



The Members of the Prize Selection Committee

The Helen Keller Prize for Vision Research

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September 19, 2024

Letter of support on behalf of Prof. em. Dr. Thomas T. Norton, PhD

Dear Members of the Prize Selection Committee,

I am writing this letter to support Dr. Thomas T. Norton, PhD, for the 2026 Helen Keller Prize for Vision Research. This award is given for research excellence as demonstrated by a number of significant research contributions to vision science during the course of a career, and in my opinion Dr. Norton would be extremely well qualified for it.

My own research is in the visual system, with particular interests in myopia. My work in this area has spanned over 35 years, involving work with both human subjects and animal models, and has resulted in over 200 original publications, listed in PubMed. With Dr. Norton, I had many discussions about the mechanisms of emmetropization and myopia development over the years, comparing my animal model, the chicken and his, the tree shrew - a nice chance to compare results from a bird with those from a mammal. More recently, we had a chance to compare the roles of chromatic cues in emmetropization in humans and tree shrews and found surprising similarities. I have long been familiar with Dr. Norton and his impressive record of research in this field, and therefore I believe that I am well positioned to judge Dr. Norton's accomplishments.

Dr. Norton has been instrumental in developing as an animal model the Northern Tree Shrew (*Tupaia belangeri*), which is closely related to primates. Using this model he has conducted any number of studies that have been fundamental to this field. As one example, Dr. Norton's studies helped to determine that that emmetropization and induced myopia are not dependent on central visual pathways but are regulated by an emmetropization mechanism within the eye, demonstrating that retinal signals to slow or increase eye growth are communicated in a signaling pathway through retinal pigment epithelium and choroid to the sclera. He has also found evidence for induced myopia generating retinally-derived signals

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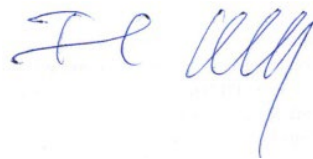
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that modulate mRNA, protein levels in mammalian sclera that produce biomechanical changes leading to an increase in extensibility, allowing increased axial expansion of the eye. More recently, he has been exploring the role of chromatic cues in refractive development, and his results in this area are amongst the forefront of the field of myopia research.

In addition to his basic research, Dr. Norton has been involved in the development of clinical trials, most notable in the Correction of Myopia Evaluation Trial (the COMET Study), the first large prospective randomized clinical trial of myopia control in children. This pioneering study found that progressive addition lenses produced a small but still significant slowing of myopia progression. This result, which demonstrated the principle that optical interventions can affect human myopia progression, paved the way for the proliferation of subsequent trials (such as for multifocal contact lenses) that are changing the standard of care for myopia in an effort to control the worldwide epidemic of myopia.

In summary, I enthusiastically support the nomination of Dr. Norton for the 2026 Helen Keller Prize for Vision Research.

Sincerely,

A handwritten signature in blue ink, appearing to read 'F. Schaeffel', is positioned below the word 'Sincerely,'.

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I am writing this letter in support of the nomination of Dr. Thomas T. Norton, PhD, for the Helen Keller Prize for Vision Research 2026. This award, which recognizes "**research excellence as demonstrated by a number of significant research contributions to vision science during the course of a career or for a single research contribution of exceptional importance to vision**," is one for which I think Dr. Norton is extremely qualified. I have known Dr. Norton personally since I moved to UAB in 1996, and have collaborated with him on emmetropization (myopia) research since 2014. I am well acquainted with his research accomplishments and feel that I am well qualified to judge their considerable impact on ophthalmological research.

The eye is a precision optical instrument, that to achieve good focus needs to have its axial length matched to its optics with a precision of greater than 300 microns out of about 25 mm. Because individual optics vary, and because the optics for each individual are continually changing up through young adulthood, the eye must use visual cues to actively regulate its rate of axial elongation to first achieve, and then maintain, good focus. This process is termed *emmetropization*. If this process fails and the eye becomes too long for its optics, the result is myopia (nearsightedness).

For some time, myopia research was not considered a priority: 'just prescribe glasses and the problem is solved.' However, the incidence of myopia is increasing to epidemic levels. Myopia stretches the retina and is a major risk factor for later sight-threatening disease. Indeed, as myopes age, myopia may become the one of the – if not the single greatest – risk factor for eye disease. Additionally, while spectacles and contact lenses can allow myopes nominally good visual acuity, myopia limits a person's career choices and high myopia, especially, substantially degrades the quality of life. Research into emmetropization has thus become of major importance to visual health.

