Contour Tonometer, Goiânia, Brazil, May 16, 2008.
  129. "Biomechanics in Glaucoma." Symposium on Biomechanics in Scientific Conference: "Glaucoma: reality and perspective;" Moscow, Russia, September 26, 2008.
  130. "Galilei: The Best of Both Worlds." Galilei Users Meeting at the American Academy of Ophthalmology, Atlanta, November 2008.
  131. "Ray Tracing: A More Accurate Method to Determine Total Corneal Power." 4<sup>th</sup> Annual IOL Power Club, St. Pete Beach, November 13, 2008.
  132. "In Vivo Corneal Biomechanics," Modulating Ocular Biomechanics Session IV of the Lens, Refractive, and Wavefront Summit, Alicante, Spain; March 6, 2009.
  133. "Galilei: The Best of Both Worlds." Galilei Users Meeting at the ASCRS, San Francisco, April 6, 2009.
  134. "Predicting Post-LASIK Ectasia in Laser Vision Correction Candidates: Biomechanical Tests," 8<sup>th</sup> International Congress on Ablation & SBK, Ft. Lauderdale, May 2, 2009.
  135. "Galilei: The Best of Both Worlds," Galilei Users Meeting at the ESCRS, Barcelona, September 13, 2009.
  136. "Biomechanics of the Cornea," Keynote Lecture; Session I – The Cornea; United Kingdom & Ireland Society of Cataract & Refractive Surgeons (UKISCRS), Leeds, UK, October 8, 2009.
  137. "Corneal Shape – The Galilei," Imaging the Cornea Session; United Kingdom & Ireland Society of Cataract & Refractive Surgeons (UKISCRS), Leeds, UK, October 8, 2009.
  138. "Galilei: Placido, Dual Scheimpflug, Total Corneal Power," Galilei Users Meeting at the AAO, San Francisco, October 26, 2009.
  139. "Intraocular Pressure (IOP) and Biomechanics," Ziemer Booth at the AAO, San Francisco, October 26, 2009.
  140. "Scheimpflug Imaging: Are two cameras better than one?" Imaging Symposium, 14<sup>th</sup> ESCRS Winter Meeting, Budapest, February 13, 2010.
  141. "Galilei Dual Scheimpflug: The Best of Both Worlds," Ziemer Refractive Symposium: FEMTO LDV and GALILEI; EyeWorld Corporate Mornings, ASCRS, Boston, April 10, 2010.
  142. "Biomechanics in Ophthalmology," Tel Aviv Medical Center Department of Ophthalmology, Tel Aviv, May 20, 2010.
  143. "Corneal Biomechanics," Israeli Cornea Club, Tiberius, May 20, 2010.
  144. "Dynamic Corneal Topography," Israeli Cornea Club, Tiberius, May 20, 2010.

