

Curriculum Vitæ

Dr. Marco Lombardo, MD, PhD

Ophthalmologist and Eye Surgeon

PhD in Biomedical and Computer Engineering

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- PERSONAL DETAILS

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Date of Birth	09 July 1975
Place of Birth	Reggio di Calabria, Italy
Marital Status	Single
Nationality	Italian
Languages	Italian, English written and spoken, Spanish scholar
Medical Registration No.	M50316 (Ordine dei Medici della Provincia di Roma)

- PROFESSIONAL MEMBERSHIPS

- European Society of Cataract and Refractive Surgery (ESCRS).
- Optical Society of America (OSA).
- The Association for Research in Vision and Ophthalmology (ARVO).

- EDUCATION

Dates	Qualifications	Academic Institutions
2004 - 2007	PhD in Biomedical and Computer Engineering	University of Catanzaro "Magna Græcia", Department of Experimental and Clinical Medicine - Catanzaro (Italy)
1999 - 2003	Specialization in Ophthalmology (50/50 with honours)	Catholic University of Rome, Department of Ophthalmology - Rome (Italy)
1993 - 1999	Degree in Medicine and Surgery (110/110 with honours)	First University of Rome "La Sapienza" - Rome (Italy)
1988 - 1993	High School	"T. Campanella" Lyceum - Reggio Calabria (Italy)
1985 - 1988	Intermediate School	"M. Polo" School - Reggio Calabria (Italy)
1980 - 1985	Grammar School	"G. Carducci" School - Reggio Calabria (Italy)

Thesis Discussions:

PhD in Biomedical and Computer Engineering (18/01/08): "Study and design of an innovative system for measuring and correcting the wavefront aberration of the human eye".

Specialization in Ophthalmology (29/10/03): "First corneal surface optical aberrations and their correction".

Degree in Medicine and Surgery (27/07/99): "Application of an innovative visual biofeedback method in patients suffering from inherited retinal dystrophies".

- CURRENT EMPLOYMENT

Dates	Employers	Locations
April 2007 - present	Private practice	Latina, Italy
January 2006 - present	Private practice	Reggio Calabria, Italy
December 2003 - present	Private practice	Rome, Italy
December 2003 - present	CNR-INFN Research Collaborator	Rende, Italy

I have 1 or 2 weekly theatre sessions (mostly Phaco and Excimer laser surgery) and 4 weekly outpatient clinics (50-60 out patients a week).

- PAST EMPLOYMENT

Dates	Employers	Locations
October 2005 - March 2006	University Magna Graecia, Ophthalmology Unit	Catanzaro, Italy
January - September 2005	S. John Hospital, Ophthalmology Unit	Rome, Italy
October 2003 - December 2004	Catholic University of Rome, Dept. of Ophthalmology	Rome, Italy

I was used to have 1 or 2 weekly theatre sessions (cataract surgery and corneal refractive surgery), and 4 weekly outpatient clinics.

During the time spent at Ophthalmology Unit of the University Magna Graecia, I was the residents' clinical tutor.

At S. John Hospital, I assisted paediatric ophthalmology's consultant in either the clinic or surgery room activities.

At Catholic University, I was used to work in the cornea and medical retina clinics (1 day a week for each clinic) and in the surgery room (2 days a week).

- MEDICAL and SURGICAL TRAINING

Dates	Employers	Post
April 2009 and May 2008	Devers Eye Institute, Corneal Services, Portland - OR, USA	Visiting Surgeon
January 2000 - October 2003	Catholic University of Rome, Dept. of Ophthalmology	Resident in Ophthalmology
June 2001	Instituto Ophthalmologico de Alicante, Spain	Visiting Doctor
April 1997 - December 1999	First University of Rome, "Umberto I" Hospital, Dept. of Ophthalmology	Intern in Ophthalmology
October 1995 - December 1997	First University of Rome, "Umberto I" Hospital, Dept. of General Surgery	Intern in General Surgery

Devers Eye Institute, Corneal Services:

I assisted Prof. Mark A. Terry in the treatment and examination of patients that underwent PKP, DALK and DSAEK surgeries. Also, I completed an educational Endothelial Keratoplasty program, participating in wet-lab DSAEK procedures.

During the time spent in Alicante I took part in daily theatre session (Phacos + IOL implantation and LASIK procedures) and patients' examinations.

