

BIOGRAPHICAL SKETCH

NAME: Robert T Chang, MD

eRA COMMONS USER NAME (credential, e.g., agency login): rchang3

POSITION TITLE: Assistant Professor of Ophthalmology, Medical Center Line

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Missouri, Kansas City	BA	12/2002	Biology
University of Missouri, Kansas City School of Medicine	MD	12/2002	Medicine
Post Doctoral Research Fellow Bascom Palmer Eye Institute		07/2003	OCT
Evanston Northwestern Hospital (Northshore)		07/2004	Internship
Washington University St. Louis Department of Ophthalmology and Visual Sciences		07/2007	Residency
University of Miami, Bascom Palmer Eye Institute		07/2009	Fellowship

A. Positions and Honors**Positions and Employment**

2009- Assistant Professor of Ophthalmology, Stanford University School of Medicine and Bio-X
2015-2016 Stanford Biodesign Faculty Fellow Program
2017 Stanford StartX Professor-in-Residence Accelerator Program

Professional Memberships and University Administrative Service

2007- Fellow, American Academy of Ophthalmology (AAO)
2009- Member, American Glaucoma Society (AGS)
2009-2016 Department of Ophthalmology Faculty Call Schedule Organizer
2010- Co-Director AUPO-Certified Glaucoma Fellowship Program
2011- Stanford MedScholars Advisor
2013- ACGME Ophthalmology Clinical Competency Milestone Project Review Committee
2015 Non Voting Faculty Member Committee on School of Medicine Curriculum and Academic Policy
2015-2017 Stanford MD Admissions Committee
2015- Selected Member of Stanford Center for Population Health Sciences (PHS)
2015- Appointed Faculty Fellow, Stanford Center for Innovation in Global Health (CIGH)
2016- Medical Director of Employer Based Optometry Service, Stanford University
2016- Vice President, Asia Pacific Tele-Ophthalmology Society (APTOS)

Honors

2002 Alpha Omega Alpha
2007 Heed Ophthalmic Fellowship
2008 American Glaucoma Society Advocacy Day Fellow Representative
2013 Best Pivot, Stanford StartxMed Innovation Challenge
2015 First Place, "Medidash" Philips Healthsuite Hackathon
2016 American Academy of Ophthalmology Achievement Award
2016 Robert Howard Next Step Award "Lunair: a personal air pollution protection device"

B. Invited National and International Lectures

INVITED INTERNATIONAL LECTURES

- 1) Coordinator Ophthalmic Epidemiology, Telemedicine, Big Data & Artificial Intelligence Program, Asia Pacific Academy of Ophthalmology (APAO), Bangkok - 3/7/19
- 2) Lifeline Express Foundation, Glaucoma International Conference Lectures, Dali, China - 11/10/18
- 3) "Healthcare Entrepreneurship: How Innovation and Technology is Revolutionizing the World of Medicine" CIS Alumni, Hong Kong, 11/7/18
- 4) "Blockchain Project for Medical Imaging Data Storage" Pacific Rim Alliance for Population Health (PRAPH) and Zhejiang Stanford Co-Lab, Hangzhou - 10/31/18
- 5) "Welcome to Doctor Innovation Training" Medical Workshop, Shanghai Jiaotong University, Shanghai - 10/20/18
- 6) "Welcome to Doctor Innovation Training" Medical Workshop, Suzhou - 10/19/18
- 7) "Big Data Blockchain and Ophthalmic Service" Chinese Ophthalmology Society (COS), Hangzhou - 9/18/18
- 8) "How to Be a Better Scientist Inventor" Shanghai Jiao Tong University, Shanghai - 7/30/18
- 9) "Uveitic Glaucoma" Chaoyang International Uveitis Summit Forum, Beijing - 7/28/18
- 10) "Welcome to Changing the Future of Medical Care" Peking Union Medical College, Beijing - 7/28/18
- 11) "Introduction to Design Thinking" Lingyuned Educational Series, Beijing - 7/22/18
- 12) "Innovation from Physician" Peking University Third Eye Hospital, Beijing - 7/18/18
- 13) Scientific Program Committee Co-Chair, Asia Pacific Tele-Ophthalmology Society (APTOS), Singapore – 7/8/18
- 14) "Using Machine Learning in Glaucoma Research," World Ophthalmology Congress (WOC), Barcelona – 6/16/18
- 15) "Managing Patients with Myopia and Glaucoma -- How AI Can Help?" International Imaging and Perimetry Society, Kanazawa, Japan - 5/10/18
- 16) "Combining Functional and Structural Test for Glaucoma Detection," "Suprachoroidal Devices Including Cypass," Asia-Pacific Glaucoma Congress (APGC), Busan, Korea – 4/15/18
- 17) "Artificial Intelligence in Ocular Imaging," "APTOS Session: AI Screening in USA," Asia Pacific Academy of Ophthalmology (APAO), Hong Kong – 2/8/18
- 18) "Retinal Imaging and AI" Panel, "Small Company Presentation" Panel, Ophthalmology Futures Asian Forum, Hong Kong – 2/7/18
- 19) Lifeline Express Foundation, Glaucoma International Conference Lectures, Dali, China – 12/1/17
- 20) "Embracing the AI Revolution in Medicine, Stanford Biodesign and Digital Health Innovation" Visiting Professor, Chinese University of Hong Kong (CUHK), Hong Kong - 11/27/17
- 21) "Digital Health Innovation and the AI Revolution" Visiting Professor, Centre for Eye Research Australia (CERA), Melbourne – 8/1/17
- 22) "Introduction to Biodesign" Australia China Research Stakeholders Meeting, Melbourne – 7/31/17
- 23) Scientific Program Committee Chair, Asia Pacific Tele-Ophthalmology Society (APTOS), "Promises and Pitfalls of AI and Digital Health," Hong Kong – 7/14/17
- 24) Hot Topics in Glaucoma: "In a Patient with Open Angle Glaucoma, a Concurrent Diagnosis of Moderate to High Myopia: Influences Both Diagnosis and Treatment," How to diagnose glaucoma among highly myopic eyes," session co-moderator "Image reading + grading" World Glaucoma Congress (WGC), Helsinki – 6/30/17

