Stanford



Karteek Kunala

Research Engineer, Ophthalmology Research/Clinical Trials

Bio

BIO

My current interests are in development of design and instrumentation of pre-clinical vision devices, to conduct non-invasive in vivo retinal imaging. I studied Physics with a concentration in optics during my time at University of Hyderabad, India and received a bachelors and masters degree in 2014. I then moved to USA to continue working in the field of optics at University of North Carolina at Charlotte to pursue my PhD, working on nanofabrication of broadband anti-reflective structures. My interest in vision science started with my job at University of Rochester as a research scientist, where I was involved in developing optical imaging tools using adaptive optics to study retinal diseases. My work was focused on development of fluorescence lifetime imaging techniques in humans and two photon fluorescence microscopy in mouse.

ACADEMIC APPOINTMENTS

- Research Engineer, Ophthalmology Research/Clinical Trials

PROFESSIONAL EDUCATION

- Ph.D., University of North Carolina at Charlotte , Optical Science and Engineering (2018)
- MS, University of North Carolina at Charlotte , Optical Science and Engineering (2018)
- MSc, University of Hyderabad, INDIA , Physics (2014)

LINKS

- Linkedin: linkedin.com/in/karteek-kunala
- https://dubralab.stanford.edu/: https://dubralab.stanford.edu/

Publications

PUBLICATIONS

- **Automated montaging and contrast stretching of adaptive optics ophthalmoscope images.** *Biomedical optics express*
  Ayubi, G. A., Kunala, K., Dubra, A.
  2026; 17 (5): 2557-2581

- **Strabismic imaging for correcting in-plane motion distortion in scanning imaging instruments and rolling shutter cameras** *ADVANCED PHOTONICS*
  Ayubi, G. A., Kunala, K., Kowalski, B., Hargrave, A., Dubra, A.
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- **Strabismic imaging for correcting in-plane motion distortion in scanning imaging instruments and rolling shutter cameras.** *Advanced photonics*
  Ayubi, G. A., Kunala, K., Kowalski, B., Hargrave, A., Dubra, A.

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- **Refractive adaptive optics scanning light ophthalmoscope with fast 2D MEMS scanner.** *Biomedical optics express*
  Kunala, K., Xia, Y., Ayubi, G. A., Kowalski, B., Desai, A. X., Lippman, D., Bentley, J., Dubra, A.
  2026; 17 (2): 635-655
- **Automated animal gimbal steering for retinal imaging and stimulation.** *Biomedical optics express*
  Kunala, K., Ayubi, G. A., Franco, J. A., Mahajan, V. B., Dubra, A.
  2026; 17 (1): 502-510
- **Telecentric model eye for correction of image distortion in adaptive optics ophthalmoscopes.** *Biomedical optics express*
  Akondi, V., Ayubi, G. A., Huang, X., Kunala, K., Dubra, A.
  2025; 16 (7): 2767-2791
- **Low-cost non-contact axial placement and active focusing of optical components** *APPLIED OPTICS*
  Kunala, K., Dubra, A.
  2025; 64 (21): 6150-6156
- **In Vivo Visualization of Intravascular Patrolling Immune Cells in the Primate Eye.** *Investigative ophthalmology & visual science*
  Ashbery, D., Baez, H. C., Kanarr, R. E., Kunala, K., Power, D., Chu, C. J., Schallek, J., McGregor, J. E.
  2024; 65 (11): 23
- **Multispectral label-free in vivo cellular imaging of human retinal pigment epithelium using adaptive optics fluorescence lifetime ophthalmoscopy improves feasibility for low emission analysis and increases sensitivity for detecting changes with age and eccentricity.** *Journal of biomedical optics*
  Kunala, K., Tang, J. A., Parkins, K., Hunter, J. J.
  2024; 29 (Suppl 2): S22707
- **Refractive adaptive optics scanning ophthalmoscope for small animal imaging**
  Kunala, K., Lippman, D., Desai, A., Kowalski, B., Bentley, J., Dubra, A.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2024
- **Near Infrared Autofluorescence Lifetime Imaging of Human Retinal Pigment Epithelium Using Adaptive Optics Scanning Light Ophthalmoscopy.** *Investigative ophthalmology & visual science*
  Kunala, K., Tang, J. A., Bowles Johnson, K. E., Huynh, K. T., Parkins, K., Kim, H. J., Yang, Q., Sparrow, J. R., Hunter, J. J.
  2024; 65 (5): 27
- **Near-infrared adaptive optics fluorescence lifetime ophthalmoscopy of human retinal pigment epithelium reveals variations with eccentricity and disease**
  Kunala, K., Tang, J., Johnson, K., Huynh, K. T., Parkins, K., Yang, Q., Hunter, J. J.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
- **Prolonged Fluorescence Lifetimes of the Retinal Pigment Epithelium in Human Subjects with Pentosan Polysulfate Sodium Toxicity**
  Johnson, K., Tang, J., Kunala, K., Parkins, K., Yang, Q., Hunter, J. J.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
- **Erratum: Adaptive optics fluorescence lifetime imaging ophthalmoscopy of in vivo human retinal pigment epithelium: erratum.** *Biomedical optics express*
  Tang, J. A., Granger, C. E., Kunala, K., Parkins, K., Huynh, K. T., Bowles-Johnson, K., Yang, Q., Hunter, J. J.
  2023; 14 (4): 1544
- **Mapping the origin of two-photon excited fluorescence in macaque retinal layers with adaptive optics fluorescence lifetime ophthalmoscopy**
  Huynh, K. T., Chadderdon, A. B., Kunala, K., Parkins, K., Yang, Q., Hunter, J. J.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Calcium responses to optogenetic stimulation decay faster in primate retinal ganglion cells after photoreceptor ablation**
  Xu, Z., Kunala, K., Murphy, P., Koo, E., Puthussery, T., McGregor, J. E.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **In vivo measurement of light steering by single retinal cells optimizes phase-contrast AOSLO**

