

Shigeo Tamiya

Wiseman Hall, Ohio State University, 400 W 12th Ave, Columbus, OH 43210
tamiya.1@osu.edu

Education

University of East Anglia, School of Biological Sciences, Norwich UK
Ph.D. in Cell Biology 1998-2001
Thesis: “Autocrine and paracrine signaling mechanisms in lens cells”
Supervisor: Prof. George Duncan

University of East Anglia, School of Biological Sciences, Norwich UK
Postgraduate Diploma in Cell Biology 1997-1998

Seikei University, Faculty of Engineering, Tokyo, Japan
M.E. in Industrial Chemistry 1995-1997
Thesis “Cell morphology on various polymeric membranes”

Seikei University, Faculty of Engineering, Tokyo, Japan
B.E. in Industrial Chemistry 1991-1995

Post-doctoral training

Dept. of Ophthalmology and Visual Sciences, University of Louisville, Louisville, KY 2002-2005
Project: Regulation of lens ion transport by tyrosine kinases
Mentor: Prof. Nicholas Delamere

School of Biological Sciences, University of East Anglia, UK 2001-2002
Project: TGF- β activated gene expression in lens cells
Mentor: Prof. George Duncan

Academic Appointments

Associate Professor 2021 - present
Dept. of Ophthalmology and Visual Sciences, Ohio State University, Columbus, OH

Assistant Professor 2007 - 2021
Dept. of Ophthalmology and Visual Sciences, University of Louisville, Louisville, KY

Assistant Professor (associate appointment) 2013 - 2021
Dept. of Biochemistry and Molecular Genetics, University of Louisville, Louisville, KY

Assistant Professor (joint appointment) 2007 - 2013
Dept. of Biochemistry and Molecular Biology, University of Louisville, Louisville, KY

Instructor 2005 - 2007
Dept. of Ophthalmology and Visual Sciences, University of Louisville, Louisville, KY

Research Experience

Associate Professor - Department of Ophthalmology and Visual Sciences (DOVS), Ohio State University

Assistant Professor - DOVS, University of Louisville

- PI of a lab investigating cellular/molecular mechanisms involved in development of proliferative vitreoretinopathy (PVR), a potentially blinding ocular fibrotic complication affecting the retina.
- Utilized several *in vitro* models to examine fibrotic changes of retinal pigment epithelial (RPE) cells and Müller glia, two retinal cell types implicated to undergo myofibroblast transdifferentiation and play key role in the fibrotic process. Key findings include prevention of PVR associated cellular phenotypic/functional change by tyrosine kinase inhibitors as well as canonical Wnt signaling inhibitors.
- Established and utilized swine *in vivo* models of PVR, and secured two federal grants from the Department of Defense to study the effect of dasatinib, a tyrosine kinase inhibitor approved for the treatment of chronic myeloid leukemia, on the development of PVR.
- Recently obtained NIH/NEI R01 grant to study the role of mechanosignaling in myofibroblast transdifferentiation and PVR development.

The project has resulted in seven research articles and a review article thus far [17-21, 24,25], with two more currently in preparation.

Instructor - DOVS, University of Louisville

Post-doctoral fellow - DOVS, University of Louisville

- Examined the expression and function of sodium/potassium-ATPase (NKA) as well as Src family kinases (SFKs) within the lens epithelium using activity assays and western blot analyses.
- Studied the role of sodium calcium exchanger (NCX) in lens calcium regulation using pharmacological inhibitors and measuring ion content by atomic absorption or calcium imaging as a side project.

Findings from the projects for NKA, SFKs, and NCX led to publication of multiple articles [6,7,11-14].

Post-doctoral fellow - School of Biological Sciences, University of East Anglia

- Determined the expression profile of fibrotic genes in lens cells activated by TGF- β using PCR as part of a project to determine their role in posterior capsule opacification (PCO), a fibrotic complication following cataract surgery.

Data from this work was included in a publication [10].