145. "Misconceptions and Misinterpretations in Corneal Topography, Israeli Cornea Club, Tiberius, May 21, 2010.
146. "Galilei: Dual Scheimpflug with integrated Placido, Israeli Cornea Club, Tiberius, May 21, 2010
147. "Dynamic Corneal Surface Topography: In Vivo Measurement of Biomechanical Properties." International Society of Eye Research (ISER), Montreal, July 20, 2010.
148. "Dynamic Corneal Surface Topography: in vivo measurement of spatially-resolved biomechanical properties." Corneal Biomechanics Clinical Research Symposium; XXVIII Congress of the ESCRS, Paris, September 4, 2010.
149. "GALILEI: Keratoconus Prediction and IOL Power Calculation after Refractive Surgery." Ziemer Refractive Lunch Symposium: FEMTO LDV and GALILEI; XXVIII Congress of the ESCRS, Paris – EuroTimes Satellite Education Programme, September 4, 2010.
150. "Biomechanical Treatment for Keratoconus: INTACS." XVI International Course of Cornea and Refractive Surgery, Cancun, Mexico, October 28, 2010.
151. "The Importance of Biomechanical Properties to the Clinician." XVI International Course of Cornea and Refractive Surgery, Cancun, Mexico, October 31, 2010.
152. "In Vivo Measurement of Biomechanical Properties." XVI International Course of Cornea and Refractive Surgery, Cancun, Mexico, October 31, 2010.
153. Roberts, C. "Corneal Biomechanics: Implications in Cornea and Glaucoma." Peking University, Beijing, China, January 17, 2011.
154. Roberts, C. "Corneal Biomechanics." Shanghai Jiao Tong University, Shanghai, China, January 19, 2011.
155. Roberts, C. "Clinical Corneal Biomechanics" Global Leaders Lecture Series, given via video link to LV Prasad Eye Institute, Hyderabad, India, Feb. 10, 2011
156. "The Future of Clinical Corneal Biomechanics" Oculus Booth, ASCRS, San Diego, March 28, 2011.
157. "Biomechanical Property Measurements of the Cornea," Rothschild Foundation, Paris, July 1, 2011.
158. "Diagnostics: How to evaluate the Cornea Biomechanically PREOP?" ISRS Symposium on Ophthalmic Diagnostics, Surgical Techniques and Controversies in Corneal and Refractive Surgery, XXIX Congress of the ESCRS, Vienna, September 20, 2011.
159. "New Understanding and Visualization of Corneal Biomechanics." Oculus Booth, AAO, Orlando, October 23, 2011.
160. "Advancing Keratoconus Screening: CLMLX, The Cone Location and Magnitude Index Applied to GALILEI Maps." GALILEI Expert User Meeting, AAO, Orlando, October 23, 2011.
161. "New Advances in Keratoconus Screening: The Cone Location and Magnitude Index (CLMI) Applied to GALILEI Maps" GALILEI User Meeting, ASCRS, Chicago, April 20, 2012.
162. "A Journey through the Biomechanics of the Cornea." Egyptian Society of Ocular Implants and Refractive Surgery (ESOIRS), Alexandria, Egypt, May 31, 2012.
163. "Clinical Corneal Biomechanics in Crosslinking." ESOIRS, Alexandria, Egypt, May 31, 2012.
164. "Biomechanical Advantages of ReLEx SMILE as a refractive procedure." Zeiss Users Group Meeting, Cyprus, June 2, 2012.
165. "The Clinical Impact of Biomechanics in Refractive Surgery." British Society for Refractive Surgery (BSRS), 20<sup>th</sup> Annual Scientific Congress, Birmingham, UK, June 23, 2012.
166. "Corneal Biomechanics in Keratoconus and Crosslinking." British Society for Refractive Surgery (BSRS), 20<sup>th</sup> Annual Scientific Congress, Birmingham, UK, June 23, 2012.
167. "Clinical Evaluation of Corneal Crosslinking using High-Speed Scheimpflug Imaging of Air Puff Induced Deformation Response." International Congress on Surface Ablation, Femto-Lasers and Crosslinking, July 29, 2012, Park City, UT.
168. "Basic Corneal Biomechanics: Parameters and Measurements." Satellite Symposium on High Speed, High Resolution Anterior Segment Imaging. XXX Congress of the ESCRS, Milan, September 10, 2012.
169. "Basic Studies toward Understanding the link between IOP and Evaluation of Corneal Biomechanics." CorVis Study Group, AAO, November 9, 2012.
170. "CorVis: Biomechanics and IOP." Oculus Booth, AAO, Chicago, November 11, 2012.
171. "Biomechanics of Keratoconus" Strategies for Treating Keratoconus Symposium. 17<sup>th</sup> ESCRS Winter Meeting, Warsaw, Poland, February 17, 2013.
172. "Biomecánica de la Córnea." Summit 2013: Enfoque multidisciplinario en el manejo integral del glaucoma. Cancun, Mexico, April 13, 2013.
173. "Noninvasive Prediction of Changes in Intracranial Pressure in Patients with Idiopathic Intracranial Hypertension." Co-authors: Monica Okon, Keerthana Bolisetty, Robert H. Small, and Steven E Katz. 10<sup>th</sup> Annual World Congress of the

Society for Brain Mapping and Therapeutics (SBMT) on Brain, Spinal Cord Mapping, and Image Guided Therapy, Baltimore, May 13, 2003.