- 25) "Future Visions of Telemedicine and Artificial Intelligence" APAC Gerontech and Innovation Summit – Healthy Ageing, Hong Kong – 6/18/17
- 26) "Machine Learning and Medicine" APSEG Symposium: Personalized Medicine and Big Data, Asia Pacific Academy of Ophthalmology (APAO), Singapore – 3/2/17
- 27) "How AI Will Save Sight" Chinese University of Hong Kong Invited Lecture, Hong Kong – 1/6/17
- 28) "Telemedicine and Glaucoma: Future Directions," "Precision Medicine in Glaucoma and MIGS Surgery," Glaucoma Academy Pfizer Korea, Seoul – 10/29/16
- 29) "Culture and Innovation: A Look at the Educational Systems" International Grand Rounds, 130th Anniversary of Beijing Tongren Hospital Memorial Lecture, Beijing – 8/25/16
- 30) "Cyclophotocoagulation with Micropulse Technology" and "IStent and Collector Channel Patency" Co-Chair Free Paper 3 Session, Asia-Pacific Glaucoma Congress (APGC), Chiang Mai – 7/15/16
- 31) "MedTech Innovation Within Current US Healthcare" Hong Kong Science Technology Park (HKSTP), Hong Kong – 6/29/16
- 32) "Clinical Service Innovation in Tele-Ophthalmology" Asia Pacific Tele-Ophthalmology Society (APTOS), Beijing – 6/19/16
- 33) "Precision Medicine in Glaucoma" Visiting Professor Kaohsiung Veterans General Hospital, Taipei – 3/28/16
- 34) "iStent and Collector Channel Patency" and "Digital Health Innovation Overview" Asia Pacific Academy of Ophthalmology (APAO), Taipei – 3/25/16
- 35) "Future Role of ICT Advances in Eye Care Including Impact of M-Health: 3D Printing and Hackathons, Potential for Ophthalmology?" World Ophthalmology Congress (WOC) Session Chair, Guadalajara, Mexico – 2/5/16
- 36) "Similarities and Differences Between Chinese and American Policies in Medical Innovation" Invited Panel Digital Healthcare Speaker, Caixin Annual Summit, Beijing – 11/7/15
- 37) "Applications of Machine Learning in Ophthalmology" Shaozhen Li Invited Named Lecture and Parallel Symposium "Digital Health Innovation and Smartphone Adapters to Take Pictures of the Eye" International Symposium of Ophthalmology (ISO), Shantou, China – 10/31/15
- 38) Lifeline Express Foundation, Glaucoma International Conference Lectures, Hubei, China – 10/17/15
- 39) "Digital Health Innovation: A Personal Journey in Silicon Valley" Stanford Center at Peking University Innovation VISA Teleconference Lecture, Beijing – 7/24/15
- 40) "When and What Treatment to Start in Glaucoma Suspect" World Glaucoma Congress (WGC), Hong Kong – 6/7/15
- 41) "Smartphone and Tablet Computers for Ophthalmic Information for Private Study or by the Bedside: Ophthalmic Imaging Anterior and Posterior Segment" Asia Pacific Academy of Ophthalmology (APAO), Guangzhou, China – 4/3/15
- 42) Lifeline Express Foundation, Glaucoma International Conference Lectures, Lanzhou, China – 11/1/14
- 43) "Updates on Portable Ophthalmic Imaging" Senior Instructor, Asia-Pacific Glaucoma Congress (APGC), Hong Kong – 9/27/14
- 44) "Innovation in Mobile Healthcare: Using Smartphones as Medical Devices" Public Lecture at Stanford Center at Peking University, Beijing, China – 6/12/14
- 45) "Mobile Health in Ophthalmology: A View From Silicon Valley" Chinese Ophthalmology Society, Tai Yuan, China – 5/31/14.
- 46) "Endocyclophotocoagulation" World Ophthalmology Congress (WOC), Tokyo, Japan – 4/5/14