Ph.D. student researcher - School of Biological Sciences, University of East Anglia

- Worked as part of a team that examined the effects of growth factors and matrix metalloproteinases (MMPs) on cellular changes associated with PCO.
- Performed cell biological assays for proliferation and migration, and examined expression of MMP-2 and -9 by gelatin zymography.

Results have been published as five articles in IOVS and EER [2-5,9].

Master course student - Faculty of Engineering, Seikei University

- Examined morphology and growth of murine cell line L929 on various polymeric membranes.

Obtained findings formed part of a published article [1].

Publication

Invited peer reviewed articles and book chapter

- [i] N.A. Delamere, **S. Tamiya**, Lens Na,K-ATPase. In Tombran-Tink J and Barnstable CJ (Eds.); Ophthalmology Research Series – Ocular Transporters in Ophthalmic Diseases and Drug Delivery. Humana Press Inc. (2008) pp.111-123.
- [ii] N.A. Delamere, **S. Tamiya**, Lens ion transport: from basic concepts to regulation of Na,K-ATPase activity, *Exp Eye Res*, 88 (2009) 140-143.
- [iii] **S. Tamiya**, H.J. Kaplan, Role of epithelial-mesenchymal transition in proliferative vitreoretinopathy, *Exp Eye Res*, 142 (2016) 26-31.

Peer reviewed articles

- [1] A. Higuchi, **S. Tamiya**, T. Tsubomura, A. Katoh, C.S. Cho, T. Akaike, M. Hara, Growth of L929 cells on polymeric films prepared by Langmuir-Blodgett and casting methods, *J Biomater Sci Polym Ed*, 11 (2000) 149-168.
- [2] **S. Tamiya**, I.M. Wormstone, J.M. Marcantonio, J. Gavrilovic, G. Duncan, Induction of matrix metalloproteinases 2 and 9 following stress to the lens, *Exp Eye Res*, 71 (2000) 591-597.
- [3] I.M. Wormstone, **S. Tamiya**, J.M. Marcantonio, J.R. Reddan, Hepatocyte growth factor function and c-Met expression in human lens epithelial cells, *Invest Ophthalmol Vis Sci*, 41 (2000) 4216-4222.
- [4] I.M. Wormstone, K. Del Rio-Tsonis, G. McMahan, **S. Tamiya**, P.D. Davies, J.M. Marcantonio, G. Duncan, FGF: an autocrine regulator of human lens cell growth independent of added stimuli, *Invest Ophthalmol Vis Sci*, 42 (2001) 1305-1311.
- [5] I.M. Wormstone, **S. Tamiya**, I. Anderson, G. Duncan, TGF-beta2-induced matrix modification and cell transdifferentiation in the human lens capsular bag, *Invest Ophthalmol Vis Sci*, 43 (2002) 2301-2308.
- [6] M. Okafor, **S. Tamiya**, N.A. Delamere, Sodium-calcium exchange influences the response to endothelin-1 in lens epithelium, *Cell Calcium*, 34 (2003) 231-240.
- [7] **S. Tamiya**, W.L. Dean, C.A. Paterson, N.A. Delamere, Regional distribution of Na,K-ATPase activity in porcine lens epithelium, *Invest Ophthalmol Vis Sci*, 44 (2003) 4395-4399.
- [8] N.A. Delamere, **S. Tamiya**, Expression, regulation and function of Na,K-ATPase in the lens, *Prog Retin Eye Res*, 23 (2004) 593-615.
- [9] J.M. Maidment, G. Duncan, **S. Tamiya**, D.J. Collison, L. Wang, I.M. Wormstone, Regional differences in tyrosine kinase receptor signaling components determine differential growth patterns in the human lens, *Invest Ophthalmol Vis Sci*, 45 (2004) 1427-1435.
- [10] I.M. Wormstone, **S. Tamiya**, J.A. Eldred, K. Lazaridis, A. Chantry, J.R. Reddan, I. Anderson, G. Duncan, Characterisation of TGF-beta2 signalling and function in a human lens cell line, *Exp Eye Res*, 78 (2004) 705-714.
- [11] **S. Tamiya**, N.A. Delamere, Studies of tyrosine phosphorylation and Src family tyrosine kinases in the lens epithelium, *Invest Ophthalmol Vis Sci*, 46 (2005) 2076-2081.
- [12] **S. Tamiya**, N.A. Delamere, The influence of sodium-calcium exchange inhibitors on rabbit lens ion balance and transparency, *Exp Eye Res*, 83 (2006) 1089-1095.
- [13] M. Shahidullah, **S. Tamiya**, N.A. Delamere, Primary culture of porcine nonpigmented ciliary epithelium, *Curr Eye Res*, 32 (2007) 511-522.
- [14] **S. Tamiya***, M.C. Okafor*, N.A. Delamere, Purinergic agonists stimulate lens Na-K-ATPase-mediated transport via a Src tyrosine kinase-dependent pathway, *Am J Physiol Cell Physiol*, 293 (2007) C790-796.
- [15] A. Gozdz, A. Vashishta, K. Kalita, E. Szatmari, J.J. Zheng, **S. Tamiya**, N.A. Delamere, M. Hetman, Cisplatin-mediated activation of extracellular signal-regulated kinases 1/2 (ERK1/2) by inhibition of ERK1/2 phosphatases, *Journal of neurochemistry*, 106 (2008) 2056-2067.

