BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Joseph Hanna

eRA COMMONS USER NAME (credential, e.g., agency login): N/A

POSITION TITLE: Ophthalmology Resident Physician

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)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Tanta University	MD	09/2006	02/2024 (expected)	Medicine and Surgery
University of Toronto	MSc	01/2017	12/2018	Laboratory Medicine and Pathobiology/Vision Sciences
University of Toronto	PhD	09/2020	09/2024	Laboratory Medicine and Pathobiology/Vision Sciences
University of Toronto	Ophthalmology Residency	07/2023	06/2028 (expected)	Ophthalmology

A. Personal Statement

Early exposure to patients with glaucoma revealed the profound and irreversible impact of vision loss, shaping my commitment to ophthalmology. As a third-year ophthalmology resident at the University of Toronto, I am pursuing an academic career that integrates clinical excellence with translational research in optic nerve disease.

I completed a Master's and Ph.D. at the University of Toronto, where I investigated glaucoma pharmacotherapy and regenerative strategies for retinal disease. My work has been supported by over $200,000 in competitive funding, including a prestigious Canadian Institutes of Health Research doctoral award, and has produced a sustained record of peer-reviewed publications. As a co-investigator on a CIHR-funded project, I incorporated patient perspectives into study design, strengthening my focus on clinically impactful research.

In residency, I have been recognized with two awards for clinical excellence while advancing an active research portfolio spanning clinical and translational projects, including surgical innovation, with multiple manuscripts submitted and in preparation. These experiences have refined my focus on glaucoma, particularly neuroprotection and preservation of retinal ganglion cell function.

I will pursue glaucoma fellowship training and build an academic practice that integrates a high-volume clinical service with a translational research program in neuroprotection. The Heed Resident Retreat will accelerate my development by fostering mentorship and collaborations that translate scientific discovery into meaningful advances in patient care.

B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

Jul 2023- date	**Ophthalmology Resident Physician**, Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Canada
July 2025-date	**Professional Association of Residents of Ontario (PARO) Representative** for the Department of Ophthalmology and Otolaryngology
July 2024-June 2025	**Resident Program Committee Representative** for second year residents
Sep 2020-Sep 2024	**PhD Candidate (full-time)**, Schuurmans Lab and Brain Regenerative Lab, Sunnybrook Research Institute Supervisors: Dr. Carol Schuurmans and Dr. Isabelle Aubert Thesis Title: Elucidating the role of *Pten* in the retina as a tool for elucidating developmental principles and for disease modeling
Mar 2019- Nov 2019	**Research Assistant (volunteer full-time)**, Eye Pathology Lab, St. Michael's Hospital Supervisors: Dr. Neeru Gupta and Dr. Yeni Yucel
Jan 2017 – Dec 2018	**MSc candidate (full-time),** Eye Pathology Lab, St. Michael's Hospital (Convocated in June 2019) Supervisors: Dr. Yeni Yucel and Dr. Neeru Gupta Thesis Title: Adrenergic Control of Lymphatic Drainage from the Eye
Oct 2015 – Dec 2016	**Research Assistant (volunteer full-time)**, Eye Pathology Lab, St. Michael's Hospital Supervisors: Dr. Yeni Yucel and Dr. Neeru Gupta
Mar 2014 – Sept 2015	**General Medical Practitioner**, The American Hospital, Tanta, Egypt

Honors:

Clinical Excellence Awards:

June 2025	Dr. John Speakman Award, Sunnybrook Hospital Department of Ophthalmology Award for best resident in the 2024-2025 academic year
June 2025	Dr. W. Gordon C. Kelly Award, St. Michael's Hospital Department of Ophthalmology – Award for best junior resident in the 2024-2025 academic year

Peer Reviewed Grants and Scholarships:

