

## Research Activities

### Completed project (the past):

#### **Funded by Indian Council of Medical Research (ICMR)**

**Project 1:** Prognostic markers in uveal melanoma (PI – Dr. JB)

**Project 2:** To study the expression of oxidative stress in human corneal diseases by immunohistochemistry (PI – Dr. KK)

**Project 3:** Study of Ezrin, EGFR, IGF-1R, HGF, C-FOS & C-JUN expression in uveal melanoma correlating known clinicopathological parameters and with proliferation marker MIB-1 & known clinicopathological parameters. (PI – Dr. KK)

**Project 4:** Role of Tetraspanins, p53 family proteins, Rac-1-Tiam 1 signal transduction, adherins, beta catenins and proteases and its inhibitors in retinoblastoma and correlation with aggression. (PI – Dr. KK)

### Ongoing funded projects: (the present):

#### **Funded by Indian Council of Medical Research (ICMR)**

**Project 1:** A study of the biology and the growth characteristics of human corneal limbal stem cell. (PI – Dr. KK)

**Project 2:** To study the modulation of multidrug resistant proteins expression, function and in vitro antitumor effect on Y79 retinoblastoma cells by curcumin longa derivative. (PI – Dr. KK)

**Project 3:** To study the effect of FAS (Fatty acid Synthase) inhibitors on Y79 retinoblastoma cell line.

**Project 4:** Efficacy of EpCAM-conjugated drug loaded biodegradable nanoparticles for drug therapy in Retinoblastoma (DBT).

#### **Funded by Department of Bio-Technology**

**Project 1:** Proteomic Profiling for Retinoblastoma progression: Different display analysis for the expression of intracellular proteins between non-invasive and invasivetumors and tumor cell lines (Collaboration with Centre for Cellular and Molecular Biology (CCMB), Hyderabad)

**Project 2:** To identify and characterize the retinal stem/progenitor properties of Human Iris Pigment Epithelial (IPE) cells and Ciliary Epithelial (CE) cells in vitro.

**Project 3:** To evaluate the in vitro efficacy of PLGA-nanoparticles encapsulated with chemotherapeutic drugs to induce apoptosis in Y79 retinoblastoma cell line. (ICMR).

### **Funded by Department of Science and Technology**

**Project 1:** To study the effect of small interfering RNA (siRNA) on the EpCAM expression of Y 79 retinoblastoma cell line and its correlation with invasion and migration properties of cell line (collaboration with Indian Institute of Technology (IIT), Madras).

**Project 2:** Developing Molecularly Targeted Polymer nanoparticles for cancer therapeutics and diagnostics.

**Project 3:** Identification of monosomy 3 in choroidal melanoma by chromosome in situ hybridization and correlate clinicopathologically.

### **Funded by NONI Foundation:-**

**Project 1:** To study the antitumor potential of *Morinda citrifolia* extract on the RB cell line (collaboration with World Noni Foundation, Secundrabad through Dr. Mathivanan, University of Madras).

### **Intramural Funding (Vision Research Foundation)**

**Project 1:** To study the Presence of Human Papilloma Virus 16 and 18 Genome in Retinoblastoma Tumor Tissue from Indian Children with Sporadic **Retinoblastoma**: An Alternative Mechanism for Tumor Development

**Project 2:** To study the expression of HMGA2 in retinoblastoma (Collaborative project with Santa Jeremy Ono PhD FAAAAI: (GlaxoSmithKline Professor of Biomedical Science & Associate Dean of Students; University College London; Head of Immunology Division, UCL Institute of Ophthalmology; Honorary Professor, UCL Institute of Child Health; Honorary Staff, Moorfields Eye Hospital, NHS Trust) and M Ashwin Reddy, MA MBBChir MD FRCOphth: (Consultant Paediatric Ophthalmologist with interest in Retinoblastoma, Department of Ophthalmology, The Royal London Hospital, Whitechapel Road, London, E1 1BB)

### **Projects sanctioned by Indian Government:-**

**Project 1:** Efficacy of EpCAM-conjugated drug loaded biodegradable nanoparticles for drug therapy in Retinoblastoma (DBT).