- [16] Y. Liu, F. Ye, Q. Li, **S. Tamiya**, D.S. Darling, H.J. Kaplan, D.C. Dean, Zeb1 represses Mitf and regulates pigment synthesis, cell proliferation, and epithelial morphology, *Invest Ophthalmol Vis Sci*, 50 (2009) 5080-5088.
- [17] **S. Tamiya**, L. Liu, H.J. Kaplan, Epithelial-mesenchymal transition and proliferation of retinal pigment epithelial cells initiated upon loss of cell-cell contact, *Invest Ophthalmol Vis Sci*, 51 (2010) 2755-2763.
- [18] K. Umazume, Y. Barak, K. McDonald, L. Liu, H.J. Kaplan, **S. Tamiya**, Proliferative vitreoretinopathy in the Swine-a new model, *Invest Ophthalmol Vis Sci*, 53 (2012) 4910-4916.
- [19] K. Umazume, L. Liu, P.A. Scott, J.P. Fernandez de Castro, K. McDonald, H.J. Kaplan, **S. Tamiya**, Inhibition of PVR with a tyrosine kinase inhibitor, Dasatinib, in the swine, *Invest Ophthalmol Vis Sci*, 54 (2013) 1150-1159.
- [20] K. Umazume, R. Tsukahara, L. Liu, J.P. Fernandez de Castro, K. McDonald, H.J. Kaplan, **S. Tamiya**, Role of retinal pigment epithelial cell beta-catenin signaling in experimental proliferative vitreoretinopathy, *Am J Pathol*, 184 (2014) 1419-1428.
- [21] R. Tsukahara, K. Umazume, N. Yamakawa, K. McDonald, H.J. Kaplan, **S. Tamiya**, Dasatinib affects focal adhesion and myosin regulation to inhibit matrix contraction by Muller cells, *Exp Eye Res*, 139 (2015) 90-96.
- [22] D. Jusufbegovic, **S. Tamiya**, H.J. Kaplan, Risk factors and prevention of proliferative vitreoretinopathy, *Expert Review of Ophthalmology* 10 (2015) 431-440.
- [23] M. Miura, S. Makita, S. Sugiyama, Y.J. Hong, Y. Yasuno, A.E. Elsner, **S. Tamiya**, R. Tsukahara, T. Iwasaki, H. Goto, Evaluation of intraretinal migration of retinal pigment epithelial cells in age-related macular degeneration using polarimetric imaging, *Sci Rep*, 7 (2017) 3150.
- [24] R. Tsukahara, K. Umazume, K. McDonald, H.J. Kaplan, **S. Tamiya**, Focal adhesion kinase family is involved in matrix contraction by transdifferentiated Muller cells, *Exp Eye Res*, 164 (2017) 90-94.
- [25] R. Chauhan, R. Balgemann, C. Greb, B. Nunn, S. Ueda, H. Noma, K. McDonald, H. J. Kaplan, **S. Tamiya***, M. G. O'Toole*, Production of dasatinib encapsulated spray dried Poly (lactic-co-glycolic acid) particles, *J Drug Deliv Sci Tech*, 53 (2019), Article 101204
- [26] S. Ueda, B.M. Nunn, R. Chauhan, K. McDonald, H.J. Kaplan, M.G. O'Toole*, **S. Tamiya***, Sustained dasatinib treatment prevents early fibrotic changes following ocular trauma, *Graefes Arch Clin Exp Ophthalmol*. 259(5) (2021) 1103-1111. doi: 10.1007/s00417-020-05037-4.