174. "Corneal Biomechanics: Current Knowledge, Current Measurement Techniques." Corneal Surgery Session. 26<sup>th</sup> International Congress of German Ophthalmic Surgeons (D.O.C.), June 13, 2013.
175. "Biomechanics of Corneal Collagen Crosslinking." Joint Session with the International Society of Refractive Surgery of the American Academy of Ophthalmology (ISRS/AAO). 26<sup>th</sup> International Congress of German Ophthalmic Surgeons (D.O.C.), June 14, 2013.
176. "Controversy: Short-time collagen crosslinking should be used with routine LASIK, CONTRA." Joint Session with the International Society of Refractive Surgery of the American Academy of Ophthalmology (ISRS/AAO). 26<sup>th</sup> International Congress of German Ophthalmic Surgeons (D.O.C.), June 14, 2013.
177. "The Mysteries of Corneal Assessment Revealed." Dunya Göz/World Eye Hospital, Istanbul, Turkey; Videoconferenced to Ankara, Antalya, Adana, Antep, Bursa, Izmit, and Samsun; June 17, 2013.
178. "Biomechanical and Topographic Changes with Cornea Collagen Crosslinking." International Congress on Surface Ablation, Femto-Lasers and Crosslinking, Park City, Utah, August 5, 2013.
179. "Misconceptions in Corneal Topography." Columbus EENT Society, Columbus, OH, October 14, 2013.
180. "Correlation of Changes in Topographic and Biomechanical Parameters after Corneal Collagen Crosslinking." 9<sup>th</sup> International Congress of Corneal Crosslinking, Dublin, Ireland, December 7, 2013.
181. "Engineering Vision: Biomedical Engineering applications in Ophthalmology." University of Science and Technology China, Hefei, China, May 13, 2015.
182. "Corneal and Ocular Biomechanics." Anhui Medical University First Affiliated Hospital, Hefei, China, May 14, 2015.
183. "Corneal and Ocular Biomechanics." Anhui Medical University Second Affiliated Hospital, Hefei, China, May 14, 2015.
184. "Intracranial Pressure and Vision." Eye Research Institute of Shanghai Jiao Tong University, Affiliated First People's Hospital of Shanghai Jiao Tong University, Shanghai, China, May 16, 2015.
185. "Measuring the Biomechanics of the Cornea." Workshop on Visual Optics, XXXIII Congress of the ESCRS, Barcelona, September 6, 2015.
186. "Topographic Representation of Astigmatism." 2<sup>nd</sup> ESASO Anterior Segment Academy, Milan, April 29, 2016.
187. "The Relationship between Anterior and Posterior Astigmatism." 2<sup>nd</sup> ESASO Anterior Segment Academy, Milan, April 29, 2016.
188. "How Many Zernike Terms are Necessary to Describe Astigmatism?" 2<sup>nd</sup> ESASO Anterior Segment Academy, Milan, April 29, 2016.
189. "Corneal Biomechanics: Clinical Assessment and Influence on IOP Measurement Error." VS7950 Vision Science Seminar Series. The Ohio State University College of Optometry, May 17, 2016.
190. "Biomechanics of Laser Vision Correction and the Clinical Consequences of IOP Measurement Error." International Refractive Surgery Symposium, Guangzhou, China, May 28, 2016.
191. "Corneal Crosslinking and the Clinical Assessment of Corneal Biomechanics." International Refractive Surgery Symposium, Guangzhou, China, May 28, 2016.
192. "Keratoconus Detection Using a New Index: CLMIX." Brazilian Association of Cataract and Refractive Surgery, Sao Paulo, Brazil, June 2, 2016. (EyeWorld Interview: <http://ewreplay.org/node/1274?v=4926565714001>)
193. "Assessing Corneal Biomechanics with the Corvis ST." Brazilian Association of Cataract and Refractive Surgery, Sao Paulo, Brazil, June 3, 2016. (Interviewed for EyeWorld: <http://ewreplay.org/node/1274?v=4927482756001>)
194. "IOP Measurement Error." International Glaucoma Lecture, 130<sup>th</sup> Anniversary of Beijing Tongren Hospital Memorial Lecture, Beijing Ophthalmology Institute, Beijing, China, August 25, 2016.
195. "Cerebrospinal Fluid Pressure Dynamics and the Pulsatile Component of the Translaminar Pressure Gradient." Xuanwu Hospital, Beijing, China, August 26, 2016.
196. "Cerebrospinal Fluid Pressure Dynamics and the Pulsatile Component of the Translaminar Pressure Gradient." Intraocular and Intracranial Pressure Gradient Related Diseases International Summit (IIPGD). Beijing, China, August 27, 2016.
197. "Two Novel Stiffness Parameters for the Corvis ST." EuroTimes Satellite Education Programme Pentacam AXL and Corvis ST: New Approaches for Combining Tomography with Biometry and Biomechanics. XXXIV Congress of the ESCRS, Copenhagen, September 11, 2016.
198. "Biomechanics of SMILE and FDA Results." Zeiss Symposium; Laser Vision Correction – Today and Tomorrow. 32<sup>nd</sup> Asia-Pacific Academy of Ophthalmology Congress. Singapore, March 2, 2017.

