

CURRICULUM VITAE

Manas R. Biswal, Ph.D.,

Assistant Professor
Office of Graduate Program and Department of
Pharmaceutical Sciences
College of Pharmacy, University of South Florida

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CURRENT POSITION

University of South Florida College of Pharmacy
Assistant Professor

Tampa, FL, USA
Aug-2018-Present

PREVIOUS EMPLOYMENT

University of Florida College of Medicine
Research Assistant Professor

Gainesville, FL
Jan 2018-Aug-2018

EDUCATION

University of Florida College of Medicine

Postdoctoral Training, Molecular Genetics and
Microbiology

Gainesville, FL, USA
Aug-2012 to Jan-2018

Florida Atlantic University

PhD., Integrative Biology

Boca Raton, FL, USA
May-2006-Aug-2012

Central Institute of Fisheries Education

M.F.Sc., Nutrition and Biochemistry

Mumbai, India
2002-2004

Orissa University of Agriculture and Technology

B. F. Sc., Fisheries Science

Bhubaneswar, India
1998-2002

AWARDS

Robert A. Levitt Aging Research Award

The Institute for Retirement in Learning

2017

Pathway to Independence Award (Parent K99/R00)

National Eye Institute, National Institutes of Health

2016-2021

Special Travel award to attend the Fourth Biennial Symposium on AMD and the Second Biennial Symposium on Ocular Regeneration, Boston, USA

National Eye Institute, National Institutes of Health

2016

Knight Templar Foundation Young investigator travel award

The Association for Research and Vision in Ophthalmology (ARVO)

2015

Young investigator travel award

2015

Association for Ocular Pharmacology and Therapeutics
(AOPT)

Travel fellowship to attend International Retinal Degeneration meeting, CA, USA. 2014

National Eye Institute, National Institutes of Health

Dissertation Year Award 2012

Florida Atlantic University

Pre-doctoral Fellowship award 2008-2010

American Heart Association

Newell Doctoral Fellowship award 2008-2009

Florida Atlantic University

Board certification (NET) award for lectureship in Life Science 2004

Council of Scientific & Industrial Research & University
Grants Commission, Government of India

Graduate Teaching and Research assistantship award 2006-2012

Department of Biology, Florida Atlantic University

Senior Research Fellowship 2004-2006

Indian Council of Agricultural Research (ICAR), Govt. of
India

Junior Research Fellowship 2002-2004

Indian Council of Agricultural Research (ICAR), Govt. of
India

GRANTS

- **AHA Pre-doctoral Fellowship grant** 2008-2010
Title: Reversal of oxidative damage in an in-vitro model of stroke
Funding Source: American Heart Association (\$42,000)
- **Industrial pilot project grant** 2015-2017
Title: Testing zeaxanthin in a mouse model of geographic atrophy
Funding Source: ZeaVision LLC. (\$15,000)
- **Bright focus foundation grant** 2015-2017
Title: A Novel Antioxidant Therapy for Retinal Degeneration
Funding Source: Bright Focus Foundation (\$120,000)
- **K99/R00 Pathway to Independence award** 2016-2021
Title: Defining oxidative stress induced changes in RPE that control RPE and photoreceptor degeneration.
Funding Source: National Eye Institute, National Institutes of Health (\$1,003,000)

TEACHING EXPERIENCE

Department of Biology, Florida Atlantic University

Boca Raton, FL
Summer 2006

- Teaching Assistant: Advance Biotechnology lab
 - Teaching Assistant: Biotechnology Lab I
 - Teaching Assistant: Biotechnology Lab II
 - Teaching Assistant: Biodiversity lab
 - Teaching Assistant: Life Science lab
- Fall-2006, Fall-2007
Spring-2007,
Spring-2008
Fall-2010, Fall-2011
Spring-2010 ,
Spring-2011

PROFESSIONAL ASSOCIATIONS

- Member in training, Association for Research in Vision and Ophthalmology (ARVO). 2008-Current
- Young investigator, International Society of Eye Research (ISER). 2008-Current
- Associate member, American Society of Gene and Cell Therapy (ASGCT). 2014-Current
- Associate member, Association For Ocular Pharmacology and Therapeutics 2014-Current