September 2022	Canada Graduate Scholarship Doctoral Award, Canadian Institutes of Health Research (CIHR) $105,000 (over three years)
September 2022	Co-investigator, Canadian Institutes of Health Research (CIHR), Planning for patient engagement in biomedical research disseminating grant $10,000
September 2022	Vision Science Research Program, Department of Ophthalmology and Vision Science, University of Toronto $9,913.84 CAD
April 2022	Finalist- National Competition, Vanier Canada Graduate Scholarship

September 2021	Vision Science Research Program, Department of Ophthalmology and Vision Science, University of Toronto $21,000 CAD
September 2021	Ontario Graduate Scholarship, Temerity Faculty of Medicine, University of Toronto $15,000 CAD
April 2021	Finalist- National Competition, Vanier Canada Graduate Scholarship
April 2021	Finalist- National Competition, CIHR Doctoral Awards
September 2020	The Eric Steinbach Travel Award, Department of Ophthalmology and Vision Science, University of Toronto $1,000 CAD
September 2020	Vision Science Research Program, Department of Ophthalmology and Vision Science, University of Toronto $24,000 CAD
September 2018	Vision Science Research Program, Department of Ophthalmology and Vision Science, University of Toronto $21,124 CAD
September 2018	Ontario Graduate Scholarship, Faculty of Medicine, University of Toronto $15,000 CAD

Merit Research Awards:

February 2023	1st place Best Poster Award, ISER XXV Biennial Meeting of the International Society for Eye Research, Gold Coast, Australia
January 2023	ISER Travel Fellowship Award to attend ISER XXV Biennial Meeting of the International Society for Eye Research, Gold Coast, Australia $1,500 USD
September 2022	Medicine by Design Travel Award to attend Till and McCulloch Meeting, Vancouver, Canada $2,000 CAD
May 2022	Best Poster Award of the Brain and Neuroscience Group at the 25th Annual Laboratory Medicine and Pathobiology Graduate Research Conference
May 2021	R. O. Torrence Bursary, Awarded to an MD/PhD student at Department of Laboratory Medicine and Pathobiology, Temerity Faculty of Medicine, University of Toronto $2,000 CAD
September 2020	University of Toronto Fellowship Award, Faculty of Medicine, University of Toronto $3,000 CAD
February 2019	ARVO International Travel Grant in the amount of $1,100 USD
April 2018	First-place Award of the Neuroscience Group at the 21st Annual Laboratory Medicine and Pathobiology Graduate Research Conference
Jan 2017	University of Toronto Fellowship Award $5,000 CAD

C. Contributions to Science

Selected publications:

I have authored multiple original research articles in peer-reviewed journals. My work has primarily focused on translational research, investigating the pathophysiology of ocular diseases—particularly glaucoma—and exploring regenerative strategies to replace degenerating retinal cells. More recently, I have expanded my efforts to include clinical research, with an emphasis on patient-centered care and surgical innovation.