Catholic University of Rome, Department of Ophthalmology:

During my residency, I acquired skills of rapid ocular examination of large numbers of patients. I worked in sub-specialty out-patient clinics for the management of *Corneal diseases, Retinal diseases, Glaucoma* and *Paediatric Ophthalmology*.

During the last two years of my residency, I used to have a weekly theatre session in which I was able to perform cataract surgery (phacoemulsification + IOL implants) and refractive surgery (mostly PRK) under the supervision of senior ophthalmologists.

University Hospital "Umberto I" of Rome, Department of Ophthalmology:

This post was my introduction to the specialty and decided my choice of career. I was introduced to the management of an ocular examinations both in adult as well as in children, under the guidance of senior medical staff.

- SURGICAL EXPERIENCE

I have performed more than 400 cataract surgeries (phacos + IOL implants) and more than 550 laser refractive surgeries (mostly PRK).

I have directly performed more than 500 laser retinal treatments, more than 150 YAG laser (capsulotomies and peripheral iridotomies) and 10 photodynamic therapies.

I have performed more than 200 minor operations on adnexes.

I have taken part in regular theatre sessions assisting in well over 4000 operations (cataract, vitreoretinal, oculoplastic, glaucoma, cornea and squint lists).

- PRACTICAL PROCEDURES

I am competent in the following:

- Laser Excimer Corneal Refractive Surgery
- Cataract Surgery
- Corneal cross-linking
- Paediatric Ophthalmology
- Medical Retina and Retinal Laser Treatments
- Fluorescence Angiography and Indocyanine Green Angiography
- Corneal Topography and Aberrometry
- Ocular Biometry, Corneal Pachymetry

I am competent to undertake phacoemulsification cataract surgery on topical anaesthesia. My favourite technique is "Divide & Conquer" through a single corneal incision. My main ophthalmic subspecialty of interest is corneal surgery; furthermore, I have excellent clinical skills in paediatric ophthalmology and medical retina. I have performed over 500 retinal angiographies both fluoresceine as well as indocyanine green.

- HONOURS and AWARDS

2009: Awarded as "21st Century Award for Achievement" by the International Biographical Centre, Cambridge, UK.

2009: My scientific career has been selected to be published on the "2000 Outstanding Intellectuals of the 21st Century" edited by the International Biographical Centre, Cambridge, UK.

2009: My short biography has been published on "Who's Who in the World", 2009 Edition, edited by Marquis Who's Who, New Providence, USA.

2008: I was awarded the "Prize Reggio Innovation" - Category "Scientific Results of applicability relevance", call of the Chamber of Commerce, Reggio Calabria (Italy).

2008: My scientific career has been selected to be published on "Who's Who in Science and Engineering, 10th Anniversary Edition", edited by Marquis Who's Who, New Providence, USA.

2007: Awarded as an "International Health Professional of the Year" by the International Biographical Centre, Cambridge, UK.

2007: My scientific career has been selected to be published on the I Edition of "Outstanding Scientists of the 21st Century" edited by the International Biographical Centre, Cambridge, UK.

2006: My scientific career has been selected to be published on the IX Edition of "Who's Who in Science and Engineering" edited by Marquis Who's Who, New Providence, USA.

2005: Honourable mention at the European Society of Cataract & Refractive Surgery Conference (Rome Winter Congress) for the best poster in refractive surgery session.

2000: I was awarded a prize as the best as well as the youngest graduate in Medicine and Surgery of the regions of Calabria and Sicily (Italy).

- RESEARCH INTERESTS

- Corneal Biomechanics.
- Nano-mechanics and nano-resolved imaging of the cornea using *Atomic Force Microscopy*.
- Biophysics of laser-tissue interaction.
- Study of re-epithelialization and wound healing of the cornea.
- Human Optics and Quality of Vision (analysis of new visual metrics).
- Optical aberrations and visual performance.
- Biocompatibility of intraocular lenses.
- Innovation Technology in Ophthalmology: non conventional wavefront sensing and Adaptive Optics.
- Diffractive Optics.