Feng, G., Yang, Q., Kunala, K., Schallek, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022

- **Optogenetic therapy restores retinal activity in primate for at least a year following photoreceptor ablation** *MOLECULAR THERAPY*
  McGregor, J. E., Kunala, K., Xu, Z., Murphy, P. J., Godat, T., Strazzeri, J. M., Bateman, B. A., Fischer, W. S., Parkins, K., Chu, C. J., Puthussery, T., Williams, D. R., Merigan, et al
  2022; 30 (3): 1315-1328

- **Adaptive optics fluorescence lifetime imaging ophthalmoscopy of in vivo human retinal pigment epithelium** *BIOMEDICAL OPTICS EXPRESS*
  Tang, J. A. H., Granger, C. E., Kunala, K., Parkins, K., Huynh, K. T., Bowles-Johnson, K., Yang, Q., Hunter, J. J.
  2022; 13 (3): 1737-1754

- **Adaptive optics fluorescence lifetime ophthalmoscopy of iGlucoSnFR-TS suggests increased glucose in RPE of rho(-/-) compared to healthy mice**
  Kunala, K., Xue, Y., Huynh, K., Yang, Q., Parkins, K., Steven, S., Dubra, A., Cepko, C., Hunter, J.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Adaptive optics fluorescence lifetime imaging ophthalmoscopy of the human RPE mosaic**
  Tang, J., Granger, C. E., Parkins, K., Kunala, K., Huynh, K., Bowles-Johnson, K., Yang, Q., Hunter, J. J.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Optogenetic activation of retinal ganglion cells persists for at least a year in primate fovea following photoreceptor loss**
  McGregor, J. E., Kunala, K., Xu, Z., Parkins, K., Godat, T., Strazzeri, J. M., Bateman, B. A., Williams, D. R., Merigan, W. H.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020

- **Optical scattering measurements of random anti-reflection subwavelength surface structures on binary gratings**
  Gadamsetti, P., Kunala, K., Poutous, M. K.
  edited by Jiang, S., Digonnet, M. J.
  SPIE-INT SOC OPTICAL ENGINEERING.2020

- **Optical Scattering of Deterministic Diffractive Elements with Antireflective Structured Surfaces**
  Gadamsetti, P., Kunala, K., Poutous, M. K., IEEE
  IEEE.2019: 223-225

- **Random antireflective nanostructuring on binary near-wavelength period gratings** *OPTICAL ENGINEERING*
  Kunala, K., Poutous, M. K.
  2018; 57 (8)

- **Diffraction efficiency performance of random anti-reflecting subwavelength surface structures on prefabricated fused silica binary gratings** *APPLIED OPTICS*
  Kunala, K., Poutous, M. K.
  2018; 57 (16): 4421-4427

- **Optical characterization of random anti-reflecting subwavelength surface structures on binary gratings**
  Kunala, K., Sapkota, G., Poutous, M. K.
  edited by Jiang, S., Digonnet, M. J.
  SPIE-INT SOC OPTICAL ENGINEERING.2018