Tom Norton is one of the giants of this field. In a research effort spanning five decades and counting, he has started from the basic findings that emmetropization is visually guided, to building a body of scientific work of exceptional quality that defines much of this field. While primarily a basic scientist, he has long pushed to move his findings into the clinic. An early clinical trial with which he was involved was the inspiration for the current effective use of multifocal lenses for myopia control. Lately he has built upon his developed body of knowledge and is working to move three different optical treatments for myopia into translational studies and clinical trials. I can think of no current researcher in vision science who is more deserving of this award than Tom Norton.

For practical and ethical considerations, animal models are essential for the study of myopia. There is no single best animal model, and emmetropization is likely an evolutionarily ancient process whose fundamental mechanisms are conserved across the vertebrate line. But some animal models are closer to human than others: rhesus monkeys in particular come to mind. But these are expensive and slow to mature: one simply cannot perform a large number of experiments in this species. Tom has developed the Northern tree shrew (*Tupaia belangeri*) as a model, these are small diurnal mammals that are closely related to primates. Tree shrews are, however, wild animals, and difficult to handle. But Tom has perfected their use, and his original colony at the University of Alabama at Birmingham has expanded into a tree shrew

core, supporting multiple researchers working not just on myopia, but also glaucoma, diabetic retinopathy, among other topics.

One of the most important breakthroughs of using animal models was the realization that active emmetropization really existed: this had long been suspected because of the non-Gaussian distribution of refractive errors in humans, but it took animal models to definitively prove this. In the mid-1970s, Wiesel and Raviola (1977) and Sherman, Norton & Casagrande (1977) independently discovered that surgical closure of an eyelid in animals (monkeys and tree shrews) produced elongation of the vitreous chamber and myopia – the first direct evidence for visually-guided refractive development.

From his work in tree shrews and the monkey studies of Wiesel & Raviola it was apparent that removing clear images triggered axial elongation and suggested that visual cues were critically important in controlling axial length. The realization that there is a guided feedback system awaited the 1988 paper by Schaeffel, Glasser & Howland that used lenses rather than form deprivation and found that chicks accurately compensated for the power of the lens. Using lenses in tree shrews, Dr. Norton found that the emmetropization mechanism remains active throughout adolescence and guides recovery from induced myopia, but focused for over a decade on discovering how retinally-generated signals travel through RPE and choroid to control gene and protein expression in the sclera. His work on these topics has been a large part of the foundation of our knowledge of refractive development.

Working with Jane Gwiazda and others, Dr. Norton initiated and guided the *Correction of Myopia Evaluation Trial* (COMET study), the first large prospective randomized clinical trial of myopia control in children. This study found that progressive addition lenses produced a small but significant slowing of myopia progression that paved the way for the proliferation of subsequent trials for optical therapies such as multifocal contact lenses, that are changing the standard of care for myopia in an effort to control the worldwide epidemic of myopia

It has been demonstrated the emmetropization can detect the sign of defocus, making the eye longer in the presence of hyperopic defocus, and restraining elongation in the presence of myopic defocus. But what aspect of the retinal image is key? For some time, chromatic cues were not thought to be important for refractive development, but the work of Dr. Norton and his collaborators over the past 10 years has turned the field around, and shown how critical chromatic cues are. This is of fundamental importance. Based on these findings, Dr. Norton now has three provisional patents for optical myopia control therapies, including multi-focal multi-spectral lenses, and an anti-myopia video display, and work on translating these to human therapies is ongoing.

Dr. Norton also found that narrow-band red light induces a strong hyperopia in tree shrews, a response that (of the existing animal models) only the rhesus macaque shares. Further investigations determined that you don't need pure red, amber will do as long as blue cones are not significantly stimulated. It was also determined that the pro-hyperopia anti-myopia effect can be significant even with relatively brief daily exposures, but that the effect degrades quickly with contaminating white light, so spectacles with open sides would likely be ineffective.