GUIDED GRADUATE & UNDERGRADUATE STUDENTS

1. Corey James Robinson, Florida Atlantic University 2008-2009
2. Diana Navarro, Florida Atlantic University 2009-2010
3. Shivanne Ramnath, Florida Atlantic University 2009-2010
4. Olena Mahneva, Florida Atlantic University 2010-2011
5. Ngam Lan, Florida Atlantic University 2011-2012
6. Shuai Wang, Florida Atlantic University 2010-2012
7. Lindsey Buz, University of Florida 2013-Current
8. Giovanni Quinones, University of Florida 2014-2015
9. Tong Yao, University of Florida 2014-2016
10. Brad Justis, University of Florida 2015-2016
11. Caroline Wright, University of Florida Spring 2016
12. Kevin Pierre, University of Florida 2016-2017
13. Rukshana Uddin 2016-2017
14. Yixiao Wang Spring 2017-Current
15. Anil Patel Fall 2017-Current

REVIEWED MANUSCRIPTS FOR JOURNALS

1. Molecular Biology Reports
2. Current Eye Research
3. Experimental Eye Research
4. Molecular vision;
5. Journal of Infectious Diseases and Immunity
6. International Journal of Genetics and Molecular Biology (IJGMB)
7. Molecular Therapy
8. Current Eye Research
9. Cell Biochemistry & Function

10. Journal of Clinical Ophthalmology
11. Hypoxia
12. Journal of Medical Plant Research
13. Journal of Ophthalmology & Clinical Research
14. Molecular vision
15. African Journal of Microbiology Research
16. American Journal of Health System Pharmacy
17. Journal of Infectious Diseases and Immunity
18. Clinical Ophthalmology
19. Eye and Vision
20. Plos One
21. Mitochondria
22. Ophthalmic Genetics

INVITED TALK

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| 1. Gene Therapy- A Promising Treatment for Macular Degeneration | 2017: Aging Exposition at The Institute for Learning in Retirement, Gainesville, Florida |
| 2. Prevention of Retinal Degeneration: An Antioxidant Therapy Approach | 2017; College of Pharmacy University of Georgia at Augusta Campus |
| 3. Gene and Drug Based Therapy Prevents Retinal Degeneration in a Mouse Model of Geographic Atrophy | 2016; Worcester, Massachusetts, USA
Department of ophthalmology
UMASS medical school, |
| 4. Gene and Drug Based Therapy Prevents Retinal Degeneration in a Mouse Model of Geographic Atrophy | Tokyo, Japan
2016; XXII Biennial Meeting of the International Society for Eye Research |
| 5. An Antioxidant Gene Therapy Approach to prevent retinal degeneration | Gainesville, Florida, USA
2015; Neuromedicine summer seminar series, McKnight Brain Institute, Florida |
| 6. Delaying Retinal Degeneration in a Mouse Model of Geographic Atrophy: An Antioxidant Gene Therapy Approach. | Denver, USA
2015; ARVO Annual meeting, |
| 7. Hypoxia-regulated, glial cell specific gene therapy to treat retinal neovascularization: | Gainesville, Florida, USA
2012; Center for Vision research seminar series, University of Florida, |
| 8. Robust Hypoxia-induced regulation of a Muller cell specific promoter. | Beijing, China
2008; XVIII International Congress of Eye Research |