- 47) "Smartphones and Gadgets: How to Practice Neuro-Ophthalmology Anywhere in the 21st Century" North American Neuro-Ophthalmology Society (NANOS) Symposium, San Juan, Puerto Rico – 3/5/14
- 48) "Visual Field Defects in Myopes and 6 Lessons Using SD-OCT" Visiting Professor Glaucoma Update Mettapracharak Hospital, Bangkok, Thailand – 12/27/13
- 49) "6 Lessons: SD-OCT for Glaucoma" Visiting Professor Seoul National University Hospital, Seoul, Korea – 12/23/13
- 50) "Myopia and Glaucoma: Visual Field Defects in High Myopes" International Symposium of Ophthalmology (ISO), Guangzhou, China – 11/11/13
- 51) "Glaucoma: Early Diagnosis and Prevention of Blindness" Pan-American Congress of Ophthalmology (PAAO), Rio De Janeiro, Brazil – 8/10/13
- 52) "Glaucoma and Myopia: Challenges and Pearls for Progression Detection" World Glaucoma Congress (WGC), Vancouver, Canada – 7/19/13
- 53) Lifeline Express Foundation, Glaucoma International Conference Lectures, Jilin, China – 6/13/13
- 54) Lifeline Express Foundation, Glaucoma International Conference Lectures, Zhengzhou, China – 9/1/12-9/2/12
- 55) "OCT: ONH, RNFL, GCA, GPA" Visiting Professor Hong Kong Sanatorium and Hospital Grand Rounds, Hong Kong – 7/5/12
- 56) "Collagen Disease and Glaucoma" Asia Pacific Academy of Ophthalmology (APAO), Busan, Korea – 4/16/12
- 57) "Cirrus OCT" Visiting Professor Seoul National University Hospital, Seoul, Korea – 9/23/11
- 58) Visiting Professor Lanzhou University Ophthalmology Conference, Lanzhou, China – 8/12/11
- 59) "Trabeculectomy Failure" World Glaucoma Congress (WGC), Paris, France – 7/2/11
- 60) Lifeline Express Foundation, Glaucoma International Conference Lectures, Nanjing and Urumqi, China – 6/19/11-6/23/11
- 61) "Management of Acute Angle Closure" Asia Pacific Academy of Ophthalmology (APAO), Sydney, Australia – 3/21/11
- 62) Lifeline Express Foundation, Cataract and Glaucoma International Conference Lectures, Lanzhou and Mianyang, China – 12/16/10-12/19/2010

INVITED REGIONAL AND NATIONAL LECTURES

- 1) "How to Choose the Correct MIGS Device and Manage Post-op Expectations" American Glaucoma Society (AGS) Breakfast Roundtable Lead Moderator, San Francisco – 3/17/18
- 2) "Glaucoma: Therapeutic Updates, Best Practices, and Barriers to Effective Care" Santa Clara County Optometric Society, San Jose - 11/15/18
- 3) "Smartphones in Ophthalmology #TheFutureIsAI" American Academy of Ophthalmology (AAO), Chicago - 10/29/18
- 4) "Home Visual Fields" Glaucoma Subspecialty Day, American Academy of Ophthalmology (AAO), Chicago - 10/27/18
- 5) "What Can You Do With an MD Degree" Los Altos High School STEAM Week - 10/8/18
- 6) "Ophthalmology Basics," Biodesign Fellowship Lead Coordinator, Stanford - 8/6/18
- 7) Moderator, Poster Session 274, Surgery and Wound Healing II, Association of Research and Vision in Ophthalmology (ARVO), Honolulu - 4/30/17
- 8) "Various Strategies and the Role of Artificial Intelligence in a Tele-Glaucoma Screening Service" SIG Telemedicine and AI Panel, Association of Research and Vision in Ophthalmology (ARVO), Honolulu - 4/29/17

- 9) "Tips for Adopting MIGS" American Glaucoma Society (AGS) Breakfast Roundtable Co-Moderator, New York City – 3/4/18
- 10) "Vision and Hearing Screening" Panel Ophthalmology/ENT CME, Sonoma – 2/2/18
- 11) "Cataracts," Regional Medical Center of San Jose – 1/9/18
- 12) Lab 150 "AI Trends in Medicine" American Academy of Ophthalmology (AAO), New Orleans – 11/13/17
- 13) "Embracing the AI Revolution in Glaucoma" 2017 Weston Invited Lecture, Glaucoma Research Foundation, Palo Alto – 10/7/17
- 14) 2017 China-US Young Maker Summit & China-US Youth Innovation Center Inauguration Ceremony, New York University (NYU), New York - 9/25/17
- 15) "Sudden Vision Loss" Dominican Hospital CME Lecture, Santa Cruz – 7/21/17
- 16) "How MAPS Jumpstarted My Academic Career" MAPS Luncheon Symposium, American Glaucoma Society (AGS), San Diego – 3/4/17
- 17) "New Innovations in Hacking Glaucoma" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 2/5/17
- 18) "How Artificial Intelligence (AI) Help Save Sight" 2016 Young Ophthalmology Symposium, American Academy of Ophthalmology (AAO), Chicago – 10/17/16
- 19) "Updates in Portable Imaging" The Virtual and Mobile Glaucoma Office Symposium, American Academy of Ophthalmology (AAO), Chicago – 10/17/16
- 20) "Case #2: Diagnostic and Therapeutic Challenges in High Myopia" Glaucoma Subspecialty Day, American Academy of Ophthalmology (AAO), Chicago – 10/15/16
- 21) "Ophthalmology for the Primary Care Physician" Regional Medical Center of San Jose – 3/15/16
- 22) "Smartphone Imaging: New Options" Glaucoma 360 OD Meeting, San Francisco – 1/30/16
- 23) "Structural and Functional Glaucoma Progression Analysis and Precision Medicine" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 1/30/16
- 24) Lab 140 "iPhone and iPad for Ophthalmologists" Course Instructor, American Academy of Ophthalmology, Las Vegas – 11/16/15
- 25) "New Developments in OCT Imaging for Glaucoma: Update on the Macula" American Glaucoma Society (AGS) Breakfast Roundtable Co-Moderator, San Diego – 3/1/15
- 26) "The EyeGo and Mobile Health Innovation" PH 196 Global Ophthalmic Public Health and Epidemiology of Eye Disease, Guest Lecturer, UC Berkeley – 2/12/15
- 27) "Glaucoma Genetics: Facts vs. Fiction" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 2/7/15
- 28) "Smartphone-Based Tele-Ophthalmology Screening For Diabetic Eye Disease" Bay Area Vision Research Day (BAVRD) Guest Lecturer, UC Berkeley – 2/6/15
- 29) "New Clinical Dimensions in Glaucoma Diagnostics" Hawaiian Eye Zeiss Academy, Maui – 1/20/15
- 30) "How to Use SDOCT Effectively for Glaucoma" Zeiss Academy, Oakland – 8/20/14
- 31) "Smartphone Adaptors for Ocular Image Capture" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 2/8/14
- 32) "Structure and Function in Glaucoma Diagnostics: The Trials and their Impact on the Development of New Technologies" Hawaiian Eye Zeiss Symposium, Kauai – 1/21/14
- 33) Lab 192a and 192b "iPhone Physician Education and Reference Tools" Course Instructor, American Academy of Ophthalmology, New Orleans – 11/17/13
- 34) "Update in Ophthalmology" Dominican Hospital CME Lecture, Santa Cruz – 7/12/13