* indicates equal contribution by the individuals

Presentations

A. Invited presentations

1. Regulation of lens Na,K-ATPase by Src family kinases. (2006) University of Arizona, Dept. of Physiology
2. Pharmacological prevention of ocular fibrosis. (2016) Wakayama Medical University, Dept. of Ophthalmology
3. Role of epithelial-mesenchymal transition in proliferative vitreoretinopathy. (2017) Special Interest Group session on TGFbeta signal transduction in ocular health and disease, at the Association for Research in Vision and Ophthalmology (ARVO) annual meeting, Baltimore, MD.

B. Abstract and presentation – oral presentations

1. **S. Tamiya**, J.M. Maidment, I.M. Wormstone, G. Duncan. (2001) EGF signaling in human lens epithelial cells. US-Japan Cooperative Cataract Research Group (CCRG) meeting, Kona, HI

2. **S. Tamiya**, L.D. Bozulich, N.A. Delamere. (2003) Distribution of Na,K-ATPase activity within the lens. Biological transport meeting at Lake Cumberland, Lake Cumberland, KY.
3. **S. Tamiya**, L. Liu, D.C. Dean, H.J. Kaplan. (2010) Loss of Cell-Cell Contact Initiates Epithelial-Mesenchymal Transition and Proliferation of Retinal Pigment Epithelial (RPE) Cells. The Association for Research in Vision and Ophthalmology (ARVO) annual meeting, Fort Lauderdale, FL.
4. **S. Tamiya**, L. Liu, H.J. Kaplan. (2011) Tyrosine Kinase Inhibitors Prevent Retinal Pigment Epithelial Cell EMT and Growth. The ARVO annual meeting, Fort Lauderdale, FL.
5. **S. Tamiya**, R. Chauhan, R. Balgemann, H. Noma, K. McDonald, H.J. Kaplan, M. O'Toole. (2017) Production and characterization of a sustained release system of dasatinib to prevent proliferative vitreoretinopathy. The ARVO annual meeting, Baltimore, MD.
6. **S. Tamiya**, K. McDonald, S. Ueda. (2018) Mechanosensitive TRPV4 channels is involved in fibrotic transdifferentiation of retinal pigment epithelial cells. Experimental Biology meeting, San Diego, CA.