INVITED TALK

9. Gene Therapy- A Promising Treatment for Macular Degeneration
2017: Aging Exposition at The Institute for Learning in Retirement, Gainesville, Florida
10. Prevention of Retinal Degeneration: An Antioxidant Therapy Approach
2017; College of Pharmacy University of Georgia at Augusta Campus
11. Gene and Drug Based Therapy Prevents Retinal Degeneration in a Mouse Model of Geographic Atrophy
2016; Worcester, Massachusetts, USA
Department of ophthalmology
UMASS medical school, Tokyo, Japan
12. Gene and Drug Based Therapy Prevents Retinal Degeneration in a Mouse Model of Geographic Atrophy
2016; XXII Biennial Meeting of the International Society for Eye Research
Gainesville, Florida, USA
13. An Antioxidant Gene Therapy Approach to prevent retinal degeneration
2015; Neuromedicine summer seminar series, McKnight Brain Institute, Florida
Denver, USA
14. Delaying Retinal Degeneration in a Mouse Model of Geographic Atrophy: An Antioxidant Gene Therapy Approach.
2015; ARVO Annual meeting, Gainesville, Florida, USA
15. Hypoxia-regulated, glial cell specific gene therapy to treat retinal neovascularization:
2012; Center for Vision research seminar series, University of Florida, Beijing, China
16. Robust Hypoxia-induced regulation of a Muller cell specific promoter.
2008; XVIII International Congress of Eye Research

PEER REVIEWED PUBLICATION

1. **Biswal MR**, Justis BD, Han P, Li H, Gierhart D, Dorey CK, Lewin AS (2018). Daily zeaxanthin supplementation prevents atrophy of the retinal pigment epithelium (RPE) in a mouse model of mitochondrial oxidative stress. *PLoS One*. 2018 Sep 28;13(9):e0203816. [PMID: 30265681]
2. **Biswal MR**, Prentice HM, Smith GW, Zhu P, Tong Y, Dorey CK, Lewin AS, Blanks JC. (2018). Cell-specific gene therapy driven by an optimized hypoxia-regulated vector reduces choroidal

neovascularization. *J Mol Med (Berl)*. 2018 Aug 13. doi: 10.1007/s00109-018-1683-0. [Epub ahead of print] PMID: 30105447

3. **Biswal, M. R.**, Han, P., Zhu P., Wang Z., Hong Li., Ildefonso, C. J., and Lewin, A.S. (2017) Timing of Antioxidant Gene Therapy: Implications for Treating Dry AMD. *Investigative ophthalmology & visual science*. 2017 Feb 1;58(2):1237-1245. doi: 10.1167/iovs.16-21272.
4. Tong, Y., Zhao, K.-K., Feng, D., **Biswal, M.**, Zhao, P.-Q., Wang, Z.-Y., & Zhang, Y. (2016). Comparison of the efficacy of anti-VEGF monotherapy versus PDT and intravitreal anti-VEGF combination treatment in AMD: a Meta-analysis and systematic review. *International Journal of Ophthalmology*, 9(7), 1028–1037. <http://doi.org/10.18240/ijo.2016.07.16>
5. Ahmed, C. M., **Biswal, M. R.**, Li, H., Han, P., Ildefonso, C. J., & Lewin, A. S. (2016). Repurposing an orally available drug for the treatment of geographic atrophy. *Molecular Vision*, 22, 294–310.
6. Berkowitz, B. A., Lewin, A. S., **Biswal, M. R.**, Bredell, B. X., Davis, C., & Roberts, R. (2016). MRI of Retinal Free Radical Production With Laminar Resolution In Vivo. *Investigative Ophthalmology & Visual Science*, 57(2), 577–585. <http://doi.org/10.1167/iovs.15-18972>
7. Ildefonso, C.J., Jaime. H., Brown, E.E., Iwata, R., Ahmed, C., Massengil, M., **Biswal, M.R.**, Boye, S.E., Hauswirth, W.W., Ash, J.D., Li, Q., Lewin, A.S. (2016) Targeting the NRF2 signalling pathway in the retina with a gene delivered secretable and cell-penetrating peptide. *Investigative ophthalmology & visual science*, 57(2):372-86. [PMID: 26842755]
8. **Biswal, M.R.**, Ildefonso, C.J., Mao, H., Seo, S.J., Wang, Z., Li, H., Le, Y.Z., Lewin, A.S. (2016) Conditional Induction of Oxidative Stress in RPE: A Mouse Model of Progressive Retinal Degeneration. *Adv Exp Med Biol*. 2016;854:31-7. [PMID: 26427390]
9. Ildefonso, C.J., **Biswal, M.R.**, Ahmed, C.M., Lewin, A.S. (2016) The NLRP3 Inflammasome and its Role in Age-Related Macular Degeneration. *Adv Exp Med Biol*. 2016;854:59-65. [PMID: 26427394]
10. **Biswal, M.R.**, Ahmed, C.M., Ildefonso, C.J., Han, P., Li, H., Jivanji, H., Mao, H., Lewin, A.S. (2015) Systemic Treatment with a 5HT1a Agonist Induces Anti-oxidant Protection and Preserves the Retina from Mitochondrial Oxidative Stress, *Experimental Eye Research*, 140:94-105. [PMID: 26315784].
11. Ildefonso, C.J., Jaime. H., **Biswal, M.R.**, Boye, S.E., Li, Q., Hauswirth, W.W., Lewin, A.S. (2015) Gene therapy with the caspase activation and recruitment domain reduces the ocular inflammatory response. *Molecular Therapy*, 23(5):875-84. [PMID: 25698151]
12. Wang ZY, Zhao K, Zheng J, Rossmiller B, Ildefonso C, **Biswal M.R.**, Zhao PQ. (2014) Systematic review and meta-analysis of the association between complement factor H I62V polymorphism and risk of polypoidal choroidal vasculopathy in Asian populations. *Plos One* 10;9(2):e88324. [PMID: 24520367]
13. Mao, H., Seo, S., **Biswal, M. R.**, Li, H., , Conners, M., Nandyala, A., Jones, K., Le, Y., Lewin, A.S. (2014) A mouse model of geographic atrophy based on mitochondrial oxidative stress in the retinal pigment epithelium. *Investigative ophthalmology & visual science*, 55(7):4613-27. [PMID:24985474]