- 35) "Fixing the Plumbing of the Eye" American Society of Ophthalmic Registered Nurses (ASORN) Lecture, Palo Alto – 4/27/13
- 36) "The Art of Fundus Photo Interpretation" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 2/2/13
- 37) Lab 192a and 192b "iPhone Physician Education and Reference Tools" Course Instructor, American Academy of Ophthalmology, Chicago – 11/11/12
- 38) "OCT Diagnostic Performance Studies" Invited Panel Speaker FDA AGS Workshop, Washington D.C. – 10/5/12
- 39) "Myopia and Glaucoma" Glaucoma 360, Glaucoma Research Foundation, San Francisco – 2/3/12
- 40) Lab 152a and 152b "iPhone Patient Education and Social Media" Course Instructor, American Academy of Ophthalmology, Orlando – 10/24/11
- 41) "Retcam Goniography" American Glaucoma Society (AGS) Pre-Surgical Meeting, Naples – 3/3/10

STANFORD UNIVERSITY LECTURES

- 1) "Mobile Health Needs" BioE 273 Stanford Biodesign for Mobile Health Panel - 10/3/18
- 2) "Vision Care: Landscape Overview of Ophthalmology" Biodesign Fellows Lecture - 8/6/18
- 3) "Health Hackathons" Center for Digital Health Workshop Presentation - 5/23/18
- 4) "Designing a Wearable Personal Air Pollution Sensor and Filter Device for China and Beyond" Spectrum Biodesign MedTech Highlights - 4/9/18
- 5) "Precision Health in Glaucoma" Stanford Glaucoma Resident Lecture - 3/15/18
- 6) "Precision Medicine in Glaucoma" Stanford Glaucoma Resident Lecture - 12/8/17
- 7) "Genetics of Glaucoma" and "Optic Nerve Imaging" Stanford Basic Science Review Course, Palo Alto – 7/19/17
- 8) "Mobile Health Needs" BioE 273 Stanford Biodesign for Mobile Health Panel – 10/5/16
- 9) "Genetics of Glaucoma" and "Optic Nerve Imaging" Stanford Basic Science Review Course, Palo Alto – 7/20/16
- 10) "Ophthalmology as a Career" Ophthalmology Interest Group Panel, Stanford – 4/26/16
- 11) "Need Finding in Mobile Health" SHIFT Digital Health Panel, Stanford – 4/8/16
- 12) "Innovation in Glaucoma" Stanford Glaucoma Resident Lecture - 4/7/16
- 13) "Vision and Aging: Glaucoma, Macular Degeneration, and Cataracts" Stanford Physician Assistant (PA) Program Guest Lecturer – 1/11/16
- 14) "Enabling Technologies" BioE 273 Stanford Biodesign for Mobile Health Panel – 10/7/15
- 15) "Genetics of Glaucoma" Stanford Basic Science Review Course, Palo Alto – 7/22/15
- 16) "Vision and Aging: Glaucoma, Macular Degeneration, and Cataracts" Stanford Physician Assistant (PA) Program Guest Lecturer – 1/12/15
- 17) "OCT and Visual Field Progression Analysis" Stanford Glaucoma Resident Lecture – 11/13/14
- 18) "Genetics of Glaucoma" Stanford Basic Science Review Course, Palo Alto – 7/23/14
- 19) "APAMSA Presents: Medicine in Asia: Practice, Policy & Technology" Guest Speaker Panel, Stanford – 2/25/14
- 20) "Istent" Stanford Glaucoma Resident Lecture – 3/27/14
- 21) "Genetics of Glaucoma" Stanford Basic Science Review Course, Palo Alto – 7/24/13
- 22) "OKAP Glaucoma Review" Stanford Glaucoma Resident Lecture – 2/21/13
- 23) "Visual Field Interpretation" Stanford Glaucoma Resident Lecture – 12/20/12