C. Abstract and presentation – poster presentations

1. **S. Tamiya**, M. Hara, A. Higuchi. (1996) Membrane Potential of Animal Cultured Cells by a Fluorescence Method. International Congress on Membranes and Membrane Processes (ICOM'96), Yokohama, Japan.
2. **S. Tamiya**, H. Tadika, K. Ishida, M. Hara, C.S. Cho, T. Akaike, A. Higuchi. (1996) Morphologies and Membrane Potential of Animal Cultured Cells on Various Polymeric Membranes. International Membrane Science and Technology Conference (IMSTEC'96), Sydney, Australia.
3. I.M. Wormstone, **S. Tamiya**, J.M. Marcantonio, R.M. Warn, G. Duncan. (1999) C-met expression and hepatocyte growth factor function in human lens epithelial cells. The Association for Research in Vision and Ophthalmology (ARVO) annual meeting, Fort Lauderdale, FL.
4. J.R. Reddan, D.C. Dziedzic, K.R. Hightower, I.M. Wormstone, **S. Tamiya**, G. Duncan. (2000) Hepatocyte growth factor function and c-met expression in the human lens cell line FHL124. *Exp Eye Res*, 71, S.41.
5. **S. Tamiya**, I.M. Wormstone, J.M. Marcantonio, J. Gavrilovic, G. Duncan. (2000) Stress-induced expression of gelatinases in lens cells. ARVO annual meeting, Fort Lauderdale, FL.
6. I.M. Wormstone, K. Del Rio-Tsonis, G. McMahon, P.D. Davies, **S. Tamiya**, J.M. Marcantonio, G. Duncan. (2000) Autocrine regulation and age-related expression of FGF in human lens cells. ARVO annual meeting, Fort Lauderdale, FL.
7. G. Duncan, I.M. Wormstone, **S. Tamiya**, I. Anderson. (2001) TGF beta 2 and EGF regulation of MMP 2 and 9 expression in the human lens capsular bag. ARVO annual meeting, Fort Lauderdale, FL.
8. I.M. Wormstone, **S. Tamiya**, J.A. Eldred, J.R. Reddan, J. Anderson, G. Duncan. (2001) Inhibition of TGF beta 2 mediated effects on human lens epithelial cells by the human monoclonal antibody CAT-152. ARVO annual meeting, Fort Lauderdale, FL.
9. G. Duncan, **S. Tamiya**, I.M. Wormstone. (2003) Dynamics of gene expression in the human lens capsular bag in response to transforming growth factor beta 2. ARVO annual meeting, Fort Lauderdale, FL..
10. I.M. Wormstone, J.A. Maidment, **S. Tamiya**, D.J. Collison, L. Wang, G. Duncan. (2003) Regional differences in Epidermal Growth Factor receptor signaling components in the human lens. *Ophthalmic Research*, 35, 132.
11. **S. Tamiya**, W.L. Dean, C.A. Paterson, N.A. Delamere. (2003) Regional distribution of Na,K-ATPase activity in porcine lens epithelium. In: Seventh Annual Great Lakes Vision Research Conference, Miami, OH.
12. N.A. Delamere, W.L. Dean, **S. Tamiya**, L.D. Bozulich. (2004) The influence of Src-family tyrosine kinases on lens Na,K-ATPase. *Ophthalmic Research*, 36, 113.