I can also attest to the uniformly high levels of scholarship and integrity in all of Dr. Norton's work. He is also an amazing colleague and mentor, generous with his time, whose advice has proven invaluable to many researchers, both young and established. His legacy to

the field of refractive development is huge. I dare say that, while there are other talented and accomplished researchers in this field, that none of them have a lifetime achievement record that exceeds Dr. Norton's. As more and more people build on the foundations that his career has built, I expect the impact of what he's done to continue to increase. As an update for the last year, Dr. Norton is now a consultant on two NIH funded grants that he helped design. One is a funded R21 EY036536 clinical trial (Dr. Safal Khanal PI), "Pilot test of a novel, wavelength-based method to control childhood myopia." This exciting study will attempt to translate results from tree shrews using amber light, by employing amber-tinted contact lenses (Tom will be on the data safety committee). The other is a basic research grant, RO1 EY036970 "Myopia and the Visual Environment," which will use the now well-established tree shrew model to investigate the effects of common artificial lighting sources on myopia, develop optical methods for controlling myopia that only take brief daily exposures, and defining the extent to which different external visual environments could affect the development of myopia. Also just now is an author on a peer-reviewed commentary in Translational Vision Science and Technology (TSVT) "An Alternative Mechanism for the Anti-Myopia Effectiveness of Diffusion Optics Technology (DOT) Lenses" – a totally new take on how anti-myopia spectacle lenses work that has the potential to really shake up the field. Not a bad year for someone who is 'retired'!

To recap, I support the nomination of Dr. Thomas T. Norton, PhD, for the Helen Keller Prize for Vision Research 2026, in the strongest manner possible.



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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: Norton, Thomas Tolles

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

POSITION TITLE: Professor emeritus, Department of Optometry and Vision Science

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
Yale University, New Haven, CT	B.A.	06/1965	Psychology
University of California, Los Angeles, CA	Ph.D.	08/1970	Psychology
University of Pennsylvania, Philadelphia, PA	Postdoctoral	09/1972	Neurophysiology

A. Personal Statement

Most of my scientific career, both before and after “retirement” in 2014, has involved using the tree shrew animal model to understand the emmetropization process in order to learn (1) what causes myopia in children and (2) how to prevent or slow childhood myopia. Tree shrews are small mammals that are closely related to primates. They have excellent color vision and acuity and have an emmetropization mechanism that uses visual cues in the environment to guide eye growth so that the retina comes to be located at the focal plane where images are in good focus. In the juvenile postnatal period, we can cause their eyes to become myopic (too long) or hyperopic (too short) by manipulating the visual environment. Our studies in tree shrews showed that the environment plays a critical role in myopia. Indeed, the recent worldwide “epidemic” of myopia cannot be accounted for by genetic factors. Rather, for some people, visual cues needed by the emmetropization mechanism to achieve and maintain emmetropia are missing or diminished. For the past 10 years, Dr. Tim Gawne and I have been investigating the role of wavelength of light in providing the needed signals. This has led to three strategies to slow or prevent myopia in children by exposing them to particular wavelengths of light or defocusing selected wavelengths for brief periods each day. One of these is being evaluated in an NEI-funded clinical study that I helped design, using experience I gained through my participation in the NEI-funded COMET clinical trial – the first trial to demonstrate that the progression of myopia can be slowed by an optical treatment.

Citations:

1. **Norton, T.T.** and Siegwart, Jr., J.T. Light Levels, Refractive Development, and Myopia – a Speculative Review. *Exp Eye Res*, 114: 48-57, 2013. PMCID: PMC23680160.
2. Gawne, T.J., and **Norton, T.T.** An Opponent Dual-Detector Spectral Drive Model of Emmetropization. *Vision Res* 173: 7-20, 2020. PMCID: PMC32445984.
3. Gawne, T.J., She, Z and **Norton, T.T.** Chromatically simulated myopic blur counteracts a myopiagenic environment. *Exp Eye Res*, 222: 109187, 2022. PMCID: PMC35843288.
4. Gwiazda, J., Hyman, L., Hussein, M., Everett, D., **Norton, T.T.**, Kurtz, D., Leske, M.C., Manny, R., Marsh-Tootle, W., Scheiman, M., and the COMET Group. A randomized clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children. *Invest Ophthalmol Vis Sci* 44:1492-1500, 2003. PMCID: PMC12657584.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2014 – Present	Professor <i>emeritus</i> , Department of Optometry and Vision Science, UAB
2014 – 2016 & 1995 – 1996	Elected member, ARVO Annual Meeting Planning Committee, AP section
2005, 2007, 2008, 2009, 2018	<i>ad Hoc</i> Member, various NIH Special Emphasis panels
2000 – 2005	Editorial Board, <i>Optometry and Vision Science</i>
1998 – Present	emeritus Member, International Society for Eye Research (ISER)
1997 – Present	Fellow, American Academy of Optometry
1989 – 1991	Director, Vision Science Research Center (CORE grant PI), UAB
1986 – 2014	Professor of Vision Sciences (formerly, Physiological Optics), UAB
1979 – Present	Senior Scientist, Vision Science Research Center, UAB
1978 – Present	Member, Graduate Faculty, UAB
1978 – 1986	Assoc. Professor, Dept. of Physiol. Optics, Univ. of Alabama at Birmingham (UAB)
1975 – Present	Member, Association for Research in Vision and Ophthalmology (ARVO)
1972 – 1978	Assistant Professor, Department of Psychology and Department of Physiology, Duke University
1970 – 1972	NIH Postdoctoral Fellow, Dr. James M. Sprague (mentor), Department of Anatomy, University of Pennsylvania