14. **Biswal, M.R.**, Prentice, H.M., Dorey, C.K., and Blanks, J.C. (2014). A hypoxia responsive glia cell-specific gene therapy vector for targeting retinal neovascularization. *Investigative ophthalmology & visual science*, 55 (12), 8044-8053. [PMID: 25377223]
15. Wang Z.Y., Zhao, K., Li, J.K., **Biswal M.R.**, Zhao P.Q., (2013). Immediate corneal vitrectomy for posteriorly dislocated lens fragments during cataract surgery. *Retina*. 2013 Sep;33(8):1715-9. [PMID: 23807182]
16. **Biswal, M. R.**, Singh, S.D., Srivastava, P., and Umesha, D., (2012). Molecular Cloning and Characterization of Asian Seabass (*Lates calcarifer*) Beta-Actin Gene Promoter. *National Academy Science Letters*; 35(3):163-168.
17. Prentice, H.M*., **Biswal, M.R*.**, Dorey, C.K., and Blanks, J.C. (2011). Hypoxia-regulated retinal glial cell-specific promoter for potential gene therapy in disease. *Investigative ophthalmology & visual science*, 52 (12), 8562-8570. (***Equivalent first authors**) [PMID: 21960554]
18. Shivendra Kumar, D Choudhury, K Baruah, **M Biswal**, D Umesha, NP Sahu (2005). Effect of feeding three different formulated feeds having different protein levels on the growth of angel fish (*Pterophyllum scalare*) juveniles. *Journal of the Indian Fisheries Association*, 32:95-101.

PUBLISHED BOOK CHAPTER

1. **Biswal, M.R.**, Prentice, H.M., Dorey, C.K., and Blanks, J.C. (2012). Hypoxia responsive vectors targeting astrocytes in glioma. *Novel Therapeutic Concepts in Targeting Glioma, Prof. Faris Farassati* (Ed.), ISBN: 978-953-51-0491-9, InTech, p199- p216.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCE

1. **Manas Biswal**, Brad Justis, Ping Yang Han, Hong Li, C Kathleen Dorey, Dennis L. Gierhart, Alfred S. Lewin (2017). Daily Zeaxanthin Supplementation Improves RPE Function in a Mouse Model of RPE Oxidative Stress. ARVO Annual meeting, Baltimore, USA.
2. Cristhian J. Ildefonso, Brianna M. Bowman, **Manas Biswal**, Chulbul M. Ahmed, Qihong Li, Alfred S. Lewin (2017). Gene Therapy with the Caspase Activation and Recruitment Domain (CARD) Slows the Retina Degeneration of the Sod2 Knock-Out Mouse Model of Geographic Atrophy. ARVO Annual meeting, Baltimore, USA.
3. Alfred S. Lewin, Cristhian J. Ildefonso, Qihong Li, **Manas R. Biswal** (2017). AAV Delivery of Cell Penetrating Proteins for Treatment of Retinal Disease 20th Annual Meeting of the American Society of Gene & Cell Therapy, Washington DC, USA.
4. **Manas Biswal**, Cristhian Ildefonso, Chulbul Ahmed, Alfred Lewin (2016). Gene and Drug Based Therapy Prevents Retinal Degeneration in a Mouse Model of Geographic Atrophy. XXII Biennial Meeting of the International Society for Eye Research, Tokyo, Japan. [*PAPER*]
5. Cristhian Ildefonso, **Manas Biswal**, Kyle Jones, Ryo Iwata, Chulbul Ahmed, Qihong Li, Alfred Lewin (2016). Gene Therapy with the Caspase Activation and Recruitment Domain (CARD) Slows the Retina Degeneration of the Sod2 Knock-out Mouse Model of Geographic Atrophy. XXII Biennial Meeting of the International Society for Eye Research, Tokyo, Japan. [*PAPER*]

6. Alfred Lewin, Cristhian Ildefonso, **Manas Biswal**, Chulbul Ahmed, Hong Li, Pingyan Han (2016). Targeting Oxidative Stress in the Retina Using Gene and Drug Therapies. XXII Biennial Meeting of the International Society for Eye Research, Tokyo, Japan. [*PAPER*]
7. **Manas R. Biswal**, Cristhian J. Ildefonso, Bradley D. Justis, Hong Li, Pingyan Han, Ping Zhu, Lindsey E. Buz, Chulbul M. Ahmed, Alfred S. Lewin (2016). Early Sub-retinal Delivery of AAV1-Sod2 Protects the Retina in a Mouse Model of Progressive Retinal Degeneration. ARVO annual meeting. Seattle, Washington, USA. [*POSTER*]
8. Alfred S. Lewin, Chulbul M. Ahmed, **Manas R. Biswal**, Hong Li, Pingyan Han (2016). The 5HT1a Agonist Xaliproden Exhibits Anti-oxidant and Anti-inflammatory Properties and Protects the Retina in a Mouse Model of Geographic Atrophy. ARVO annual meeting. Seattle, Washington, USA. [*POSTER*]
9. Janet Blanks , James Sullivan, **Manas Biswal** , Howard Prentice, Shailaja Allani(2016). Development of a hypoxia -regulated glial cell specific gene therapy vector encoding decorin. ARVO annual meeting. Seattle, Washington, USA. [*POSTER*]
10. Cristhian J. Ildefonso, Emily E. Brown, Ryo Iwata, Chulbul M. Ahmed, Michael Massengill, **Manas Biswal** , Shannon E. Boye, William W. Hauswirth, John Ash , Qiuhong Li , Alfred S. Lewin (2016). Induction of Endogenous Nrf2 Activation in the Retina Partially Protects from Oxidative Stress and Inflammation. ARVO annual meeting. Seattle, Washington, USA. [*POSTER*]
11. James Fleming, **Manas Biswal**, Alfred Lewin, Hideko Kasahara (2016). AAV9 gene transfer rescued heart failure of cardiac myosin light chain kinase knockout mice. UF College of Medicine Celebration of Research, Gainesville, Florida, USA. [*POSTER*]
12. Alfred Lewin, Chulbul Ahmed, **Manas Biswal**, Hong Li, Hayou Mao (2016). A 5HT1a agonist stimulates an antioxidant response and protects the retina in a mouse model of geographic atrophy. UF College of Medicine Celebration of Research, Gainesville, Florida, USA. [*POSTER*]
13. **Manas Biswal**, Cristhian Ildefonso, Brad Justis, Hong Li, Ping Han, Ping Zhu, Haoyu Mao, Lindsey Buz, Michael Massengill, Chulbul Ahmed, Alfred Lewin (2016). Early sub-retinal delivery of AAV-Sod2 protects the retina in a mouse model of progressive retinal degeneration. UF College of Medicine Celebration of Research, Gainesville, Florida, USA. [*POSTER*]
14. Cristhian Ildefonso, Henrique Jaime, Emily Brown, Ryo Iwata, Chulbul Ahmed, Michael Massengill, **Manas Biswal**, Shannon Boye, William Hauswirth, John Ash, Qiuhong Li, Alfred Lewin (2016). Induction of endogenous Nrf2 activation in the retina partially protects from oxidative stress and inflammation. UF College of Medicine Celebration of Research, Gainesville, Florida, USA. [*POSTER*]
15. **Manas R Biswal** , Christian Ildefonso, Haoyu Mao, Hong Li, and Alfred S Lewin (2015). Gene based antioxidant therapy delays retinal degeneration in a mouse model of progressive retinal degeneration. Association for Ocular Pharmacology and Therapeutics (AOPT) 12th biennial scientific meeting. Charleston, SC.[*POSTER*]
16. Janet C. Blanks , **Manas R. Biswal** , C. Kathleen Dorey, and Howard M. Prentice (2015). Novel Treatment for Neovascularization in Retinal Disease. Association for Ocular Pharmacology and Therapeutics (AOPT) 12th biennial scientific meeting. Charleston, SC, USA.[*PAPER*]
17. **Manas R Biswal** , Cristhian J. Ildefonso, Brian P. Rossmiller , Haoyu Mao , Hong Li , Ping Han , Ping Zhu , Yao Tong , Giovanni Quinones Valdez , Alfred S. Lewin (2015). Delaying Retinal