13. G. Duncan, **S. Tamiya**, I.M. Wormstone (2004) Antagonistic effects of TGFbeta and EGF on gene expression in the human lens capsular bag. ARVO annual meeting, Fort Lauderdale, FL.
14. **S. Tamiya**, N.A. Delamere. (2004) Non-uniform expression and function of Src family tyrosine kinases in the porcine lens epithelium. ARVO annual meeting, Fort Lauderdale, FL.
15. I.M. Wormstone, J.M. Maidment, **S. Tamiya**, D.J. Collison, L. Wang, G. Duncan. (2004) Relationship Between Growth Activity And Expression Of Egf Receptor And Downstream Signalling Proteins In The Human Lens. ARVO annual meeting, Fort Lauderdale, FL.
16. N.A. Delamere, **S. Tamiya**, S.A. Mathews, Y. Hou. (2005) The influence of carbonic anhydrase inhibitors on cytoplasmic pH in nonpigmented ciliary epithelium. *Ophthalmic Research*, 37, 93.
17. N.A. Delamere, **S. Tamiya**, M.L. Messer, B.M. Nunn, A.K. Hartford. (2005) Inhibition of the Na,K-ATpase alpha 2 isoform alters calcium store size and Bcl-2 expression in optic nerve astrocytes. ARVO annual meeting, Fort Lauderdale, FL.
18. **S. Tamiya**, N.A. Delamere. (2005) Tyrosine phosphorylation and Src-family tyrosine kinases in the lens epithelium. Experimental Biology (EB) annual meeting 2005, San Diego, CA.
19. **S. Tamiya**, N.A. Delamere. (2005) Studies on the role of Src-family tyrosine kinases in the lens equatorial epithelium. ARVO annual meeting, Fort Lauderdale, FL.
20. N.A. Delamere, **S. Tamiya**, Y. Hou, S.A. Mathews. (2006) Studies on cytoplasmic pH and Src-family tyrosine kinases in cultured rabbit nonpigmented ciliary epithelium. ARVO annual meeting, Fort Lauderdale.
21. **S. Tamiya**, N.A. Delamere. (2006) The role of sodium calcium exchanger in maintaining lens ion balance. ARVO annual meeting, Fort Lauderdale, FL.
22. **S. Tamiya**, M.C. Okafor, N.A. Delamere. (2007) Stimulation of lens Na,K-ATPase-mediated transport by purinergic receptor agonists via a Src tyrosine kinase-dependent pathway. ARVO annual meeting, Fort Lauderdale, FL.
23. **S. Tamiya**, Q.Z. Ruley, H.J. Kaplan, D.C. Dean. (2008) Lithium Chloride Prevents Ectopic Proliferation and Dedifferentiation of RPE Cells. ARVO annual meeting, Fort Lauderdale, FL.
24. **S. Tamiya**, L.Liu, H.J. Kaplan, D.C. Dean. (2009) Epithelial-to-Mesenchymal Transition in RPE Cells - A Switch in Cadherin Expression From P-Cadherin to N-Cadherin. ARVO annual meeting, Fort Lauderdale, FL.
25. **S. Tamiya**, L. Liu. (2011) Mechanisms involved in retinal surface scar formation. Kentucky Innovation and Entrepreneurship Conference (KIEC) 2011, Louisville, KY.
26. K. Umazume, Y. Barak, K. McDonald, L. Liu, H.J. Kaplan, **S. Tamiya**. (2012) Development of a Swine Model of Proliferative Vitreoretinopathy Using RPE Cells. ARVO annual meeting, Fort Lauderdale, FL.
27. **S. Tamiya**, Y. Barak, K. Umazume, L. Liu, K. McDonald, H.J. Kaplan. (2012) Curcumin as Adjunctive Therapy for Proliferative Vitreoretinopathy. ARVO annual meeting, Fort Lauderdale, FL.
28. L. Liu, K. Umazume, **S. Tamiya**. (2012) Molecules involved in fibrotic scarring of the retina. KIEC 2012, Louisville, KY.
29. K. Umazume, L. Liu, K. McDonald, H. Goto, H.J. Kaplan, **S. Tamiya**. (2013) β -catenin signaling in RPE in experimental PVR. ARVO annual meeting, Seattle, WA.
30. L. Liu, R. Tsukahara, K. Umazume, **S. Tamiya**. (2013) Mechanisms involved in scar tissue contraction on the retinal surface. KIEC 2013, Lexington, KY.
31. R. Tsukahara, K. Umazume, K. McDonald, H. Goto, H.J. Kaplan, **S. Tamiya**. (2014) Dasatinib inhibits contraction of Müller and RPE cells on type I collagen gel assay. ARVO annual meeting, Orlando, FL.
32. R. Tsukahara, K. McDonald, H. Goto, H.J. Kaplan, **S. Tamiya**. (2015) Molecular mechanism of dasatinib inhibition of matrix contraction. ARVO annual meeting, Denver, CO.

