

VISION RESEARCH FOUNDATION
NEW NO.41 (OLD NO.18), COLLEGE ROAD, CHENNAI – 600 006



ANNUAL REPORT & AUDITED ACCOUNTS
2022-23



VISION RESEARCH FOUNDATION

Date: Septemeber 7, 2023

The Members of the Vision Research Foundation

NOTICE

NOTICE IS HEREBY GIVEN TO THE MEMBERS OF VISION RESEARCH FOUNDATION THAT THE 39TH ANNUAL GENERAL MEETING OF VISION RESEARCH FOUNDATION WILL BE HELD ON THURSDAY, THE 28TH SEPTEMBER 2023 AT 11.00 A.M. AT THE VRF BOARD ROOM IN THE 2ND FLOOR OF KAMALNAYAN BAJAJ RESEARCH CENTRE, VISION RESEARCH FOUNDATION, NEW NO.41 OLD NO.18, COLLEGE ROAD, CHENNAI – 600006. THE AGENDA FOR THE MEETING IS GIVEN BELOW.

AGENDA

1. To consider and adopt the Annual Report of the Hon. Secretary for the year 2022-23.
2. To consider and adopt the Audited Income and Expenditure Account for the year ended March 31, 2023 and the Balance Sheet as at that date together with the Report of the Auditors thereon.
3. To appoint statutory auditors for the financial year 2023-24 and to fix their remuneration.
4. To appoint the following Members to the Board of Management in the vacancies caused by retirement, who is eligible for re-appointment:

Name	Category of Membership
Mr. V Vaidyanathan	Founder Member
Dr. S Bhaskaran	Honorary Member
Dr. H N Madhavan	Honorary Member
Dr. J Biswas	Honorary Member
Dr. L Vijaya	Honorary Member
Mr. R Rajagopal	Donor Member
Dr. S Suresh	Donor Member

Kindly make it convenient to attend the meeting.

**DR S BHASKARAN
HON. SECRETARY**

Note:

Explanatory statement for Item 4 of the Agenda is attached.



VISION RESEARCH FOUNDATION

Explanatory Statement

Refer Item No 4 of the Agenda

The following members were appointed to the Board of Management for a period of three years at the 36th Annual General Meeting held on 30th December 2020:

Name

Mr. V Vaidyanathan
Dr. S Bhaskaran
Dr. H N Madhavan
Dr. J Biswas
Dr. L Vijaya
Mr. R Rajagopal
Dr. S Suresh

Their term of appointment expires at the end of the Annual General Meeting on 28.09.2023. As per 16(xiv) of the Bye-laws of the Foundation read with Section 15 (5) of the Tamil Nadu Societies Registration Act 1975, they are eligible for reappointment to the Board of Management.



VISION RESEARCH FOUNDATION

BOARD OF MANAGEMENT

Dr Ronnie Jacob George	President
Dr S Bhaskaran	Honorary Secretary

Members of the Board

Dr J Biswas	Member
Mr Homi C H Bhabha	Member
Dr H N Madhavan	Member
Mr R Rajagopal	Member
Dr T S Surendran	Member
Dr S Suresh	Member
Mr V Vaidyanathan	Member
Dr L Vijaya	Member

Director – Research	Dr. Ronnie Jacob George
Deputy Director – Research Manager	Dr. S Krishnakumar Mrs. Manjula R

Auditors	M/s S Viswanathan LLP Chartered Accountants, Chennai
----------	---

Bankers	HDFC Bank Ltd, Chennai – 600034 Indian Overseas Bank, Chennai – 600006 State Bank of India, Chennai –600034 State Bank of India, New Delhi. ICICI Bank Ltd, Chennai – 600034 Bank of Maharashtra, Chennai - 600006
---------	---

Registered Office	New No.41, Old No.18, College Road Chennai – 600 006
-------------------	---



VISION RESEARCH FOUNDATION

INSTITUTIONAL REVIEW BOARD (ETHICS COMMITTEE) MEMBERS

Chairman

Prof. H N Madhavan, M.D, Ph.D, FAMS, FICPATH
Director-Microbiology (Retd)
Medical Research Foundation

Member-Secretary

Dr. Ronnie Jacob George, M.S, D.O, D.N.B
President & Director-Research
Vision Research Foundation

Members

Dr. Bakulesh M. Khamar, M.S (Oph)
Prof of Ophthalmology (Retd.)
Gujarat University.