### **Projects which have been approved by Indian Government**

**Principal Investigator:** Dr. S.Krishnakumar

**Project 1:** To evaluate the in vitro efficacy of PLGA-nanoparticles encapsulated with chemotherapeutic drugs to induce apoptosis in Y79 retinoblastoma cell line. (ICMR).

### **1. Proposals – where collaborations are welcome. (the future)**

1. Stem cells RNAi Nanotechnology.

## **Our collaborators :-**

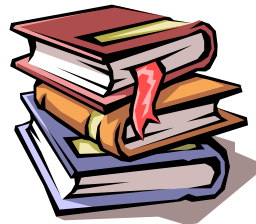
- a. Anna University, AU-KBC, Chennai
- b. Indian Institute of Technology (IIT), Chennai
- c. Centre for Cellular and Molecular Biology (CCMB), Hyderabad
- d. Central Leather Research Institute (CLRI), Chennai
- e. Institute of Life Sciences, Orissa
- f. University of Nebraska, Omaha
- g. St. Jude Hospital, Memphis
- h. University of Missouri-Columbia
- i. Deakin University, Australia
- j. University of California, San Francisco
- k. Doheny Eye Institute, Los Angeles, USA
- l. Save Sight Institute, Netherlands

## **List of Publications:**

Peer reviewed journals	220
Non Peer reviewed journal	70
In House journal	77
Chapters in books	76

## **Papers presented:-**

National	143
International	51



### **Infrastructure facilities:**

Tissue Processor , Microtomes - 2 , Dissection microscope , Transilluminator, Cryostat , Hot air oven, Water bath, Microscopes – 2 (Nikon), Satorious balance Microwave oven, pH meter, Western Blot apparatus, Cyclomixer, Rocker Microfuge – 2, Digital Camera, PCR Machine, Laminar Flow Hood.

Facilities of cell biology lab are utilized for doing the cell culture work

**Tissue processor**



**Cryostat**



**Microtome**

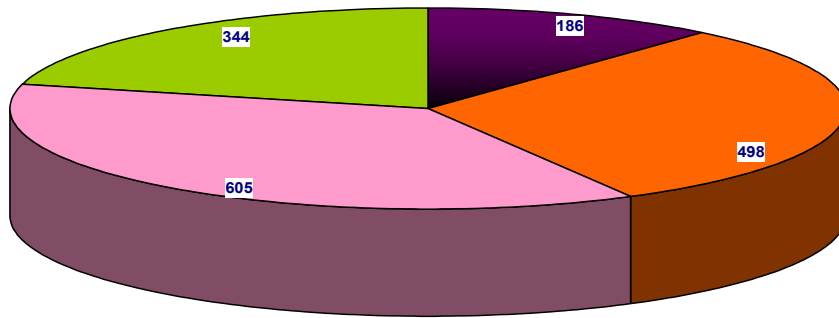
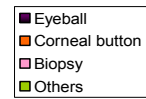