- 24) "Optic Nerve Interpretation" Stanford Glaucoma Resident Lecture – 10/11/12
- 25) "Genetics of Glaucoma" and "Aqueous Dynamics" Stanford Basic Science Review Course, Palo Alto – 7/16/12
- 26) "Tube versus Trabeculectomy" Journal Club Stanford – 12/20/11
- 27) "iPhone Apps and the Present/Future of Patient Education" Grand Rounds Stanford Ophthalmology Department, Palo Alto – 11/1/11
- 28) "Acute Angle Closure" Stanford Glaucoma Resident Lecture – 10/13/11
- 29) "Normal Tension Glaucoma" Stanford Glaucoma Resident Lecture – 10/11/11
- 30) "Glaucoma Overview" Stanford Glaucoma Resident Lecture – 9/1/11
- 31) "Genetics of Glaucoma" Stanford Basic Science Review Course, Palo Alto – 7/20/11
- 32) "Cirrus OCT Ganglion Cell Analysis" Stanford Research Day, Palo Alto – 6/25/11
- 33) "Glaucoma Technology: Surgical Innovation" Stanford BioDesign Program, Palo Alto – 1/29/11
- 34) "Cataracts and Glaucoma" Stanford Glaucoma Resident Lecture – 1/18/11
- 35) "Glaucoma Lasers" Stanford Glaucoma Resident Lecture – 12/23/10
- 36) "New Glaucoma Surgeries" Stanford Glaucoma Resident Lecture – 10/7/10
- 37) "Glaucoma Pharmacology" Stanford Glaucoma Resident Lecture – 8/31/10
- 38) "Glaucoma Devices: Diagnostic and Therapeutic" Stanford BioDesign Program, Palo Alto – 8/26/10
- 39) "Genetics of Glaucoma" Stanford Basic Science Review Course, Palo Alto – 7/12/10
- 40) "Common Eye Issues" Stanford Physician Assistant (PA) Program Guest Lecturer – 7/8/10
- 41) "Update on Cirrus OCT RNFL and ONH" Stanford Research Day – 6/12/10
- 42) "Glaucoma Pharmacology" Stanford Glaucoma Resident Lecture – 4/20/10
- 43) "Tube and Trabeculectomy Postoperative Management" Stanford Glaucoma Resident Lecture – 1/19/10
- 44) "Glaucoma Coding" Stanford Glaucoma Resident Lecture – 11/10/09
- 45) "Optical Coherence Tomography (OCT) in Glaucoma" Chinese Zeiss Meeting, Stanford – 10/21/09
- 46) "Trabectome" Grand Rounds Stanford Ophthalmology Department, Palo Alto – 10/6/09
- 47) "Gonioscopy" Stanford Glaucoma Resident Lecture – 10/8/09
- 48) "Visual Field Testing" Stanford Glaucoma Resident Lecture – 9/1/09

C. Peer-Reviewed Publications

PEER-REVIEWED PUBLICATIONS IN PRESS

- 1) Hong K, Chang RT, Wong IY, Singh K. "Corneal Biomechanics Using a Scheimpflug-Based Noncontact Device in Normal Tension Glaucoma and Healthy Controls." APJO. Accepted.
- 2) Wang, JK, Roy, SK, Barry M, **Chang RT**, Bhatt AS. "Institutionalizing Healthcare Hackathons to Promote Diversity in Collaboration in Medicine." BMC Medical Education. Accepted.

PEER-REVIEWED ORIGINAL RESEARCH PUBLICATIONS

- 1) Li Z, Keel S, Liu C, He Y, Meng W, Scheetz J, Lee PY, Shaw J, Ting D, Wong T, Taylor H, Chang R, He M. "An Automated Grading System for Detection of Vision-Threatening Referable Diabetic Retinopathy on the Basis of Color Fundus Photographs." Diabetes Care. 2018 Oct 1. pii: dc180147. doi: 10.2337/dc18-0147. [Epub ahead of print]
- 2) Wang JK, Pamnani RD, Capasso R, Chang RT. "An Extended Hackathon Model for Collaborative Education in Medical Innovation." J Med Syst. 2018 Oct 17;42(12):239.

