

## **Pete A Williams, PhD**

*Dept. of Clinical Neuroscience, Section of Ophthalmology and Vision  
S:t Eriks Ögonsjukhus, Karolinska Institutet, Polhemsgatan 50, 112 82 Stockholm, Sweden  
Email: pete [dot] williams [at] ki.se*

### **Career History**

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- 2018-Present *Dept. of Clinical Neuroscience, Section of Ophthalmology and Vision, Karolinska Institutet*  
**Assistant Professor in Medical Sciences**
- 2018-Present *S:t Eriks Ögonsjukhus*  
**Research Group Leader**
- 2012-2018 *The Jackson Laboratory, Bar Harbor, ME, U.S.A.*  
**Postdoctoral Fellow (Simon John Lab)**
- 2011 *The Jackson Laboratory, Bar Harbor, ME, U.S.A.*  
**Collaborative Researcher**
- 2009 *School of Optometry and Vision Sciences; Cardiff University, Cardiff, U.K.*  
**Summer Research Student**

### **Teaching Experience**

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- 2016 *The Jackson Laboratory, Bar Harbor, ME, U.S.A.*  
**Online Education Consultant**
- 2016 *The Jackson Laboratory, Bar Harbor, ME, U.S.A.*  
**Teaching Assistant**  
JAX SSP (The Jackson Laboratory Summer Student Program)
- 2015 *College of the Atlantic, Bar Harbor, ME, U.S.A.*  
**Invited Lecturer**  
Topics in Biomedical Research lecture series
- 2009-2012 *School of Optometry and Vision Sciences, Cardiff University, U.K.*  
**Postgraduate Demonstrator**  
Teaching of undergraduates in practical laboratory classes including blood physiology, tonometry, primate retina anatomy, and human neuroanatomy.

### **Education**

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- 2012 *School of Optometry and Vision Sciences, Cardiff University, Cardiff, U.K.*  
**PhD in Vision Science (Visual Neuroscience and Molecular Biology)**  
Title: Retinal neuronal remodelling in a model of optic atrophy  
Supervisors: Prof. M Votruba and Prof. JE Morgan
- 2009 *School of Biosciences; Cardiff University, Cardiff, U.K.*  
**BSc. (Hons) Biomedical Sciences – Neuroscience**

### **Professional Training**

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- 2015 Software Carpentry: R for Data Analysis, The Jackson Laboratory
- 2012 Applied Bioinformatics, Mount Desert Island Biological Laboratory

## Funding and Awards

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2019	Glaucoma Research Foundation Shaffer Grant (2019-2020; 50,000 USD)
2018	KI Foundation Grant for Eye Research (2019; 106,000 SEK)
2018	Stiftelsen Lars Hiertas Minne (2019-2020; 40,000 SEK)
2018	Stiftelsen Kronprinsessan Margaretas Arbetsnämnd för synskadade (KMA) (2019; 90,000 SEK)
2018	Vetenskapsrådet Medicine and Health Starting Grant (2019-2022; 6,000,000 SEK)
2018	KI Research Foundation Grants (2019-2020; 215,800 SEK)
2018	StratNeuro Start-up Programme (2018-2020; 1,000,000 SEK)
2017	Faculty Funded Career Position, Karolinska Institutet (2018-2021; 4,750,000 SEK)
2013	TJL Fellowship Grant (2 years full salary funding)
2013	The Barbara and Joseph Cohen Young Investigator Award
2011	European Association for Vision and Eye Research Travel Grant Winner for Best Paper in Category (Genetics)

## Professional and Academic Service

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Reviewer: *BMC Ophthalmology, The FASEB Journal, International Journal of Tryptophan Research, Investigative Ophthalmology & Visual Science, Journal of Glaucoma, Journal of Molecular Biology, Journal of Neurochemistry, Molecular Vision*

Grant reviewer: *The Ophthalmic Research Institute of Australia (ORIA)*

Session chair:

2018	Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria
2017	Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria
2016	Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria

Session scribe:

2015	Lasker/IRRF Initiative on Astrocytes and Glaucomatous Neurodegeneration
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Academic service:

2019-2021	FoUU-kommittén S:t Eriks Ögonsjukhus (Research, Development, and Education committee)
2016-2017	Co-chair - The Jackson Laboratory Postdoctoral Association (JPA)
2014-2016	JAX SSP mentor
2006-2009	STEMNET Ambassador for Cardiff University
2007-2008	Student Representative for Neuroscience and Pharmacology
2006-2008	Student Chairman of Biological Sciences
2006-2007	Student Representative for Neuroscience
2006-2007	Vice President – Cardiff University Neuroscience Society
2006-2007	Student and Residential Representative

## Peer Reviewed Publications

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### 2019

- **Williams PA**, Braine CE, Kizhatil K, Foxworth NE, Tolman NG, Harder JM, Scott RA, Sousa GL, Panitch A, Howell GR, John SWM. “Inhibition of monocyte-like cell extravasation protects from neurodegeneration in DBA/2J glaucoma”. *Molecular Neurodegeneration*. 2019 (doi: 10.1186/s13024-018-0303-3).