**Microscope**

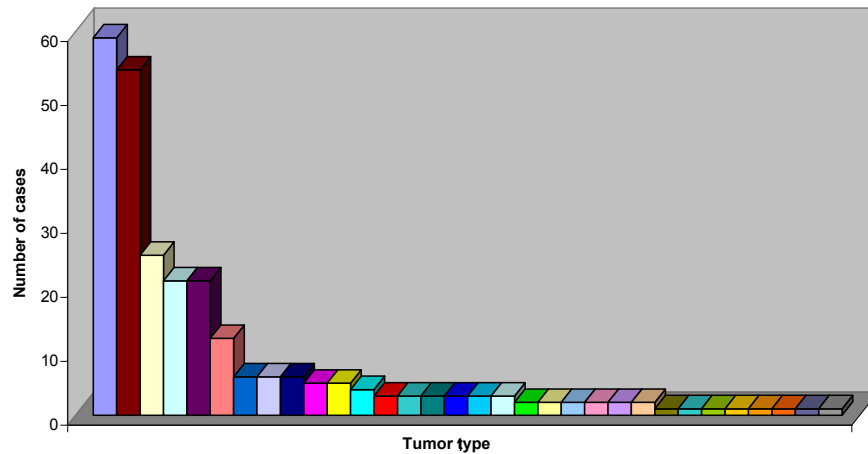


# STATISTICS OF THE YEAR 2007

N: 1633



## NUMBER OF OCULAR TUMORS FOR YEAR 2007



Retinoblastoma -59	Fungus -54	Melanoma -25	Lymphoma -21
Sebaceous gland carcinoma -21	lymphangioma -12	pleomorphic ade -6	MI SCC -6
cavernoushemangioma -6	Schwannoma -5	neurofibroma -5	car insitu -4
Basalcellar -3	Rhabdomyo -3	Roundcelltumor -3	spindlecelltumor -3
Lipoma -3	RLH -3	SFT -2	Adenoidcysti -2
Ewingsarcoma -2	Metastatictumor -2	Adenocarcinoma -2	Xanthogranuloma -2
Adnexal tumor -1	Cap hemangioma -1	PAM -1	Hemangioma -1
Meningmeningioma -1	Meduloepithe -1	Hematoma -1	Eccrineacrospiroma -1

## Teachings / Trainings / Ph.D programs:

### Training of Ophthalmic Pathologists

From Srilanka	Dr Samarasekara
From India	
Jalna (Maharashtra)	Dr Alka Thool
Guwahati (Assam)	Dr Dipankar Das
Bangalore (Karnataka)	Dr Kalpana Babu
Punjab (Chandigarh)	Dr Sweta Ahuja

### Summer Course Students from abroad for short-term training

1. Ms. Arpitha Muthialu
2. Mr. Neil Desai
3. Ms. Hema Ramkumar
4. Mr. Prasad V Acharya
5. Ms. Anita Iyer

### Ph.D. Students

- Ms. Adithi Mohan working on retinoblastoma doing part of her Ph.D. work under Dr Michael Dyer, Michael A. Dyer, PhD, Department of Developmental Neurobiology, St. Jude Children's Research Hospital, 332 N. Lauderdale, Memphis, USA
- Ms. B. Sudha has submitted her Ph.D thesis on "To understand the biology of corneal stem cells" and joined as post doctoral fellow with Dr. Iqbal Ahmad at Durham's Research Centre at Nebraska School of Medicine, Omaha
- Mr. K.Mallikarjuna started his work on proteomics of retinoblastoma in collaboration with Centre for Cellular and Molecular Biology, Hyderabad

### MAJOR AWARDS:-

#### Dr. J. Biswas

1. Travel fellowship - Association for Research in vision and Ophthalmology, USA 1988.
2. Best paper award at 39th Tamil Nadu State Ophthalmic Conference for the paper 'Corneal stromal dystrophy - a clinicopathological study of eyes', Coimbatore, 1991.
3. 2nd prize for poster on 'Clinicopathological study of Malignant melanoma of choroid in a 14 year period' at 51st All India Ophthalmological Society Conference, Jaipur, February 1993.