- 3) Wang SY, Singh K, Stein JS, Chang RT. "Reduction of Ocular Antihypertensive Medication Usage After iStent Implantation Concurrent with Cataract Surgery in a Large U.S. Healthcare Claims Database." *JAMA Ophthalmol.* 2018 Sep 27. doi: 10.1001/jamaophthalmol.2018.4461. [Epub ahead of print]
- 4) Li Z, He Y, Keel S, Meng W, Chang RT, He M. "Efficacy of A Deep Learning System for Detecting Glaucomatous Optic Neuropathy based on Color Fundus Photographs." *Ophthalmology.* 2018 Aug;125(8) 1199-1206.
- 5) Ludwig CA, Newsom M, Jais A, Myung DJ, Murthy SI, Chang RT. "Training Time and Quality of Smartphone-Based Anterior Segment Screening in Rural India." *Clin Ophthalmol.* 2017 Jul 14;11:1301-1307.
- 6) Yoo YC, Kim JM, Park HS, Yoo C, Shim SH, Park KH, **Chang RT.** "Relationship Between Retinal Nerve Fiber Layer Defects and the Quadrant and Proximal Location of Optic Disc Hemorrhage." *Optom Vis Sci.* 2017 Jun;94(6):647-653.
- 7) Lu LP, Lee R, Fan MC, Lam WC, **Chang RT,** Wong IY. "Serial Spectral-Domain Optical Coherence Tomography Findings in Acute Retinal Pigment Epitheliitis and the Correlation to Visual Acuity." *Ophthalmology.* 2017 Jun;124(6):903-909.
- 8) Lowry EA, Hou J, Hennein L, **Chang RT,** Lin S, Keenan J, Wang SK, Ianchulev S, Pasquale L, Han Y. "Comparison of Peristat Online Perimetry with Humphrey Perimetry in a Clinic-Based Setting." *Transl Vis Sci Technol.* 2016 Jul 19;5(4):4.
- 9) Ludwig CA, Murthy S, Pappuru RR, Jais A, Myung D, **Chang RT.** "A Novel Smartphone Imaging Adapter: User Feasibility Studies in Hyderabad, India." *Indian J Ophthalmol.* 2016 Mar;64(3):191-200.
- 10) Ding X, **Chang RT,** Guo X, Liu X, Holden B, He M. "Visual Field Defect Classification in the Zhongshan Ophthalmic Center- Brien Holden Vision Institute High Myopia Registry Study." *Br J Ophthalmol.* 2016 Dec;100(12):1697-1702.
- 11) Lee R, **Chang RT,** Wong I, Lai J, Lee J, Singh K. Assessment of corneal biomechanical parameters in myopes and emmetropes using the Corvis ST. *Clin Exp Optom.* 2016 Mar;99(2):157-62.
- 12) Toy B, Myung D, He L, Pan CK, **Chang RT,** Polkinhorne A, Merrell D, Foster D, Blumenkranz MS. Smartphone Ophthalmoscopy Lens Adapter as an Inexpensive Screening Tool to Detect Referral-Warranted Diabetic Eye Disease. *Retina.* 2016 May;36(5):1000-8.
- 13) Do AT, Pilai MR, Balakrishnan V, **Chang RT,** Robin AL, Singh K, Lee BW. Effectiveness of Glaucoma Counseling on Rates of Follow-up and Glaucoma Knowledge in a South Indian Population. *Am J Ophthalmol.* 2016 Mar;163:180-189.
- 14) Long C, Tsay EL, Jacobo SA, Popat R, Singh K, **Chang RT.** Factors Associated with Press Ganey Satisfaction Scores for Ophthalmology Patients. *Ophthalmology.* 2016 Feb;123(2):242-7.
- 15) Lee R, **Chang RT,** Wong I, Lai J, Lee J, Singh K. Novel Parameter of Corneal Biomechanics That Differentiate Normals from Glaucoma. *J Glaucoma.* 2016 Jun;25(6):e603-9.
- 16) Choi DY, **Chang RT,** Yegnashankaran K, Friedman NJ. Reversible Conjunctival Pigmentation Associated With Prostaglandin Use. *J Glaucoma.* 2016 Jan;25(1):e56-7.
- 17) Mwanza JC, Warren JL, Hochberg JT, Budenz DL, **Chang RT,** Ramulu PY. Combining Frequency Doubling Technology and Scanning Laser Polarimetry for Glaucoma Detection. *J Glaucoma.* 2015 Oct-Nov;24(8):561-7.
- 18) Lin SR, Lai I, Dutta S, Singh K, **Chang RT.** Quantitative Measurement of Fixation Stability During Rarebit Perimetry and Humphrey Visual Field Testing. *J Glaucoma.* 2015 Feb;24(2):100-4.
- 19) Do AT, Ilango K, Ramasamy D, Kalidasan S, Balakrishnan V, **Chang RT.** Effectiveness of Low Vision Services in Improving Patient Quality of Life at Aravind Eye Hospital. *Indian J Ophthalmol.* 2014 Dec;62(12):1125-31.
- 20) Lin SR, Fijalkowski N, Lin BR, Li F, Singh K, **Chang RT.** Parallel Rarebit: A Novel, Large-Scale Visual Screening Methodology for School-Age Children. *Clin Exp Optom.* 2014 Nov;97(6):528-33.
- 21) Silva RA, **Chang RT,** Moshfeghi DM, Leng T. Optic Nerve Pit-associated Choroidal Cleft. *JAMA Ophthalmol.* 2014 Sep 1;132(9):1142.
- 22) Mwanza JC, Budenz DL, Godfrey DG, Neelakantan A, Sayyad FE, **Chang RT,** Lee RK. Diagnostic Performance of Optical Coherence Tomography Ganglion Cell-Inner Plexiform Layer Thickness Measurements in Early Glaucoma. *Ophthalmology.* 2014 Apr;121(4):849-54.