Degeneration in a Mouse Model of Geographic Atrophy: An Antioxidant Gene Therapy Approach. ARVO annual meeting. Denver, Colorado, USA. [PAPER]

18. Cristhian J Ildfonso, Henrique Jaime, Kyle Jones, **Manas R Biswal**, Qiuhong Li, Alfred S Lewin (2015). Delivery of the Anti-inflammatory CARD Gene Allows Retinal Recovery After Acute Oxidative Injury: Implications for AMD. ARVO annual meeting. Denver, Colorado, USA. [POSTER]
19. **Manas Biswal**, Cristhian Ildfonso, Haoyu Mao, Hong Li, and Alfred S Lewin (2015). Gene based antioxidant therapy delays retinal degeneration in a mouse model of progressive retinal degeneration. University of Florida postdoc research symposium, Gainesville, Florida. [POSTER]
20. **Manas R Biswal**, Yun Le, Zhaoyang Wang, Haoyu Mao, Hong Li, Alfred Lewin (2014). Reversal of oxidative stress in a mouse model of Dry AMD. XVIth International Symposium on Retinal Degeneration, Asilomar, CA, USA. [POSTER]
21. **Manas Biswal**, Yun Le, Zhaoyang Wang, Haoyu Mao, Hong Li, Alfred Lewin (2014). Reversal of oxidative stress in a mouse model of Dry AMD. 21st Biennial International Congress on Eye Research (ICER) meeting, San Francisco, CA, USA. [POSTER]
22. **Manas R. Biswal**, Cristhian Ildfonso, Zhaoyang Wang, Haoyu Mao, Hong Li, Ping Zhu, Giovanni Quinones, Alfred S. Lewin (2015). Effectiveness of Antioxidant Gene Therapy in Delaying Retinal Degeneration. American Society of Gene & Cell Therapy 18th annual meeting. New Orleans, USA. [POSTER]
23. **Manas R. Biswal**, Zhaoyang Wang, Haoyu Mao, Hong Li, Alfred S. Lewin (2014). Reversal of oxidative stress in a mouse model of Dry AMD. 17th Annual Meeting of the American Society of Gene & Cell Therapy, Washington DC, USA. (Program no: 130) [POSTER]
24. **Manas R. Biswal**, Zhaoyang Wang, Haoyu Mao, Hong Li, Arman Elkaz and Alfred S. Lewin (2014). Design and testing of AAV vectors for Sod2 gene augmentation therapy. ARVO annual meeting, Orlando, FL, USA. (3334 /B0274). [POSTER]
25. Arun Sur, **Manas R Biswal**, A. Kreymerman, H. Prentice, H. Weissbach, and J. C. Blanks (2011). Pretreatment by the NSAID, Sulindac Confers Protection Against Oxidative Stress Induced Damage in Retinal Pigmented Epithelial Cells. ARVO annual meeting, Ft. Lauderdale, FL, USA. [POSTER]
26. A Sur, D Baronas-Lowell, **M Biswal**, H Prentice, H Weissbach, J Blanks (2013). Protection of RPE cells by sulindac against oxidative damage is through ischemic preconditioning (IPC) and involves activation of the peroxisome proliferator activated receptor alpha (PPAR α). ARVO annual meeting. Seattle, Washington, USA. [POSTER]
27. Janet C. Blanks, **Manas Biswal**, C. Kathleen Dorey, Howard Prentice (2012) Novel hypoxia regulated, glial cell specific AAV gene therapy in mouse model of retinal disease. Society for Neuroscience annual meeting. New Orleans, USA. [POSTER]
28. **M. R. Biswal**, H. Prentice, G.W. Smith, C. Dorey, C. Robinson, J. Blanks (2010). Hypoxia-regulated Muller Cell-specific Promoter for use in Retina Gene Therapy. ARVO annual meeting, Ft. Lauderdale, FL, USA (3101/A325). [POSTER]
29. G.W. Smith, E. Hernandez, H. Prentice, C. Dorey, **M. Biswal**, J. Blanks (2010). HIF-1 Regulated Gene Therapy Reduces Choroidal Neovascularization in a Mouse-Model. ARVO annual meeting, Ft. Lauderdale, USA. (4495/A467). [POSTER]