### 2018

- Tribble JR, **Williams PA**, Caterson B, Sengpiel F, Morgan JE. “Digestion of the glycosaminoglycan extracellular matrix by chondroitinase ABC supports retinal ganglion cell dendritic preservation in a rodent model of experimental glaucoma”. *Molecular Brain*. 2018 (doi: 10.1186/s13041-018-0412-5),
- Harder JM, **Williams PA**, Soto I, Foxworth NE, Fernandes KA, Freeburg NF, Howell GR, Libby R, John SWM. “*Jnk2* deficiency increases the rate of glaucomatous neurodegeneration in ocular hypertensive DBA/2J mice”. *Cell Death & Disease*. 2018 (doi: 10.1038/s41419-018-0705-8),
- Choquet H, Paylakhi S, Kneeland SC, Thai KK, Hoffmann TJ, Yin J, Kvale MN, Banda Y, Tolman NG, **Williams PA**, Schaefer C, Melles R, Risch N, John SWM, Nair KS, Jorgenson E. “A multiethnic genome-wide association study of primary open-angle glaucoma identifies novel risk loci”. *Nature Communications*. 2018 (doi: 10.1038/s41467-018-04555-4),
- **Williams PA**, Harder JM, Cardozo BH, Foxworth NE, John SWM. “Nicotinamide treatment robustly protects from inherited mouse glaucoma”. *Communicative & Integrative Biology*. 2018 (doi: 10.1080/19420889.2017.1356956).

### 2017

- **Williams PA**, Harder JM, John SWM. “Glaucoma as a metabolic optic neuropathy: making the case for nicotinamide treatment in glaucoma”. *Journal of Glaucoma*. 2017 (doi: 10.1097/IJG.0000000000000767),
- **Williams PA**, John SWM. “Glaucoma dialogue – 71509. Vitamin B<sub>3</sub> modulates mitochondrial vulnerability and prevents glaucoma in aged mice”. *International Glaucoma Review*. 2017 (<http://www.e-igr.com/GD/index.php?issue=183>),
- **Williams PA**, Braine CE, Foxworth NE, Cochran KE, John SWM. “GlyCAM1 negatively modulates monocyte entry into the optic nerve head and contributes to radiation-based protection in glaucoma”. *Journal of Neuroinflammation*. 2017 (doi: 10.1186/s12974-017-0868-8),
- Harder JM, Braine CE, **Williams PA**, Zhu X, MacNicoll KH, Sousa GL, Buchanan RA, Smith RS, Libby RT, Howell GR, John SWM. “Early immune responses are independent of RGC dysfunction in glaucoma with complement component C3 being protective”. *PNAS*. 2017 (doi: 10.1073/pnas.1608769114),
- **Williams PA**, Harder JM, Foxworth NE, Cardozo BH, John SWM. “Nicotinamide and WLD<sup>S</sup> act together to prevent neurodegeneration in glaucoma”. *Frontiers in Neuroscience*. 2017 (doi: 10.3389/fnins.2017.00232),
- **Williams PA**, Harder JM, Foxworth NE, Cochran KE, Philip VM, Porciatti V, Smithies O, John SWM. “Vitamin B<sub>3</sub> modulates mitochondrial vulnerability and prevents glaucoma in aged mice”. *Science*. 2017 (doi: 10.1126/science.aal0092),
- **Williams PA**, Marsh-Armstrong N, Howell GR. “Neuroinflammation in glaucoma: A new opportunity”. *Experimental Eye Research*. 2017 (doi: 10.1016/j.exer.2017.02.014).

### 2016

- **Williams PA** \*, Tribble JR \*, Pepper KW, Cross SD, Morgan BP, Morgan JE, John SWM, Howell GR. “Inhibition of the classical pathway of the complement cascade prevents early dendritic and synaptic degeneration in glaucoma”. *Molecular Neurodegeneration*. 2016 (doi: 10.1186/s13024-016-0091-6), \* co-first author.