- 23) Lee JWY, Chan JCH, **Chang RT**, Singh K, Liu CCL, Gangwani R, Wong MOM, Lai JSM. Corneal Changes After a Single Session of Selective Laser Trabeculoplasty for Open Angle Glaucoma. *Eye (Lond)*. 2014 Jan;28(1):47-52. Epub 2013 Oct 18.
- 24) Mwanza JC, Durbin MK, Budenz DL, Sayyad FE, **Chang RT**, et al. Glaucoma Diagnostic Accuracy of Ganglion Cell-Inner Plexiform Layer Thickness: Comparison with Nerve Fiber Layer and Optic Nerve Head. *Ophthalmology*. 2012 Jun;119(6):1151-8. Epub 2012 Feb 23.
- 25) Mwanza JC, Oakley JD, Budenz DL, **Chang RT**, et al. Macular Ganglion Cell-Inner Plexiform Layer: Automated Detection and Thickness Reproducibility with Spectral-Domain Optical Coherence Tomography in Glaucoma. *Invest Ophthalmol Vis Sci*. 2011 Oct 21;52(11):8323-9.
- 26) Bhorade AM, Wilson BS, Gordon MO, Palmberg P, Weinreb RN, Miller E, **Chang RT**, Kass MA; for the Ocular Hypertension Treatment Study Group. The Utility of the Monocular Trial Data from the Ocular Hypertension Treatment Study. *Ophthalmology*. 2010 Jul 8. Epub 2010 Aug 12.
- 27) Mwanza JC, **Chang RT**, Budenz DL, et al. Reproducibility of Peripapillary Retinal Nerve Fiber Layer Thickness and Optic Nerve Head Parameters Measured with Cirrus™ HD-OCT in Glaucomatous Eyes. *Invest Ophthalmol Vis Sci*. 2010 Jun 23. Epub 2010 Jun 23.
- 28) **Chang RT**, Knight OJ, Feuer WJ, Budenz DL. Sensitivity and Specificity of Time Domain versus Spectral Domain Optical Coherence Tomography in Diagnosing Early to Moderate Glaucoma. *Ophthalmology*. 2009 Dec;116(12):2294-9. Epub 2009 Oct 2.
- 29) Knight OJ, **Chang RT**, Feuer WJ, Budenz DL. Comparison of Retinal Nerve Fiber Layer Measurements Using Time Domain OCT and Spectral Domain OCT. *Ophthalmology* 2009 Jul;116(7):1271-7. Epub 2009 Apr 22.
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- 3) **Chang RT**, Singh K. "Detecting and Treating Glaucoma in a Myopic Patient Without High IOP" *Glaucoma Today*. Vol 14, Issue 3. May/June 2016.
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- 2) "Effectiveness of Trabecular Microbypass Stent Implantation (iStent) on Intraocular Pressure in Moderate and Severe Glaucoma: One Year Results" European Glaucoma Society (EGS) Poster, Florence – 5/19/18
- 3) "Automatic Identification of Referral-Warranted Diabetic Retinopathy Using Deep Learning on Mobile Phone Images," "Characteristics of Cataract Surgery Patients Influencing Press Ganey patient satisfaction Scores," "Comparison of Automated Self-Refractometry Using NETRA with Table-Mounted Autorefractor and Subjective Refraction in an Academic Optometry Clinic," "Reduction of Ocular Antihypertensive Medication Usage After iStent Implantation in a Large U.S. Managed Care Network," The Association for Research and Vision in Ophthalmology (ARVO) poster, Honolulu – 5/7/18
- 4) "Demographic and Postoperative Clinic Visit Factors Impacting Patients' Likelihood of Recommending Providers," "Evaluating Press Ganey Patient Satisfaction Scores in Postoperative Cataract and Glaucoma Patients: Are Patient Satisfaction Scores a Reliable Vehicle to Measure Quality of Care?" American Academy of Ophthalmology (AAO) paper – 2017
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- 6) Russakoff DB, Oakley JD, **Chang R**. "Deep Convolutional Neural Networks for Automated OCT Pathology Recognition." The Association for Research and Vision in Ophthalmology (ARVO) poster, Baltimore – 5/7/17.
- 7) Au TJ, Lee M, Singh K, **Chang R**. "Three Year Follow-up of Serial Structural and Function Testing in High Myopes Without Elevated Intraocular Pressure." The Association for Research and Vision in Ophthalmology (ARVO) poster, Baltimore – 5/10/17.
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- 12) Do A, Singh K, Pilai M, Balakrishnan V, **Chang R**, Lee B. "Effectiveness of glaucoma counseling on patient follow-up rates and glaucoma knowledge in a South Indian population" The Association for Research and Vision in Ophthalmology (ARVO) poster, Denver – 5/5/15
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- 14) "Design and Rapid Prototyping of a Novel 3-D Printed Smartphone Lens Adapter System" American Academy of Ophthalmology (AAO) Poster PO328, Chicago – 10/20/14
- 15) TEDMED 2014 Stanford EyeGo Exhibit, San Francisco – 9/11/14
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- 19) “Analyzing Shape Parameterization of SD-OCT Optic Nerve Head Images in High Myopes as a Predictor of Visual Field Defects,” “Cirrus SD-OCT Ganglion Cell Analysis Segmentation Errors in High Myopes,” “Clinical Utility of Web-based Office and Home Peristat for the Detection of Visual Field Defects in Glaucoma Patients,” “Comparison of Online Perimetry and Humphrey Visual Field in Patients with Glaucoma,” “Diagnostic Efficacy of RNFL Thickness Sectors for Glaucoma Detection” The Association for Research and Vision in Ophthalmology (ARVO) posters, Seattle – 5/6/13-5/8/13
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D. Grants and Media

Title	Granting Agency	Role	Dates
<i>Machine Learning for Eye Care in Nepal: Expanding Access and Improving Care</i>	<i>Stanford Center for Innovation in Global Health Seed 2017</i>	<i>PI</i>	<i>2018-2019</i>
<i>Development and Evaluation of a Compact, Accessible Medical Innovation Curriculum for Undergraduate and Graduate Students</i>	<i>Stanford UAR</i>	<i>PI</i>	<i>Oct 2017</i>
<i>How Can Machine Learning Help Solve Problems in Glaucoma?</i>	<i>Santen</i>	<i>PI</i>	<i>Aug 2017-2019</i>
<i>Designing a Wearable Personal Air Pollution Sensor and Filter Device for China and Beyond</i>	<i>Spectrum Medtech 2016</i>	<i>Co-PI</i>	<i>Jan-Dec 2017</i>
<i>Digital Health Bootcamp Beijing Co-Sponsored with Peking University</i>	<i>Stanford Center Peking Univ. Graduate Seminar Program Award</i>	<i>PI</i>	<i>Aug 2016</i>
<i>Glaucoma Humphrey Field Analyzer / Optical Coherence Tomography Specificity</i>	<i>Carl Zeiss Meditec</i>	<i>PI</i>	<i>Feb-Jun 2017</i>