4. Scientific paper award at first Singapore National Eye Centre International Meeting for the paper 'Clinicopathological study of parasitic lesions in the eye and adenexa', Singapore, April 1993.
5. 'Swarna Lata Punshi' award for being adjudged the Best Research Worker of 1993.
6. Dr C S Reshmi, Gold Medal for best General film on 'Parasites - A view through the microscope', 52<sup>nd</sup> All India Ophthalmological Society Conference, Calcutta, January 1994.
7. Major S C Dutta Memorial Oration Gold Medal, by West Bengal Ophthalmological Society, September 1994.
8. Best poster award at 56<sup>th</sup> All India Ophthalmological Society Meeting on "Ocular reticulum cell sarcoma - a masquerade syndrome", Guwahati, 25<sup>th</sup> January 1998.
9. Hari Om Ashram Alembic Research Award for Clinical Research from Medical Council of India for the year 1997.
10. Best Poster Award at HIV-Indian Scene, January 18-19, Chennai, 1999
11. Best Poster Award at 57<sup>th</sup> All India Ophthalmological Society Meeting on "Metastatic carcinoma masquerading as iridocyclitis cytopathological and ultrasound biomicroscopic correlation", Cochin, 7 – 10<sup>th</sup> January 1999.
12. Dr C N Shroff Award for Basic and Clinical Research in Eales' Disease at Sankara Nethralaya by All India Ophthalmological Society for the year 2000.
13. Best Poster Award at Tamilnadu Ophthalmic Association conference on "Montage fundus photography – Utility in posterior uveitis", Tamilnadu Ophthalmic Association Conference, Ooty, 7<sup>th</sup> to 9<sup>th</sup> September 2001. (Dr J Biswas, Dr Rupesh V Agrawal, Mr S P Govindarajan)
14. Dr. Rustum Ranji oration by Andhra Pradesh Ophthalmological Society on 30<sup>th</sup> November 2002.
15. "Retina Foundation Oration Award" in 30<sup>th</sup> Annual Gujarat Ophthalmological Conference, 21<sup>st</sup> to 22<sup>nd</sup> December 2002.
16. P N Sinha Oration Award by Bihar State Ophthalmological Society, 26<sup>th</sup> and 28<sup>th</sup> November 2004.
17. Prof. T Gopinatha Menon Oration Gold medal, Cochin, 5<sup>th</sup> August 2007.
18. Fellowship of the National Academy of Medical Sciences, 47<sup>th</sup> National academy of medical sciences, New Delhi, 27<sup>th</sup> October 2007.

**Dr. S. Krishnakumar**

1. XVI International Congress of Eye Research Travel Fellowship for Young Investigator to present the work on Retinoblastoma and uveal melanoma at Sydney
2. Swarnalatha Punshi Award for the best basic research fellow in the year 2006
3. Selected by National Eye Institute, USA as a participant for collaborative research between US and India in Eye Research
4. Selected as DBT Associate and awarded short-term Overseas Fellowship Award for 6 months in nanotechnology with Dr. Raghuraman, Kannan, Assistant Professor, Department of Radiology, Director, Nanoparticle Production Core Facility, School of Medicine, University of Missouri-Columbia from 10<sup>th</sup> March to 11<sup>th</sup> September 2007
5. Selected as ICMR Fellowship for training in nanotechnology and drug delivery with Dr Uday Kompella, Ph.D., Associate Professor, Department of pharmaceutical Sciences, College of Pharmacy, University of Nebraska Medical Center, Omaha from 1<sup>st</sup> January to 31<sup>st</sup> January 2007
6. Selected for “Sir Sriram Travel Fellowship Award” for training in proteomics for the year 2006-2007 by National Academy of Medical Sciences

**Travel grants/Awards:**

1. Ms. Adithi Mohan and Mr. K. Mallikarjuna received the travel fellowship in the IERG meeting, Hyderabad, 2005.
2. Ms. Adithi Mohan received the ARVO Travel grant for the year 2005.
3. Ms. B. Sudha and Mr. K.Mallikarjuna received the travel fellowship in the IERG meeting, 2006
4. Ms. B.Sudha received Amjad Rahi prize for the best paper presentation in the IERG meeting, 2006
5. Ms. Srilatha Jasty has been selected the travel fellowship for attending the ARVO 2008 meet.