Honors

2022	Doctor of Science (Hons) State University of New York, College of Optometry.
2018	Nathaniel E. Springer Memorial lecture, UAB School of Optometry, “Toward Myopia Control: From Animal Models to Children”
2015	Invited Speaker, ARVO Symposium, “mRNA expression in the retina-scleral pathway during myopia development.”
2014	Invited speaker, 2 nd Annual Borish Symposium, Indiana University, “Myopia Signaling Pathways”
2012	Invited Speaker, ARVO Glaucoma Section Mini symposium, “Lessons from Remodeling of the Sclera in Myopia”.
2011	Invited Speaker, Monroe Hirsch Memorial Symposium, Am. Acad. of Optometry, Boston, MA
2010	ARVO Sunday Symposium, “The Role of the Sclera in Emmetropization: Possible Mechanisms”
2010	Sek Jin Chew Memorial Lecture, 13 th International Myopia Conference, Tübingen, Germany
2009	ARVO Fellow (silver); Gold Fellow in 2021
2006	Keynote Speaker, Myopia and Visual Science Academy Conference, Wenzhou, China
2006	ARVO Sunday Symposium, “Selective Remodeling of Sclera”
1998	Recipient, UAB President’s Award for Excellence in Teaching
1982 - summer	Visiting Professor, University of Fribourg, Fribourg, Switzerland
1973 – 1975	Alfred P. Sloan Foundation Research Fellow
1970 – 1972	NIH Postdoctoral Fellow
1970	Ph.D. with Distinction, UCLA
1965	Honors in Psychology, Yale University

C. Contributions to Science

1. My primary contribution to science has been to develop the tree shrew model to foster significant discoveries on (1) slowing the development of myopia, (2) glaucoma and (3) the interaction of myopia and elevated intraocular pressure on the lamina cribrosa. My primary focus has been using this model to discover fundamental mechanisms that normally result in emmetropic eyes and how these interact with the environment to produce myopia. These studies showed that a feedback “emmetropization” mechanism exists within the eye that uses refractive error to generate GO and STOP signals that modulate the axial growth of the postnatal eye so that the retina comes to be located very near the focal plane, producing eyes that are in good focus (emmetropia). In 1976, along with Murray Sherman and Vivien Casagrande, I discovered that tree shrew eyes become elongated and myopic if visual images are prevented from reaching the retina by form deprivation.

Largely through the efforts of my laboratory, tree shrews (small mammals closely related to primates) have become one of the most successful animal models for the study of refractive development and myopia.

Prior to the development of animal models, there was a general belief that myopia (nearsightedness) was mostly genetic. When we found that preventing clear images from reaching the retina (form deprivation) in juvenile animals caused myopia, it became clear that there is a significant environmental component to refractive development. From 1986 through 2013, supported by an NEI R01 grant, we progressed from merely knowing that form deprivation causes eyes to elongate and become myopic (“experimental myopia”) to learn:

- that there is an emmetropization feedback mechanism that modulates the axial growth of postnatal eyes so that refractive error is minimized
 - The emmetropization mechanism continues to operate to maintain near emmetropia as the eye grows throughout the juvenile years
 - this mechanism exists within the eye; there is direct communication of retinal signals in a cascade through RPE and choroid to the sclera
 - the mechanism can function (but less well) without communication to central brain structures
 - Once signals pass from retina into the RPE, the signals become just GO (increase elongation) or STOP (slow the axial elongation rate) signals.
 - Changes in mRNA and proteins levels can be measured in each signaling compartment
 - Brief presentation of stimuli that produce STOP signals can prevent elongation and myopia even though myopiagenic conditions are present most of the time (non-linear temporal interaction)
- a. **Norton, T. T.** Animal models of myopia: learning how vision controls the size of the eye. *ILAR J* 40: 59-67, 1999. PMCID: PMC11304585
 - b. Shaikh, A. W., Siegwart, Jr., J. T., and **Norton, T. T.** The effect of interrupted lens wear on compensation for a minus lens in tree shrews. *Optom. Vis. Sci.* 76: 308-315, 1999. PMCID: PMC10375247
 - c. Guo, L., Frost, M.R., He, L., Siegwart, Jr., and **Norton, T.T.** Gene expression signatures in tree shrew sclera in response to three myopiagenic conditions. *Invest Ophthalmol Vis Sci*, 54: 6806- 6819, 2013. PMCID: PMC24045991
 - d. He, L., Frost, M.R., Siegwart, Jr., J. T., and **Norton, T. T.** Altered gene expression in tree shrew retina and retinal pigment epithelium produced by short periods of minus-lens wear. *Exp Eye Res* 168: 77-88, 2018. PMCID: PMC29329973

2. In 2014, as my R01 grant ended in year 25, I “retired” and began working as a consultant with faculty at UAB, including Dr. Tim Gawne studying the effects of wavelength on refractive development and Dr. Safal Khanal as he establishes his research program at UAB. We have discovered that:

- the wavelength of light plays a critically important role in emmetropization. To function properly, the emmetropization mechanism requires a broad band of wavelengths that provide longitudinal chromatic aberration (LCA) cues
- presented only with some short-wavelength (blue) lights, eyes generally drift into myopia
- in contrast, exposure to long wavelength (red or amber) light that does not activate the short-wavelength sensitive cones, causes the emmetropization mechanism to produce STOP signals that slow eye growth, producing hyperopia in eyes (in tree shrews and rhesus monkeys). It also slows the progression of induced myopia
- Presentation of narrow-band long-wavelength light for periods as short as 1 hour produces a hyperopic shift and may be sufficient to slow myopia progression in children
- A four-hour presentation period produces half as much hyperopia as does a 14-hour period

The powerful effects of wavelength suggest that wavelength-related stimuli can be used to slow myopia progression in children. In particular, a digital display that reduces the image contrast at short wavelengths while maintaining image contrast at long wavelengths counteracts a myopiagenic visual environment in tree shrews and needs to be examined in human subjects.

- a. Gawne, T.J., Siegwart, Jr. J.T., Ward, A. H., **Norton, T.T.** The wavelength composition and temporal modulation of ambient lighting strongly affect refractive development in young tree shrews. *Exp Eye Res*, 155: 75-84, 2017. PMCID: PMC27979713
- b. Gawne, T.J., Ward, A.H., and **Norton, T.T.** Long-wavelength (red) light produces hyperopia in juvenile and adolescent tree shrews. *Vision Res*, 140: 55-65, 2017. PMCID: PMC28801261

- c. Ward, A.H., **Norton, T.T.**, Huisinigh, C.E., and Gawne, T.J., The hyperopic effect of narrow-band long-wavelength light in tree shrews increases non-linearly with duration. *Vision Res*, 146-147: 9-17, 2018. PMID: PMC5949276
- d. Khanal, S., **Norton, T.T.** Gawne, T.J. Limited bandwidth short-wavelength light produces slowly-developing myopia in tree shrews similar to human juvenile-onset myopia. *Vision Res*, 204:108161, **2022**. PPMCID: PMC36529048
- e. Gawne, T.J., She, Z and **Norton, T.T.** Chromatically simulated myopic blur counteracts a myopiagenic environment. *Exp Eye Res*, 222: 109187, 2022. PMID: PMC35843288