Digital Health Bootcamp Beijing	Stanford Center Peking Univ. Graduate Seminar Program Award	PI	June-July 2015
091 The Efficacy and Safety of Bimatoprost SR in Patients With Open-angle Glaucoma or Ocular Hypertension	Allergan	Co-PI	2015-2019
Potential Benefits of Circular 2D Polarized LCD TV on Improvement of Eye Fatigue and Eye Movement Control	TCL Research America	Co-PI	Aug 2014-2016
EyeGo Smartphone Ocular Imaging Feasibility Study in China	Stanford Center Peking Univ. Faculty Fellowship Program Award	PI	May-June 2014
EyeGo: Remote Consultation Through Smartphone-Based Ophthalmic Imaging	Stanford Spectrum Medtech	PI	2014
3D printed Smartphone-based Ophthalmic Imaging System for Remote Consultation and Triage	Stanford Society of Physician Scholars (SSPS)	PI	2014
769 A Randomized, Multicenter, Double-Masked, Parallel-Group Study Comparing the Safety and Efficacy of BOL-303259-X 0.024% With Timolol 0.5% in Subjects With Open-Angle Glaucoma or Ocular Hypertension – APOLLO phase 3 study	Bausch and Lomb	PI	2013-2014
Peristat Online Visual Field Screening for Glaucoma	Bio-X Undergraduate Summer Research Program	PI	June-July 2012
Employing Gaze-Tracking Analysis to Determine How Subjects Gather Visual Information During Field Testing	America Glaucoma Society MAPS	PI	May 2010-2011
Cirrus SD OCT – Ganglion Cell Normative Database Collection	Carl Zeiss Meditec	PI	Jan-Apr 2011

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- 2) Stanford Office of Technology and Licensing: S16-026-029, US Provisional No 62/289,445, 62/289,457, 62/289,480, 62/289,546, Systems and Methods for Respiratory Health Management, filed 2/1/16. Converted by Wilson Sonsini, PCT/US2017/015816, 2/9/17.
- 3) Stanford Office of Technology and Licensing: S13-195/PCT, US Patent: 14/893,951 Modular Lens Adapters for Mobile Anterior and Posterior Segment Ophthalmoscopy, filed 5/30/14 based on PCT/US2014/040203. International PCT/US2016/024265. Licensed 7/10/15. Granted 9,706,718
- 4) Stanford Office of Technology and Licensing: S15-099/PCT, US Patent: 62/138,271 Modular Smartphone Adapters for Mobile Ophthalmoscopy, filed 3/25/15. Licensed 7/10/15.

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- 1) National Eye Institute (NEI) ZEY1VSN01 Invited Reviewer - 10/17/18
- 2) National Eye Institute (NEI) ZEY1VSN04 Invited Reviewer – 7/26/17
- 3) Bay Area Global Health Innovation Challenge Invited Reviewer – 4/3/17

- 4) Stanford Learning Design and Technology (LDT) Invited Reviewer – 7/31/15
- 5) National Eye Institute (NEI) ZEY1VSN01 Invited Reviewer – 3/17/15
- 6) National Eye Institute (NEI) Audacious Goals ZEY1VSN05 Invited Reviewer – 12/11/14
- 7) Editorial Advisory Board for Advances in Therapy – 10/12/09 to present
- 8) British Medical Journal Best Practice Expert Contributor – 7/12/13 to present
- 9) Current Ad Hoc Reviewer for Ophthalmology, Journal of Cataract and Refractive Surgery, British Journal of Ophthalmology, and Eye – 2011 to present

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- 2) **Digital Health Innovation Course Leader**, Dreamcatchers MedTech Hackathon in Hong Kong 2018, http://www.dreamcatchers.hku.hk/?page_id=57107, 6/24/18-6/30/18
- 3) **Invited Innovation Course Senior Instructor**, Biodesign in Sao Paulo, Brazil, <http://einsteinbiodesign.com>, 5/13/18-5/19/18
- 4) TreeHacks Health Judge, <https://www.treehacks.com>, 2/18/18
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- 7) **Digital Health Innovation Course Leader**, Medical Innovation Seminar 2017, <http://healthplusplus.stanford.edu/seminar/index.html>, 10/16/17-10/22/17
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- 13) Two weeks in China: Lessons on innovating abroad <http://scopeblog.stanford.edu/2016/11/16/two-weeks-in-china-lessons-on-innovating-abroad/>, 11/16/16
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- 24) “Design Daze” a dFarm Design-a-thon Volunteer Mentor,
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- 25) Advisor for Automatic Grading of Eye Diseases through Deep Learning, Nvidia GPU Conference <https://mygtc.gputechconf.com/form/session-listing&doSearch=true&queryInput=sadhwani>, 4/5/16
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 - 44) CBS Interactive CNET Video, Sumi Das <http://www.cnet.com/videos/how-the-iphone-is-zooming-in-on-eye-care/>, 5/28/14
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COMMUNITY SERVICE

- 1) Member of Orbis, Flying Eye Hospital – 2017 to present
- 2) SHIFT Stanford Student Organization Advisor <http://shift.stanford.edu> – 4/17/15 to present
- 3) Pacific Free Clinic Volunteer Stanford Faculty – 2015 to present
- 4) Arbor Free Clinic Volunteer Stanford Faculty – 2014 to present
- 5) Healthy Scholars Foundation Advisory Board – 2014 to 2015
- 6) Keepyoursight.org Foundation Volunteer Technology Advisor – 7/31/13 to 3/31/14
- 7) Stanford Immersion in Medicine Series (SIMS) Shadowing Program Mentor – 2014 to present

- 8) Faculty Mentor for Stanford Class Med 275B: Biomedical Innovation Incubator – 2014 to present
- 9) Faculty Mentor for Ophthalmology Electives OPHT 300A, 398A – 2014 to present
- 10) Faculty Mentor for Stanford Class BioE 273: Biodesign for Mobile Health – 2015 to present
- 11) Lifeline Express Foundation Volunteer Educator, annual trips, China – 2010 to present
- 12) Vision Health Fair Volunteer and Disc Photo Reading Center Volunteer, Prevent Blindness Northern California – 2010, 2014
- 13) International Aid Volunteer, Tema Eye Clinic, Ghana – July 2008