## **PUBLICATIONS IN JOURNALS:**

### **PEER REVIEWED**

1. Kaiwar R, Pal SR, Gangwar DN, Sehgal AK and **Biswas J**. 'Sporadic cases of acute haemorrhagic conjunctivitis due to enterovirus type 70', Indian Journal of Medical Research 78: PP 445-449,1983.
2. Gangwar DN, Grewal SPS, Jain IS, **Biswas J**, Pal SR and Kaiwar R: 'Enterovirus 70 acute haemorrhagic conjunctivitis - sporadic cases', Journal of Ophthalmology, Vol.28, 183-188,1984.
3. Jain IS, **Biswas J**, Ram J and Gupta A: 'Spontaneous exenteration by maggots' - Afro Asian Journal of Ophthalmology III September 1985.
4. **Biswas J**, Rao NA and Irvine RR: 'Diagnosis and management of ocular infections in Acquired Immunodeficiency Syndrome'- Indian Journal of Ophthalmology, 36(4):151-155,1988.
5. Rao NA, Zimmerman PL, Boyer D, **Biswas J**, Causey D, Beniz J and Nichols PW: A clinical, histopathologic and electron microscopic study of Pneumocystis carinii choroiditis. American Journal of Ophthalmology,107:218-228, March 1989.
6. Lo GG, **Biswas J**, Rao NA and Font RL: 'Corneal Myxoma - Case report and review of the literature'. Cornea 9(2):174-178,1990.
7. Kristeva M, **Biswas J**, Pararajasegaram G, Sevanian A and Rao NA: 'Histochemical analysis of experimental granulomatous uveitis'. Ophthalmic Research, 23:73-78,1991.
8. **Biswas J**, Badrinath SS and Rao NA: 'Primary non-familial amyloidosis of the vitreous - a light microscopic and electron microscopic study' Retina, 12:25-253, 1992.
9. **Biswas J**: 'Pathology of Uveitis'. Afro-Asian Journal of Ophthalmology 9(3):206-209, 1992.
10. **Biswas J**, Mayr AJ, Martin WJ and Rao NA: 'Detection of human cytomegalovirus in ocular tissue by polymerase chain reaction and in situ DNA hybridization', Graefes Archives of Clinical and Experimental Ophthalmology, 231:66-70, 1993.
11. Lakshmi SG, **Biswas J**, Natarajan K, Padmanabhan P, Madhavan HN: Acanthamoeba keratitis - clinicopathological study of 6 cases. Afro-Asian J. Ophthalmol. Vol. XII, No. 1, June, 1993.
12. Kinota S, Wong KW, **Biswas J** and Rao NA: 'Changing patterns of infectious keratitis : Overview of clinical and histopathological features of keratitis due to acanthamoeba or atypical mycobacteria and infectious crystalline keratopathy', Indian Journal of Ophthalmology 41 (1): 3-14, 1993.

13. **Biswas J** and Subramanian N: 'Frozen section diagnosis in ophthalmic pathology' Indian Journal of Ophthalmology 41(3):114-116, October 1993.
14. **Biswas J**: 'Practical concept in the management of uveitis'. Indian Journal of Ophthalmology, 41(3):133-141, October 1993.
15. Das T, **Biswas J**, Kumar A, Nagpal PN, Namperumalswamy P, Patnaik B and Tiwari HK: Eales' disease. Indian Journal of Ophthalmology 42 (1): 3-18, March 1994.
16. Roysarkar T, **Biswas J** and Gopal L: New tumours in non-enucleated eyes of bilateral retinoblastoma patients. Indian Journal of Ophthalmology 42 (1): 19-22, March 1994.
17. Agrawal V, **Biswas J**, Madhavan H N, Margat G, Reddy MK, Saini JS, Sharma S and Srinivasan M: Current perspectives in infectious keratitis. Indian Journal of Ophthalmology, 42 (4): 171 - 192, December 1994.
18. **Biswas J**, Gopal L, Sharma T and Badrinath SS: 'Intraocular Gnathostoma Spinigerum - Clinicopathological Study of Two Cases with Review of Literature' - Retina - 14:438-444, 1994.
19. **Biswas J**, Madhavan HN, Gopal L & Badrinath SS: Clinical features and virologic studies in viral retinitis. Indian Journal of Ophthalmology 43: 63-68, 1995.
20. **Biswas J**, Madhavan H N and Badrinath SS: Ocular lesions in AIDS: A report of first two cases in India. Indian Journal of Ophthalmology 43: 69-72, 1995.
21. Das D, **Biswas J**, and Ganesh SK: Pattern of uveitis in a referral uveitis clinic in India. Indian J Ophthalmol: 43:117-121, 1995.
22. **Biswas J**, Neelakantan A, Rao BS: Adenoma of nonpigmented epithelium of ciliary body presenting as anterior uveitis and glaucoma. Indian J Ophthalmol, 43:137-140, 1995.
23. **Biswas J**, Shanmugam MP and Gopal L: Malignant melanoma of the choroid in association with oculodermal melanocytosis - A case report. Ind J Ophthalmol, 43:140-141, 1995.
24. Gopal L, Badrinath SS, Sharma T, Parikh S and **Biswas J**: 'Patterns of Retinal Breaks and Retinal Detachments in Eyes with Choroidal Coloboma'. Ophthalmology, 102:1212-1217, 1995.
25. **Biswas J**, Madhavan H N, Gopal L & Badrinath S S: Intraocular tuberculosis. Retina, 15:461-468, 1995.
26. Madhavan HN, **Biswas J**, Gopal L, and Sharma T: Investigations in the virological aetiology of acute retinal inflammation. Indian J Med. Res. 101:233-237, 1995.
27. **Biswas J**, Chandran TC, Natarajan G: Periorbital giant congenital melanocytic nevus with malignant changes - A clinicopathological study. Orbit, Vol.15, No.1, 1996.