33. **S. Tamiya**, K. McDonald, H.J. Kaplan. (2016) PYK2 plays a role in matrix contraction by RPE-derived cells. ARVO annual meeting, Seattle, WA.
34. R. Tsukahara, K. Umazume, N. Yamakawa, T. Iwasaki, H.J. Kaplan, H. Goto, **S. Tamiya**. (2016) The role of FAK in fibrotic matrix contraction by dedifferentiated Müller cells. ARVO annual meeting, Seattle, WA.
35. H. Noma, K. McDonald, M. Shimura, **S. Tamiya**. (2017) MCP-1 disrupts morphologic and functional barrier properties of polarized retinal pigment epithelium. ARVO annual meeting, Baltimore, MD.
36. K. Umazume, R. Matsushima, R. Tsukahara, N. Yamakawa, **S. Tamiya**, H. Goto. (2017) The effect of dasatinib in PVR model. ARVO annual meeting, Baltimore, MD.
37. R. Balgemann, R. Chauhan, K. McDonald, H. Kaplan, **S. Tamiya**, M. O'Toole. (2017) Dasatinib Encapsulated Sub-micrometer Spray Dried PLGA Particles As Drug Delivery Platform For Proliferative Vitreoretinopathy. Biomedical Engineering Society (BMES) annual meeting, Phoenix, AZ
38. S. Ueda, K. McDonald, **S. Tamiya**. (2018) Myocardin-related transcription factor plays a role in myofibroblast transdifferentiation of retinal pigment epithelial cells. EB meeting, San Diego, CA.
39. T. Roland, B. Nunn, R. Chauhan, M. O'Toole, **S. Tamiya**. (2018) Feasibility and Optimization of Composite Hydrogel/PLGA Particles as Dasatinib Drug Delivery Vehicle to Treat Proliferative Vitreoretinopathy. BMES annual meeting, Atlanta, GA.
40. **S. Tamiya**, S. Ueda, K. McDonald, B. Nunn, H.J. Kaplan, M. O'Toole. (2019) Prevention of post-traumatic proliferative vitreoretinopathy using sustained release system of dasatinib. ARVO annual meeting, Vancouver, Canada.
41. S. Ueda, K. McDonald, H. Goto, **S. Tamiya**. (2019) Myocardin-related transcription factor signaling is required for myofibroblast transdifferentiation of retina pigment epithelial cells. ARVO annual meeting, Vancouver, Canada.
42. **S. Tamiya**, G. Jagatheesan, S. Ueda. (2021) Rho is involved in regulation of myocardin related transcription factor and myofibroblast transdifferentiation of RPE cells. ARVO annual meeting. Virtual online meeting.

Research funding

Active funding as PI

Role of MRTF signaling in proliferative vitreoretinopathy

NIH 1 R01 EY030060-01A1

Project Dates: 01/01/2020 - 12/31/2024

Direct Costs: \$1,250,000

The objective of the grant project is to examine the effect of substrate stiffness on cellular function and myofibroblast transdifferentiation of retinal pigment epithelial cells and Müller glia cells, and to examine the role and regulation of myocardin related transcription factor (MRTF) in this process.

Past funding as PI

Pre-clinical testing of sustained release of dasatinib to prevent the major blinding complications following eye injury

DoD/USAMRAA, Broad Agency Announcement for Extramural Medical Research W81XWH-15-1-2098

Project Dates: 08/03/2015 - 08/02/2019 (includes 1 year Extension Without Funds)

Total Direct Costs: \$1,049,002

The objective of the project was to develop a sustained release system of dasatinib for the prevention of proliferative vitreoretinopathy, and test its efficacy and side-effects on swine models of PVR.

Novel Use of Clinical Drugs To Prevent the Major Eye Injury-Associated Complication
DoD/USAMRAA, DRMRP Applied Research and Advanced Technology Development Award
DM090475

Project Dates: 12/01/2010 - 5/31/2014 (includes 6 months Extension Without Funds)

Total Direct Costs: \$890,320

The objective of the project was to test the efficacy and side-effects of FDA approved tyrosine kinase inhibitors on PVR formation, and to possibly identify tyrosine kinases affected by the drug treatment.

Role of epithelial-mesenchymal transition and transforming growth factor-beta in fibrotic diseases
Kentucky Science and Engineering Foundation, Research & Development Excellence Program KSEF-
2203-RDE-013

Project Dates: 07/01/2010 - 06/30/2013 Total Direct Costs: \$72,754

The objective of the project was to understand molecular mechanisms involved in myofibroblast transformation that lead to fibrotic diseases.