3. A major contribution to science has come from my involvement in starting and guiding the 14-year Correction of Myopia Evaluation Trial (COMET). COMET began as a clinical trial that found a small (0.2 D) but statistically significant slowing of myopia progression in children who wore progressive addition lenses (PALs) compared with standard single vision lenses. The significant slowing of myopia progression demonstrated that alterations in the visual environment could affect myopia progression and suggested that reducing hyperopic blur could slow myopia progression. COMET continued (through year 14) as a longitudinal observational trial that provided a wealth of useful information by characterizing the time-course of myopia progression and cessation in children. In retrospect, I believe that the PALs had only a limited effect because they reduced peripheral hyperopia in only a portion of the lower visual field rather than the entire visual periphery. COMET's success in slowing myopia has led to additional clinical studies aimed at using bifocal contact lenses, orthokeratology, and other optical manipulations to refractively correct the fovea while avoiding hyperopia throughout the visual periphery. These, like low-dose atropine, are only partially effective in slowing myopia progression, suggesting that they do not cause the emmetropization mechanism to generate strong enough STOP signals. Long wavelength (amber or red) light seems to produce stronger STOP signals and has a greater potential to control myopia, even with relatively short treatment periods.

- a. Gwiazda, J., Hyman, L., Hussein, M., Everett, D, **Norton, T.T.**, Kurtz, D., Leske, M.C., Manny, R., Marsh-Tootle, W, Scheiman, M., and the COMET Group. A randomized clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children. *Invest Ophthalmol Vis Sci* 44:1492-1500, 2003. PMID: PMC12657584
- b. COMET Group. Myopia stabilization and associated factors in Correction of Myopia Evaluation Trial (COMET) participants. (Writing group: Li Ming Dong, Melissa Fazzari, Jane Gwiazda, Leslie Hyman, **Thomas Norton**, Frank Thorn, and Qinghua Zhang). *Invest Ophthalmol Vis Sci* 54 7871- 7884 2013. PMID: PMC24159085
- c. Gwiazda, J., Deng, L., Manny, R., **Norton, T.T.**, COMET Study Group. Seasonal variations in the progression of myopia in children enrolled in the Correction of Myopia Evaluation Trial. *Invest Ophthalmol Vis Sci* 55: 752-758 2014. PMID: PMC24408976
- d. Hou, W., **Norton, T.T.**, Hyman, L., Gwiazda, J., and the COMET Group. Axial elongation in myopic children and its association with myopia progression in the Correction of Myopia Evaluation Trial (COMET). *Eye & Contact Lens*, 44: 248-259, 2018. PMID: PMC29923883

4. Before discovering "tree shrew myopia" with Casagrande and Sherman, I conducted studies characterizing the receptive-field properties of neurons in the visual pathway of tree shrews, cats, and bush babies (a prosimian primate) and made psychophysical measures of vision in cats. These fundamental studies of information flow through the lateral geniculate nucleus (cat, tree shrew), examination of receptive fields in the magno-, parvo-, and koniocellular LGN neurons in bush baby, and receptive field properties in the superior colliculus (tree shrew, kitten) not only contributed to our understanding of information processing in central visual pathways, but also gave me insights into visual neural signaling that have been useful in thinking about how the retina generates signals that increase and slow the axial elongation rate during postnatal refractive development.

- a. **Norton, T. T.** Receptive-field properties of superior colliculus cells and development of visual behavior in kittens. *J. Neurophysiol.*, 37: 674-690, 1974. PMID: PMC4837772
- b. Humphrey, A.L., Skeen, L.C, and **Norton, T.T.** Topographic organization of the orientation column system in the striate cortex of tree shrew (*Tupaia glis*). II. Deoxyglucose mapping. *J. Comp. Neurol.*, 192: 549-566, 1980. PMID: PMC7419744
- c. **Norton, T.T.**, Casagrande, V.A., Irvin, G.E., Sesma, M.A., and Petry, H.M. Contrast sensitivity functions of W-, X-, and Y-like relay cells in the lateral geniculate nucleus of bush baby (*Galago crassicaudatus*). *J. Neurophysiol.*, 59: 1639-1656, 1988. PMID: PMC3404199

- d. **Norton, T.T.**, and Godwin, D.W. Inhibitory GABAergic control of visual signals at the lateral geniculate nucleus. In: GABA in the Retina and Central Visual System, R. R. Mize, R. E. Marc, and M. Sillito, (Eds.), (*Prog Brain Res*, 90), Elsevier, Amsterdam, pp. 193-217, 1992. PMCID: PMC1631300

Complete list of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/thomas.norton.2/bibliography/public/>