- RESEARCH COLLABORATIONS

- Optical Manipulation Lab., Laboratorio Nazionale CNR-INFM TASC, Area Science Park, Trieste, Italy.
- Devers Eye Institute, Corneal Services, Portland, Oregon, USA.
- Department of Biomedical Engineering, The Ohio State University, USA.
- Veneto Eye Bank Foundation, Venezia-Mestre, Italy

- RESEARCH PROJECTS

- 2009- 1) Study of the human corneal tissue nano-mechanics using Atomic Force Microscopy.
2008: *Principal Investigator*.
- 2) Analysis of the corneal response to Endothelial Keratoplasty procedures. *Principal Investigator*.
- 3) Design of an innovative system for sensing the wave aberration of human eyes.
Principal Investigator.
- 2007: 1) Annual Plan Order of National Research Council (CNR), LiCryL laboratory, University of Calabria "Soft Matter and nanotechnologies for electronics, biomedicine and related technological applications" - MD.P10.007; Theme: "Study of the biomechanical response of the photoablated cornea and analysis of the biocompatibility of intraocular lenses".
Principal Investigator.
- 2006: 1) Contract as Specialist Research Collaborator with the Department of Physics, LiCryL laboratory, University of Calabria: "Study and Project of a laser interferometry technique for the investigation of biological surfaces".
- 2005: 1) Annual Plan Order of National Research Council (CNR), LiCryL laboratory, University of Calabria "Soft Matter and nanotechnologies for electronics, biomedicine and related technological applications" - MD.P10.007; Theme: "Study of the biomechanical response of the photoablated cornea and how photoablation influence the individual quality of vision". *Principal Investigator*.
- 2) Research Contract with Bioos Italia S.p.A.: "Role of vasoactive drugs in the treatment of non-proliferative Diabetic Retinopathy". *Principal Investigator*.
- 2004: 1) Research Contract with Alcon Italia S.p.A.: "Evaluation of efficacy and tolerability of travoprost 0,004% in the treatment of primary open angle glaucoma (POAG) and ocular hypertension". *Principal Investigator*.

- PUBLICATIONS

H-index: 5

Peer-Reviewed Journals

1. Lombardo M, Lombardo G (*review*). The wave aberration of human eyes and new descriptors of optical image quality and visual performance. J Cataract Refract Surg 2010, in press.
2. Lombardo M, Carbone G, Lombardo G, De Santo MP, Barberi R. Analysis of intraocular lens surface adhesiveness by Atomic Force Microscopy. J Cataract Refract Surg 2009; 35: 1266-1272.
3. Lombardo M, Lombardo G (*invited review*). New methods and techniques for sensing the wave aberration of human eyes. Clinical & Experimental Optometry 2009; 92: 176-186.
4. Lombardo M, Lombardo G, Friend D, Serrao S, Terry M. Long-term anterior and posterior topographic analysis of the cornea after deep lamellar endothelial keratoplasty. Cornea 2009; 28: 408-415.
5. Serrao S, Lombardo G, Lombardo M, Palombi M, Roberts C. Corneal topography six years after photorefractive keratectomy for myopia and myopic astigmatism. J Refract Surg 2009; 25: 451-458.
6. Lombardo M, Lombardo G, Serrao S. Long-term optical quality of the photoablated cornea. J Optical Society American A, Optics, Image Science & Vision 2007; 24: 588-596.
7. Lombardo M, Lombardo G, Manzulli M, Palombi M, Serrao S. Relative contribution of central and peripheral aberrations to overall high order corneal wavefront aberration. J Refract Surg 2006; 22: 656-664.
Times Cited: 2
8. Lombardo M, De Santo MP, Lombardo G, Barberi R, Serrao S. Analysis of intraocular lens surface properties with atomic force microscopy. J Cataract Refract Surg 2006; 32: 1378-1384.
Times Cited: 2
9. Lombardo M, Lombardo G, Serrao S. Interocular high-order corneal wavefront aberration symmetry. J Optical Society American A, Optics, Image Science & Vision 2006; 23: 777-787.
Times Cited: 5
10. Lombardo M, Lombardo G, Manzulli M, Serrao S. Response of the cornea for up to four-years after photorefractive keratectomy. J Refract Surg 2006; 22: 178-186.
Times Cited: 3
11. Lombardo M, De Santo MP, Lombardo G, Barberi R, Serrao S. Atomic Force Microscopy analysis of normal and photoablated porcine corneas. J Biomechanics 2006; 39: 2719-2724.
Times Cited: 2
12. Lombardo M, De Santo MP, Lombardo G, Barberi R, Serrao S. Roughness of excimer laser ablated corneas with and without smoothing measured with atomic force microscopy. J Refract Surg 2005; 21: 469-475.
Times Cited: 3
13. Serrao S, Lombardo M. Corneal epithelial healing after photorefractive keratectomy: analytical study. J Cataract Refract Surg 2005; 31: 930-937.
Times Cited: 6
14. Serrao S, Lombardo G, Lombardo M. (*Invited paper*). Differences in nasal and temporal responses of the cornea after photorefractive keratectomy. J Cataract Refract Surg 2005; 31: 30-38.
Times Cited: 8
15. Lombardo M, Serrao S. Smoothing of the ablated porcine corneas using the Technolas Keracor 217C and Nidek EC-5000 excimer lasers. J Refract Surg 2004; 20: 450-453.
Times Cited: 4
16. Serrao S, Lombardo M. One-year results of photorefractive keratectomy with and without surface smoothing using the Technolas 217C Laser. J Refract Surg 2004; 20: 444-449.