199. "Is SMILE Biomechanically Better?" Refractive Surgery Symposium; SMILE: Preferred Technique for Myopia or Just Another Pretender? 32<sup>nd</sup> Asia-Pacific Academy of Ophthalmology Congress. Singapore, March 3, 2017.
200. "Intracranial Pressure: A New Risk Factor for Glaucoma?" The 12<sup>th</sup> Annual MGS Allergan Research Lecture; Combined meeting of the 60<sup>th</sup> Annual Postgraduate Symposium in Ophthalmology and the 40<sup>th</sup> Annual Midwest Glaucoma Symposium; Can you handle the pressure? Tips and Tricks for Managing Glaucoma; The Ohio State University Wexner Medical Center; Columbus, Ohio; March 10, 2017.
201. "Novel Stiffness Parameters for Corneal Biomechanics." Chinese Congress of Cornea and Refractive Surgery (CCCRS), Shanghai, May 20, 2017.
202. "Corneal Biomechanics: Where are we?" 8<sup>th</sup> Ljubljana Refractive Surgery Meeting, Ljubljana, Slovenia, May 26, 2017.
203. "IOP Measurement Error after Refractive Surgery." 8<sup>th</sup> Ljubljana Refractive Surgery Meeting, Ljubljana, Slovenia, May 26, 2017.
204. "Clinical Investigation of Translaminar Pressure Gradient." Chinese Glaucoma Society Symposium. Glaucoma and cerebrospinal fluid pressure: existing and further proofs; 7<sup>th</sup> World Glaucoma Congress, Helsinki, Finland, June 27, 2017.
205. "How to Collaborate - Ph.D. Viewpoint." Pursuing a career as a clinician-scientist session; 7<sup>th</sup> World Glaucoma Congress, Helsinki, Finland, June 30, 2017.
206. "Corneal Biomechanics." Biomechanics in glaucoma session; ; 7<sup>th</sup> World Glaucoma Congress, Helsinki, Finland, July 1, 2017.
207. "Two Novel Stiffness Parameters for the Corvis ST." Corvis ST Research/Users Meeting, Lisbon, October 5, 2017
208. "From Viscoelasticity to Elastometry of the Cornea." Focus Session: Corneal and Ocular Surface Imaging: A True Revolution. 8<sup>th</sup> EuCornea Congress. Lisbon, October 7, 2017.
209. "Smile for myopia and astigmatism: Biomechanics of SMILE." Korean Ophthalmological Society, Seoul, Nov. 5, 2017.
210. "Biomechanics of SMILE vs LASIK." Korean SMILE Forum. Seoul, Korea, November 5, 2017.
211. "Clinical Assessment of Corneal Biomechanics." Wavefront & Presbyopic Refractive Corrections; Denver, CO, February 24, 2018.
212. "Basic and Clinical Aspects of Corneal and Ocular Biomechanics." Wellman Center Lecture Series, Massachusetts General Hospital, Harvard University, Boston, April 10, 2018.
213. "Modern Refractive Surgery: Corneal Biomechanical Considerations." Catching the Rising Tide of Refractive: Identifying & Integrating Advanced Technology, EyeWorld Corporate Education, Washington DC, April 15, 2018.
214. "Potential New Mechanism of Damage in Glaucoma." Aging Eye Summit: Understanding Vision Research – Hope for the Future. Ohio's Anging Eye Public/Private Partnership. Havener Eye Institute, April 13, 2018
215. "Update on Corneal Biomechanics." 2<sup>nd</sup> International Refractive Surgery Symposium, Shanghai, China, May 26, 2018.
216. "Corneal Refractive Surgery." Patient Educational Session, IRSS, Shanghai, China, May 27, 2018.
217. "Corneal Biomechanics: Importance in Glaucoma." Tongren Eye Center, Tongren Hospital, Beijing, China, June 4, 2018.