28. Sharma T, Bhende PS, Parikh S, Gopal L, **Biswas J**, and Badrinath SS: Removal of silicone oil and epimacular proliferation from eyes following vitrectomy. *Ophthalmic Surgery and Laser*, Vol.27, No.3, 192-196, 1996.
29. **Biswas J**, Shanmugam MP, Parikh S, Patwardhan D, Badrinath SS: Retinoblastoma in adults - Report of two cases with histopathological correlation. *Asia Pacific J Ophthalmol*, 8:14-18, 1996.
30. **Biswas J**, Fogla R, Srinivasan N, Narayan S, Haranath K, Badrinath V: Clinical and Histopathological findings of ocular malaria - A study of three cases. *Ophthalmology* 103:9:1996.
31. **Biswas J**, Badrinath SS: Ocular morbidity in patients with active systemic tuberculosis. *International Ophthalmology*. 19:293-298, 1996.
32. **Biswas J**, Fogla R: Sympathetic Ophthalmia following Cyclocryotherapy - Report of a case with histopathological correlation. *Ophthalmic Surgery and Laser*. 27:1035-1308, 1996.
33. **Biswas J**, Fogla R, Madhavan HN: Bilateral Frosted Branch Angiitis in an 8-year-old Indian girl. *Retina*. 16: 444 - 445,1996
34. Marion Maw, Bibhas Kar, **Biswas J**, Partha Biswas, Derek Nancarrow, Robyn Bridges, Govindasamy Kumaramanickavel, Micheal Denton, and S.S. Badrinath: Linkage of blepharophimosis syndrome in a large Indian padigree to chromosome 7P. *Human Molecular Genetics*. 5:2049-2054,1996.
35. **Biswas J**, Dutta M, Subramaniam N: Mucoepidermoid carcinoma of the conjunctiva of the lower lid. *Ind J Ophthalmol*. 44:231-233,1996.
36. Badrinath SS, Sharma T, **Biswas J**, Srinivas V: A case control study of senile cataract in a hospital based population. *Ind J Ophthalmol* 44:212-217, 1996.
37. Joseph A, **Biswas J**, Sitalakshmi G, Gopal L, Badrinath SS: Surgical induced necrotising scleritis (SINS) - report of two cases. *Ind J Ophthalmol* 45:43-45, 1997.
38. Bhooma V, Sulochana K.N., **Biswas J**, Ramakrishnan S: Eales' disease: accumulation of reactive oxygen intermediates and lipid peroxides and decrease of antioxidants causing inflammation, neovascularization and retinal damage. *Curr. Eye Res*. 16:91-95, 1997.
39. **Biswas J**, Narain S, Roy S, Madhavan HN: Evaluation of lymphocyte proliferation assay to purified protein derivative, enzyme linked immunosorbant assay and tuberculin hypersensitivity in Eales' disease. *Ind J Ophthalmol*. 45:93-97, 1997.
40. **Biswas J**, Narain S, Das D, Ganesh SK: Pattern of uveitis in a referral uveitis clinic in India. *International Ophthalmology*. *International Ophthalmology* 20:223-228, 1996.
41. Shanmugam MP, **Biswas J**: Fine needle aspiration biopsy in the diagnosis of intraocular mass lesions. *Ind J Ophthalmol* 45: 105-108, 1997.
42. Bhende PS, **Biswas J**, Madhavan HN: Serological Evidence for active Epstein-Barr virus infection in multifocal choroiditis. *Ind J Pathol Microbiol* 40(2):129-131, 1997.