Times Cited: 11

17. Serrao S, Lombardo M, Mondini F. Photorefractive keratectomy with and without smoothing: a bilateral study. *J Refract Surg* 2003; 19: 58-64.

Times Cited: 18

Proceedings

1. De Santo MP, Lombardo M, Serrao S, Lombardo G, Barberi R. Atomic Force Microscopy in Ophthalmic Surgery. Proceedings in IEEE NANO 2004, Munich, Germany 16-19 August 2004, 562-564.

Chapter in Book

1. Lombardo M, Lombardo G, De Santo MP, Barberi R, Ziccardi L, Serrao S. Excimer laser surgery: a watchful eye for the future. In *Laser Keratectomy: Approaches, Complications, and Effectiveness*. ISBN 978-1-60456-863-9. Nova Science Publisher, New York 2009; 151-163.
2. Lombardo M, Lombardo G. The new era of refractive correction. In *Laser Keratectomy: Approaches, Complications, and Effectiveness*. In *Laser Keratectomy: Approaches, Complications, and Effectiveness*. ISBN 978-1-60456-863-9. Nova Science Publisher, New York 2009; 133-145.
3. Serrao S, Lombardo M. Corneal surface analysis after photorefractive keratectomy. In *Surface Ablation: Epi-lasik, LASEK, PRK, PTK*. ISBN-13: 978-1-55642-713-8. Slack Inc., 2006; 35: 301-315.
4. Serrao S, Lombardo M. Excimer laser correction of myopia. Ablation profiles and quality of vision. In *Myopia and Related Diseases*. Ophthalmic Communication Society, New York, 2005; 8: 413-421.

- EDITORIAL ACTIVITIES

I serve, on a regular basis, as reviewer for the following International Scientific Journals:

1. *Cornea*, since 2009.
2. *Applied Optics*, since 2008.
3. *Ophthalmic and Physiological Optics*, since 2008.
4. *Journal of Optical Society of America A*, since 2008.
5. *Ophthalmology*, since 2006.
6. *Investigative Ophthalmology and Visual Science*, since 2005.
7. *Journal of Cataract and Refractive Surgery*, since 2004.

- TEACHING EXPERIENCE

- **CALPARK S.C.p.A. Scientific & Technological Park of Calabria, Italy**
I took lessons to international graduates on "The applied research in biomedicine and biotechnology and the Sixth European Framework Programme".
- **University Magna Græcia, Catanzaro, Italy**
I was responsible of the tutorial activities for residents in Ophthalmology and students in Biomedical Engineer.
- **University of Calabria, Rende (CS), Italy**
I took a series of lectures on the use of SPM techniques in biomedicine at the *Alarico International Summer School on Soft Matter, Nanoscience, Photonics*.
- **Catholic University of Rome, Italy**
I was involved in teaching medical students and residents in ophthalmology the histology and physiology of the cornea. I dedicated several sessions to teaching the interpretation of corneal topography and corneal wavefront aberration.
- **Optikon 2000 - Rome, Italy**
I taught ophthalmologists the corneal topography and corneal wavefront aberration structure with theoretical and practical demonstrations.