#### **GRAND ROUNDS PRESENTATIONS:**

1. "Issues in Corneal Topography" Ophthalmology Grand Rounds, The Ohio State University, June 23, 1994
2. "Corneal Topography" Ophthalmology Grand Rounds, The Ohio State University, April 24, 1997
3. Specialty Grand Rounds on Optical Coherence Tomography, Department of Ophthalmology, October 16, 1997
4. Specialty Grand Rounds on Corneal Topography, Department of Ophthalmology, March 19, 1998
5. Specialty Grand Rounds: "Future Horizons in Ophthalmic Imaging" on October 15, 1998
6. "Advanced Ophthalmic Imaging Techniques: Nerve Fiber Layer Imaging" Specialty Grand Rounds, December 9, 1999
7. "Corneal Topography," Specialty Grand Rounds, The Ohio State University Department of Ophthalmology, May 18<sup>th</sup>, 2000
8. "Understanding Wavefront Analysis and Visual Aberrations" Ophthalmology Grand Rounds, The Ohio State University, Dec. 13, 2001
9. "Topography in Refractive Surgery" Ophthalmology Grand Rounds, The Ohio State University, February 28, 2002
10. "New Insights in the Diagnosis and Management of Keratoconus" OSU Ophthalmology Grand Rounds, February 28, 2002

11. "Orbscan in Keratoconus" Ophthalmology Grand Rounds, The Ohio State University, February 28, 2002
12. "CLMI, A New Keratoconus Index" Ophthalmology Grand Rounds, The Ohio State University, February 28, 2002
13. "The Biomechanics of Refractive Surgery" Basic Research in Ophthalmology Grand Rounds, OSU Department of Ophthalmology, October 7, 2004
14. "Optical Wavefront Analysis in Refractive Surgery" Refractive Surgery Grand Rounds, OSU Department of Ophthalmology, October 14, 2004
15. "The Effect of Aberration on Quality of Vision" Advanced Ophthalmic Imaging Techniques Grand Rounds, OSU Department of Ophthalmology, February 24, 2005
16. ARVO Update Grand Rounds, OSU Department of Ophthalmology, May 12, 2005
17. "Corneal Topography: Back to the Basics," Corneal Topography Specialty Grand Rounds, OSU Department of Ophthalmology, May 26, 2005.
18. ARVO Update Grand Rounds, OSU Department of Ophthalmology, June 1, 2006.
19. Specialty Grand Rounds, "Corneal and Ocular Biomechanics in Glaucoma," Ophthalmology Grand Rounds, The Ohio State University, February 3, 2011.
20. "Clinical Corneal Biomechanics" Video link to LV Prasad Eye Institute, Hyderabad, India, Grand Rounds, February 10, 2011
21. "Ophthalmic Engineering" Speakers; Yi Zhao, Ph.D., Ron Xu, Ph.D., Jun Liu, Ph.D.; May 12, 2011
22. Refractive Surgery Specialty Grand Rounds, "Corneal Response to Laser Ablation," Ophthalmology Grand Rounds, The Ohio State University, June 2, 2011.
23. "What's New in the Biomechanics of Ectasia," Comprehensive Ophthalmology Specialty Grand Rounds, The Ohio State University, October 6, 2011.
24. "ARVO Update: Biomechanics and Ocular Pulse Amplitude," ARVO Update Specialty Grand Rounds, The Ohio State University, August 1, 2013.
25. Biomechanics in Screening for Keratoconus. XIII Congresso INTERNACIONAL de Catarata e Cirurgia Refrativa, Rio de Janeiro, Brazil, 4/3/2014.
26. Corneal Biomechanics in Refractive Surgery. XIII Congresso INTERNACIONAL de Catarata e Cirurgia Refrativa, Rio de Janeiro, Brazil, 4/3/2014.
27. Update on IOP Measurement after Refractive Surgery. XIII Congresso INTERNACIONAL de Catarata e Cirurgia Refrativa, Rio de Janeiro, Brazil, 4/4/2014.
28. Corneal Tomography. XIII Congresso INTERNACIONAL de Catarata e Cirurgia Refrativa, Rio de Janeiro, Brazil, 4/4/2014.
29. "Ophthalmic Engineering," Speakers; Cynthia J. Roberts, PhD, Hugh Morris, PhD, Joel Palko, Hong Chen, PhD, Varun Penmatsa, PhD, Reza Atashkhouei, PhD, Professor Mingjun Zhang; June 5, 2014

#### **ABSTRACTS:**

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