43. **Biswas J**, Madhavan HN, Badrinath SS: Demonstration of herpes simplex virus from lens aspirate in healed acute retinal necrosis (ARN) syndrome. *Bri. J. Ophthalmol* Vol. 81, No.9 pp 802-803, 1997.
44. Shanmugam MP, Potter PD, Gopal L, **Biswas J**: Current concepts in the management of adult intraocular tumours. *Ind J Ophthalmol* 43;143-161, September, 1997.
45. **Biswas J**, Madhavan HN, Kumarasamy N, Solomon S: Blepharitis and lid ulcer as initial ocular manifestations in acquired immunodeficiency syndrome (AIDS) patients. *Ind. J. Ophthalmol.* 45;233-234, December, 1997.
46. **Biswas J**, Lily Therese, Kumarasamy N, Solomon S: Lid abscess with extensive molluscum contagiosum in a patient with acquired immunodeficiency syndrome (AIDS). *Ind. J. Ophthalmol.* 45;234-236, December, 1997.
47. **Biswas J**: Unilateral retinoblastoma in an adult. *Ophthalmology* Vol. 104, No. 11, pp. 1728, November, 1997 (Letter to Editor).
48. **Biswas J**, Souza CD, Shanmugam MP: Diffuse melanotic lesion of the iris as a presenting feature of ciliary body melanocytoma - Report of a case and reievw of the literature. *Survey of Ophthalmology* 42;4:1998.
49. **Biswas J**, Raizada S: Immunopathology of uveitis. *Ind J Lepr.* Vol. 70(1), 11-25, 1998.
50. **Biswas J**, Sulochana KN, Ramakrishnan S, Madhavan HN: Eales' disease – clinical and basic research at Sankara Nethralaya. *Uveitis Today (Proceedings of the Fourth International Symposium on Uveitis, Yokohama, Japan, 10-14 October, 1997)* pp 111-114, 1998.
51. **Biswas J**: Neovascularisation of optic disc (NVD) in a case of sympathetic ophthalmia (SO). *Uveitis Today (Proceedings of the Fourth International Symposium on Uveitis, Yokohama, Japan, 10-14 October, 1997)* pp 203-205, 1998.
52. **Biswas J**, Roy S, Ravishankar K: Recurrent scleritis in a patient with toxoplasmic retinochoroiditis. *Uveitis Today (Proceedings of the Fourth International Symposium on Uveitis, Yokohama, Japan, 10-14 October, 1997)* pp 223-226, 1998.
53. **Biswas J**, Therese L, Madhavan HN: Use of polymerase chain reaction (PCR) in the detection of *Mycobacterium tuberculosis* complex DNA from aqueous sample of suspected tuberculosis uveitis. *Uveitis Today (Proceedings of the Fourth International Symposium on Uveitis, Yokohama, Japan, 10-14 October, 1997)* pp 227-230, 1998.
54. **Biswas J**, Gopal L, Sharma T, Parikh S, Madhavan HN, Badrinath SS: Recurrent cryptococcal choroiditis in a renal transplant patient - Clinicopathological study. *Retina* 18(3):273-276, 1998.
55. Takeuchi S, Itoh N, Uchio E, Ohno S, Aoki K, Fajardo RV, Dy-Liacco JU, Madhavan HN, **Biswas J**: Surveillance of viral conjunctivitis in Asian countries. *Jpn J Ophthalmol.* 52(4);513-516, 1998.
56. Rajeev B, **Biswas J**: Molecular biologic techniques in ophthalmic pathology. *Ind J Ophthalmol.* 1998;46:3-13.