1) **Hanna J,** He T, Ulate R. Scleral Fixated IOL without factoring trocar/Vitrectomy (SWIFT technique). Under review Journal of Cataract and Refractive Surgery.
2) Armarat C, **Hanna J**, Margolin E. Ocular Muasthenia, Myositis and Myocarditis syndrome in a woman treated with immune checkpoint inhibitors. Under review Journal of Neuro-Ophthalmology.
3) **Hanna J**, Yücel Y, Zhou X, Gupta N. Short-term Brimonidine increases lymphatic drainage from the mouse eye: Noninvasive photoacoustic sequential study. Manuscript in preparation.
4) Liu D, **Hanna J**, DeAngelis D, Horticultural Hazards of Glaucoma, Manuscript in Preparation.
5) Touahri Y, Pak A, David LA, **Hanna J**, et al. Plagl1 regulates the retinal progenitor cell to Müller glial cell transition. PLoS Genet. 2026 Mar 18;22(3):e1012020. doi: 10.1371/journal.pgen.1012020. PMID: 41849358; PMCID: PMC13016477.
6) **Hanna J,** Touahri Y, Pak A, Belfiore L, van Oosten E, David L. Han S, Ilnytskyy Y, Kovalchuk I, Kurrasch D, Okawa S, del Sol A, Screaton R A, Aubert I, Schuurmans C. Glycolytic flux controls retinal progenitor cell differentiation via regulating Wnt signaling*eLife*13:RP100604.
7) Eid S, Lee S, Verkuyl CE, Almanza D, **Hanna J**, Shenouda S, Belotserkovsky A, Zhao W, Watts JC. The importance of prion research. Biochem Cell Biol. 2024 Dec 1;102(6):448-471. doi: 10.1139/bcb-2024-0018. Epub 2024 Jul 12. PMID: 38996387.
8) **Hanna J**, Touahri Y, Pak A, David L, van Oosten E, Dixit R, Vecchio L, Mehta D, Minamisono R, Aubert I, Schuurmans C; *Pten* Loss Triggers Progressive Photoreceptor Degeneration in an mTORC1-Independent Manner. *Invest. Ophthalmol. Vis. Sci.* 2025;66(3):45. https://doi.org/10.1167/iovs.66.3.45.
9) **Hanna J**, David LA, Touahri Y, Fleming T, Screaton RA and Schuurmans C (2022) Beyond Genetics: The Role of Metabolism in Photoreceptor Survival, Development and Repair. Front. Cell Dev. Biol. 10:887764. doi: 10.3389/fcell.2022.887764.
10) Touahri Y, **Hanna J**, Tachibana N, David A, Balakrishnan A, Olender T, Dixit R, Cantrup R, Mattar P, Mains P, Lefebvre J, Murshed M, Cayouette M, Brand M, Reese B, Schuurmans C. *Pten regulates endocytic trafficking of cell adhesion and signaling molecules to pattern the retina.* Under Review. https://www.biorxiv.org/content/10.1101/2022.08.31.506085v1.
11) **Hanna J,** Yücel YH, Zhou X, Kim N, Irving H, Gupta N. Beta-adrenergic glaucoma drugs reduce lymphatic clearance from the eye: A sequential photoacoustic imaging study. Exp Eye Res. 2021 Nov;212:108775. doi: 10.1016/j.exer.2021.108775. Epub 2021 Sep 29. PMID: 34599970.
12) **Hanna J**, Yucel Y, Zhou X, Mathieu E, Paczka-Giorgi L., Gupta N. *Progressive Loss of Blood Vessel Regression in a Live Mouse Model of Retinitis Pigmentosa*. Canadian Journal of Ophthalmology 2018;53(4):391-401. doi:10.1016/j.jcjo.2017.10.014.
13) Mathieu E, Gupta N, Ahari A, Zhou X, Paczka-Giorgi L, Lani R, **Hanna J**, Yucel YH. *Cerebrospinal Fluid Entry Into the Optic Nerve is Impaired in Glaucoma.* Investigative Ophthalmology Visual Sciences 2018;59:5876–5884. https://doi.org/10.1167/iovs.18-24521.
14) Mathieu E, Gupta N, Ahari A, Zhou X, **Hanna J**, Yucel YH. *Evidence of Cerebrospinal Fluid Entry Into the Optic Nerve via a Glymphatic Pathway.* Investigative Ophthalmology Visual Sciences. 2017;58(11): 4784-4791. doi:10.1167/iovs. 17-22290.

D. Scholastic Performance

YEAR	COURSE TITLE	GRADE
2014	Pass Doctor of Medicine degree, the system in Egypt has a different grading system and there is no undergraduate studies.	
2018	LMP1404H Molecular and Cellular Mechanisms of Disease (course requirement for MSc)	A+
2020	MCCQEI	Pass
2021	NAC OSCE (95 percentile)	Pass
2023	LMP1209H Neurodegenerative Disease, Mechanisms, Models and Methods (course requirement for PhD)	A