30. C.J. Dougherty, **M. R. Biswal**, G.W. Smith, and J.C. Blanks (2008). Hypoxia-Enhanced and Endothelial-Specific Expression of a Mitochondria-Targeted Catalase Decreases Damage to Microvascular Endothelial Cells Due to Hypoxia and Elevated Glucose. ARVO annual meeting, Ft. Lauderdale, FL, USA.[*POSTER*]
31. **Biswal, M.**, Prentice H.M., Smith, G.W., Dorey, C.K., Webster, K.A., Blanks, J.C. (2008). Robust hypoxia-induced regulation of a Muller cell-specific promoter. 18th Biennial International Congress on Eye Research (ICER) meeting, Beijing, China.[*PAPER*]
32. Blanks, J.C., **Biswal, M.R.**, Smith G.W., Dougherty, D.C., Dorey, C.K., Webster, K.A., Prentice, H.M. Auto-initiated therapy using hypoxia-induced regulation of a Muller cell-specific promoter. Retinal Degeneration Meeting, China – 2008.
33. **Biswal., M. R.**, Singh., S. D. Srivastava., P. P. and Umesha. D. 2004. Molecular Cloning & Characterization Of The DNA encoding Beta-actin Gene Promoter Sequence In, Lates calcarifer.7th Int. Mar. Biotech. Conf. Canada, June7-12, 2005.
34. **Biswal, M.R.**, Sustainability with biosecurity for the Aquaculture industry requires 'Eco-friendly' feed management. The National Seminar on Responsible Fisheries and Aquaculture, 2004, 12-13th February, College of Fisheries (OUAT), Berhampur-7, Orissa, Abstract: RFA-89
35. **Biswal, M. R.**, Singh., S. D. Potential of beta - actin gene promoter Asian of Seabass in fish transgenesis. 92nd Indian Science Congress, 3-7th Jan ,2005, Ahmedabad, INDIA.
36. Kumar, S., Choudhury, D., Baruah, K., **Biswal, M.R.**, D. Umesha., Zaidi, S.G.S., and Sahu, N. P., Effect of formulated diet on feed intake growth and survival of Angelfish juveniles. National seminar on prospects of ornamental fish breeding and culture in Eastern and North Eastern India. 2004, 16-17th February, Kolkata center, CIFE , Abstract: CA-38.