### 2015

- Fernandes KA, Harder JM, **Williams PA**, Rausch RL, Kiernan AE, Nair KS, Anderson MG, John SWM, Howell GR, Libby RT. “Using genetic mouse models to gain insight into glaucoma: Past results and future possibilities”. *Experimental Eye Research*. 2015 (doi: 10.1016/j.exer.2015.06.019),

- Lee ST, **Williams PA**, Braine CE, Lin DT, John SWM, Irazoqui PP. “A miniature, fiber-coupled, wireless, deep-brain optogenetic stimulator”. *Transactions on Neural Systems and Rehabilitation Engineering*. 2015 (doi: 10.1109/TNSRE.2015.2391282).

## 2013

- **Williams PA**, Howell GR, Barbay JM, Braine CE, Sousa GL, John SWM, Morgan JE. “Retinal ganglion cell dendritic atrophy in DBA/2J glaucoma”. *PLoS One*. 2013 (doi: 10.1371/journal.pone.0072282),
- **Williams PA**, Thirgood RA, Littlewood E, Votruba M, Oliphant H, Good MA, Williams J, Morgan JE. “Retinal ganglion cell dendritic degeneration in a mouse model of Alzheimer’s disease”. *Neurobiology of Aging*. 2013 (doi: 10.1016/j.neurobiolaging.2013.01.006).

## 2012

- **Williams PA**, Piechota M, Von Ruhland C, Taylor E, Morgan JE, Votruba M. “Opa1 is essential for retinal ganglion cell synaptic architecture and connectivity”. *Brain*. 2012 (doi: 10.1093/brain/awr330).

## 2011

- Barnard AR, Issa PC, Perganta G, **Williams PA**, Davies V, Sekaran S, Votruba M, MacLaren RE. “Specific deficits in visual electrophysiology in a mouse model of dominant optic atrophy”. *Experimental Eye Research*. 2011 (doi: 10.1016/j.exer.2011.07.004),
- **Williams PA**, Morgan JE, Votruba M. “Mouse models of dominant optic atrophy: What do they tell us about the pathophysiology of visual loss?”. *Vision Research*. 2011 (doi: 10.1016/j.visres.2010.08.031).

## 2010

- **Williams PA**, Morgan JE, Votruba, M. “Opa1 deficiency in a mouse model of dominant optic atrophy leads to retinal ganglion cell dendropathy”. *Brain*. 2010 (doi: 10.1093/brain/awq218).

## Publications Submitted and in Preparation

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- Tribble JR, Vasalaukaite A, Redmond T, Young RD, Hassan S, Fautsch MP, Sengpiel F, **Williams PA**, Morgan JE. “Retinal ganglion cell dendritic, synaptic, and mitochondrial degeneration is an early feature of human glaucoma”. In preparation,

## Patents Submitted

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- John SWM, **Williams PA**. “Treatment and prevention of ocular neurodegenerative disorder”. United States Provisional Patent Application No. 62/245,467,
- John SWM, **Williams PA**. “Fat droplets in retina as a diagnostic marker for neurodegeneration and glaucoma in humans”. United States Provisional Patent Application No. 62/429,950.

## Recent Invited Talks

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- **Williams PA**. “Targeting neuronal mitochondria for neuroprotection in glaucoma”. 2018 Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria,
- **Williams PA**. “Ageing, neuronal metabolism, and mitochondria in glaucoma”. 2018 EVER Meeting, Nice, France,
- **Williams PA**. “Targeting neuronal mitochondria for neuroprotection in glaucoma”. 2018 ISER Meeting, Belfast, U.K.,
- **Williams PA**. “NAD supply critically modulates mitochondrial vulnerability in glaucoma”. 2017 St Erik Eye Hospital / Karolinska Institutet, Stockholm, Sweden,
- **Williams PA**. “Ageing, neuronal metabolism, and mitochondria in glaucoma”. 2017 Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria,
- **Williams PA**. “NAD supply critically modulates mitochondrial vulnerability and neurodegeneration in aged mice”. 2017 UK Dementia Research Institute, Cardiff University, Cardiff, U.K.,
- **Williams PA**. “Mitochondrial dysfunction in glaucoma”. 2017 World Glaucoma Congress – Neuroprotection – The Future of Glaucoma, Helsinki, Finland,
- **Williams PA**. “NAD supply critically modulates mitochondrial vulnerability and neurodegeneration in aged mice”. 2017 UTHSC, Memphis, U.S.A.,

- **Williams PA.** “NAD supply critically modulates mitochondrial vulnerability and neurodegeneration in aged mice”. 2016 Optic Nerve Meeting – Boosting Optic Nerve Function, Obergurgl, Austria.