- PRESENTATIONS

1. **ARVO 2009, Annual Meeting.** Fort Lauderdale, May 2009. Poster on the AFM analysis of intraocular lenses.
2. **ESCRS 13th Winter Conference.** Rome, February 2009. Poster on the 1-year refractive results following DSAEK with and without combined phacoemulsification.
3. **ARVO 2008, Annual Meeting.** Fort Lauderdale, April 2008. Poster on the 2-years response of the cornea to large-incision DLEK procedure.
4. **VIII Edition Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan, September 2007. Lecture on the long-term response of the cornea to PRK for myopia.
5. **XXV Congress of the ESCRS 2007.** Stockholm, September 2007. Lecture on the 6-months biomechanical response of the cornea to deep lamellar endothelial keratoplasty (DLEK).
6. **V International Conference S.O.I.** Rome, May 2007. Lecture on the complications related to surface ablation procedures.
7. **VII Edition Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan, September 2006. Lecture on the mirror symmetrical optical and biomechanical properties between eyes.
8. **III European Meeting in Physiological Optics.** London, September 2006. Poster on the AFM analysis of IOL biocompatibility.
9. **Aegean Cornea VIII Meeting,** Rethymnon, July 2006. Lecture on the long-term biomechanical response of the cornea following PRK.
10. **11th International Ceramics Congress & 4th Forum on New Materials.** Acireale, June 2006.
11. **7th International Congress of Wavefront Sensing & Optimized Refractive Corrections.** Nassau, January 2006. Poster on the mirror symmetric optical response of the cornea to surface ablation procedure.
12. **I Fair of Research Activities - ITA.** Science, Culture and Enterprise. Rome, December 2005. Presentation of a Research Project on a Liquid-Crystal Adaptive Optics device.
13. **XXIII Congress of the ESCRS 2005.** Lisbon, September 2005. Lecture on the interocular optical and mechanical differences of the right and left fellow corneas.
14. **VI Edition of Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan September 2005. Lecture on the long-term biomechanical response of the cornea to PRK.
15. **IX ESCRS Winter Congress.** Rome, February 2005. Poster comparing the smoothness of the standard ablated corneal surfaces with those on which the smoothing technique was performed.
16. **V Edition of Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan September 2004. Lecture on the optical response of the cornea to photorefractive keratectomy.
17. **IEEE Conference on Nanotechnologies 2004.** München August 2004. Lecture on the usefulness of Atomic Force Microscope in ophthalmic surgery.
18. **2nd Edition of the Conference on Nanotechnologies.** Bologna February 2004. Poster regarding the analysis of ablated porcine corneas at Atomic Force Microscopy.
19. **VI International Congress "Myopia and Related Diseases: a clinical and therapeutic approach".** Rome, September 2003. Lecture on the surface ablation techniques for the correction of myopia.
20. **VI S.I.TRA.C. Congress.** Rome February 2002. Video on a case report.
21. **II Edition of Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan September 2001. Lecture on the corneal epithelial healing after photorefractive keratectomy.

Invited Lectures

22. **Clinical and technological innovations in Ophthalmology.** Venice, October 2009. Lecture on the next future diagnostics and therapeutics in Ophthalmology.
23. **IV Edition of Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan September 2003. Lecture on the analysis of the corneal topography after photorefractive keratectomy.
24. **III Edition of Refr@ctive.On-line, Topogr@phy.on-line, @berrometry.on-line.** Milan September 2002. Lecture on the effectiveness of the smoothing technique with a scanning-spot laser device.

- CONFERENCES/MEETINGS ATTENDED over the last 4 years

- The role of the ophthalmologist in the early diagnosis of multiple sclerosis. Rome - March 2008.
- Information retrieval techniques applied to bioinformatics. University Magna Græcia, Catanzaro - March 2007.
- Methods of spectral parametric analysis for biomedical applications. University Magna Græcia, Catanzaro - September 2006.
- V Conference S.I.C.C.S.O. "The latest on ocular surface". Rome - June 2006.
- Nanotechnology and Biomedicine. University of Calabria, Rende - November 2005.
- Research and Patenting. University of Calabria, Rende - November 2005.
- Viruses and their uses in nanotechnology applications. University Magna Græcia, Catanzaro - May 2005.
- Modeling with Femlab 3. University of Calabria,, Department of Chemical Engineering, Rende - March 2005.
- Nanotechnology Applications in Biomedicine. University Magna Græcia, Catanzaro - March 2005.
- Computational and Systems Biology. University Magna Græcia, Catanzaro - February 2005.

- ADDITIONAL INFORMATION

Computer skills

I am an expert at computers. I developed the software I use daily during my clinical practice with Microsoft DataBase Access. I can utilize Microsoft Office Suite at very high level. I am skilful at CAD software, as Rhinoceros and CadStd; Optics and Image Design software as Adobe Photoshop or Zemax, Statistical software as KyPlot; CMS editor, like Joomla or Drupal, or Web editor as Macromedia Dreamweaver for WEB designing.