Inhibition of proliferative vitreoretinopathy, the major cause of retinal reattachment surgery failure, by curcumin and FH535

Clinical & Translational Science Pilot Grant Program Basic Award

University of Louisville, Office of Executive Vice President for Research

Project Dates: 07/01/2010 – 12/31/2011 Total Direct Costs: \$49,000

In this project, curcumin and FH535, two chemicals that inhibits proliferation and EMT of RPE cells in vitro, was tested for their effects in vivo using a swine model of PVR.

Prevention of Epithelial-mesenchymal Transition of Retinal Pigment Epithelium by Modulating Ion Transport

University of Louisville School of Medicine, Basic grant

Project dates: 05/15/2009 – 08/14/2010 Total Costs: \$15,000

The goal of this project was to examine changes in ion homeostasis and handling by RPE cells upon epithelial-mesenchymal transition (EMT) and to prevent EMT by interfering with such changes in ion transport.

Treatment of Proliferative Vitreoretinopathy with lithium salts

University of Louisville Office of Technology Transfer - Proof of Concept Grant

Project Dates: 06/30/08-06/30/09 Total Costs: \$25,000

The role of Src family tyrosine kinases in retinal pigment epithelial cell proliferation and epithelial-to-mesenchymal transition

University of Louisville Intramural Research Incentive Grants – Research Initiation Grant

Project Dates: 06/01/08-05/31/09 Total Costs: \$5,000

Past funding as Co-I

Yap 1 is essential to maintain adult RPE differentiation

R21 EY027033

Project Dates: 09/01/2016 - 08/30/2018

The objective of the project is to understand the role of Yap1 in the maintenance of RPE phenotype.

Role: Co-investigator (Q. Li, PI)

Teaching Experience

University of Louisville, Louisville, KY

Research seminar presentation for Summer Research Program (6 medical students)	2018
Research seminar presentation at the Dept. of BioEngineering (~ 40 students)	2017
Teaching seminar presentation at DOVS (~ 20 residents and staff)	2017
Presentation at DOVS Research Seminar Series (20-30 residents, staff, faculty)	2008-2015

Seikei University, Tokyo, Japan

Teaching assistant, Biochemistry lab practical (80-90 undergraduate students)	1995,1996
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Mentored students, post-docs (all at DOVS, University of Louisville)

Kyle Polley (Medical Student)	T35 NEI summer training program	2018
Shunichiro Ueda, M.D., Ph.D. (Post-doc)	DoD grant research project	2017-2018
Hidetaka Noma, M.D., Ph.D. (Post-doc)	DoD grant research project	2016
Rintaro Tsukahara, M.D., Ph.D. (Post-doc)	DoD grant research project	2013-2014
Obianuju Okeke (Undergraduate student)	Summer research project	2013
Lekara Green (Medical student)	Summer research scholar program	2012
Kazuhiko Umazume, M.D., Ph.D. (Post-doc)	DoD grant research project	2011-2013

Service

Ad Hoc reviewer

Acta Biomaterialia, Communications Biology, Developmental Dynamics, Experimental Eye Research, Fundamental & Clinical Pharmacology, International Journal of Molecular Science, Investigative Ophthalmology and Visual Sciences, Journal of Ocular Pharmacology and Therapeutics, Peer J

Reviewing Editor – Ocular immunology and inflammation 2008

Editorial Board Member – Translational Vision Science and Technology 2020

Student Promotions Committee member

2010-2012, 2014-2017

University of Louisville, Medical School

Translational Neuroscience Steering Committee member

2014 - 2021

University of Louisville

Dissertation Committee

Rayeanne Balgemann, M.Eng.

“Optimization of PLGA and PLGA-Dasatanib Particles through a Taguchi design approach”

Professional Society Memberships

Member of the Association for Research in Vision and Ophthalmology (ARVO)

Member of International Society for Eye Research (ISER)