57. Rao S, Fogla R, **Biswas J**, Padmanabhan P: Corneo-scleral epithelial cysts: Evidence of developmental etiology. *Cornea* 17(4), pp. 446-450, 1998.
58. **Biswas J**, Mukesh BN, Narain S, Roy S, Madhavan HN: Profiling of human leukocyte antigen in Eales' disease. *Int Ophthalmol.* 21:277-281, 1998.
59. **Biswas J**, Mittal S, Ganesh SK, Shetty NS, Gopal L: Posterior scleritis: clinical profile and imaging characteristics. *Ind J Ophthalmol.* 46:195-202, 1998.
60. **Biswas J**: Practical suggestions in the writing of a research paper. *Ind J Ophthalmol.* 46:247-250, 1998.
61. John S, Sujana H, Suresh S, Swarnamani S, **Biswas J**, Gopal L: Ultrasonic characterization of malignant melanoma of choroid. *Ind J Ophthalmol.* 1998;46:153-157.
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63. Fogla R, **Biswas J**, Ganesh SK: Evaluation of cataract extraction in intermediate uveitis. *Ophthalmic Surgery and Lasers.* 30;191-198, 1999.
64. Badrinath SS, Gopal L, Sharma T, Parikh S, Shanmugam MP, Bhende P, **Biswas J**: Vitreoschisis in Eales' disease – pathogenic role and significance in surgery. *Retina* 19:51-54, 1999.
65. **Biswas J**, Joseph AE, Raizada S, Kumarasamy N, Solomon S: Ophthalmic manifestations of acquired immunodeficiency syndrome in India. *Ind J Ophthalmol.* 47:87-93, June 1999.
66. Wagle AM, **Biswas J**, Subramanian N, Mahesh L: Primary liposarcoma of the orbit – A clinicopathological study". *Orbit* 18(1):33-36, 1999.
67. **Biswas J**, Therese L, Madhavan HN: Use of polymerase chain reaction in detection of *Mycobacterium tuberculosis* complex DNA from vitreous sample of Eales' disease. *Br J Ophthalmol.* 1999;83:994 (Mail box)
68. **Biswas J**, Bhende P, Gopal L, Parikh S, Badrinath SS: Subconjunctival cyst following silicone oil injection – clinicopathological study of five cases. *Ind J Ophthalmol.* Vol. 47, No. 3, 177-180, September 1999.
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71. **Biswas J**, Ahuja VK, Shanmugam MP, Kurian R, Fernandez T. Malignant melanoma of the choroid presented as orbital cellulitis - Report of two cases with review of literature. *Orbit*. Vol. 18, No.2, 123-130, 1999.
72. Sulochana KN, **Biswas J**, Ramakrishnan S: Eales disease: increased oxidation and peroxidation products of membranes constituents chiefly lipids and decreased antioxidants enzymes and reduced glutathione in vitreous. *Current Eye Research*. Vol. 19, No.3, 254-259, 1999.
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74. Castelino AM, Rao SK, **Biswas J**, Gopal L, Madhavan HN, Kumar KS: Conjunctival rhinosporidiosis associated with scleral melting and staphyloma formation – diagnosis and management. *Cornea*. Vol. 19, (No.1), 30-33, 2000.
75. Rao SK, **Biswas J**, Rajagopal R, Sitalakshmi, Padmanabhan P. Ligneous conjunctivitis: a clinicopathologic study of 3 cases. *International Ophthalmology*. 22: 201-206, 1999.
76. Sharma T, **Biswas J**, John S. Management of suprachoroidal haemorrhage (SCH) in nanophthalmos. *Asia Pacific Journal of Ophthalmol*. Vol. 11, No.2, April 1999.
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