Dr. Manjula Datta, M.D D.C.H, M.Sc.
Epidemiol.(Ca), FRCP(Ed)
Scientific Director, Aspire

Dr. S Krishnakumar, M.D,
Deputy Director- Research
Vision Research Foundation

Dr. T S Surendran, D.O, M.Phil, FRCSEd
Vice Chairman, Medical Research Foundation

Prof. N Vizheenathan, M.A, Ph.D, Siromani, D.Litt
Professor & Head, Dept. of Sanskrit (Retd)
University of Madras.

Mrs. Radhika Krishnan, B.Sc, B.L
Advocate, Chennai.

Lion G V Raman, B.Com. FCA
Executive Chairman
Shriram Group of Companies

Dr. Rama Shankar Verma, M.Sc, M.Phil, Ph.D
Professor, Dept. Of Biotechnology (Retd.)
Indian Institute of Technology Madras.

Mrs. Sujatha Viswanath, M.Com
Chennai.



VISION RESEARCH FOUNDATION

RESEARCH CELL COMMITTEE MEMBERS

Dr. Ronnie George
Dr. M. Baskaran
Dr. R R Sudhir
Dr. Rajiv Raman
Dr. S Sudharshan
Dr. Partho Pratim Majumdar
Dr. Mona Khurana
Dr. Akshay Badakere
Dr. Krishna Kumar
Dr. S Sripriya
Dr. A R Anand
Dr. R Sharada
Dr. J Narayanan
Dr. Rashima A
Dr. Anuradha N
Dr. Srujana Chitipothu - Reserach Co-ordinator

INSTITUTIONAL BIOLOGICAL SAFETY COMMITTEE MEMBERS

Dr. S Krishnakumar
Dr. Srujana Chitipothu
Dr. S Sripriya
Dr. Sharada Ramasubramanyan



VISION RESEARCH FOUNDATION

ANNUAL REPORT FOR THE YEAR 2022-23

Report of the Hon. Secretary to the Members of the Foundation

I am pleased to present the 39th Annual Report of Vision Research Foundation together with the Audited Accounts for the year ended 31st March 2023.

Financial Performance :

The financial performance of the Foundation for the year 2022-23 is summarized below :

	Rs. In Lakhs	
	2022-23	2021-22
INCOME		
Donations	134.21	169.23
Interest Receipt & Misc.Income	44.19	51.64
Research Grant	360.58	375.59
Deferred Income	7.62	1.31
TOTAL INCOME	546.60	597.77
EXPENDITURE	612.56	718.06
Deficit before Depreciation	65.96	120.30
Depreciation	94.75	96.10
Net Deficit	160.71	216.40

The donations received during the year were Rs.134.21 lakhs when compared to Rs. 169.23 lakhs in the previous year and the research grant amounting to Rs.360.58 lakhs were received as against Rs.375.59 lakhs during the last financial year. The gross total income for the year under review was Rs.546.60 lakhs. The total expenditure before providing depreciation was Rs.612.56 lakhs resulting in a cash deficit of Rs.65.96 lakhs. After considering depreciation for the year amounting to Rs.94.75 lakhs, there was a net deficit of Rs.160.71 lakhs, which was carried over to the capital fund account.



VISION RESEARCH FOUNDATION

Cash Flow

Description	Rs. In Lakhs	
	2022-23	2021-22
Sources		
Opening Cash Balance	1,066.40	1,158.81
Cash Flow from Operations	-65.97	-120.30
Grant for Equipment	-16.33	34.05
Increase / Decrease in Current Liabilities	-30.54	17.59
Total Sources	953.56	1,090.15
Applications		
Investment - Capital Expenditure	78.50	6.29
Increase / Decrease in Current Assets	3.27	17.46
Total Applications	81.77	23.75
Closing Cash Balance	871.79	1,066.40

The foundation received a sum of Rs.360.58 lakhs as research grants, during the year under review as per the details given blow :

Research Grants – Basic Science	<i>Rs. in Lakhs</i>	
	2022-23	2021-22
1. Council of Science & Industrial Research	3.87	8.74
2. Indian Council of Medical Research	110.16	87.11
3. Department of Biotechnology	107.71	109.56
4. Department of Science & Technology	31.84	18.28
5. Fellowship Programme	75.19	72.30
6. Moorfields Eye Hospital, NHS Foundational Trust	21.59	75.81
7. Medgenome Labs Ltd	6.41	0.59
8. Ngee Ann Polytechnic	0.53	0.79
9. Others	1.13	1.16
Total	358.43	374.34
Clinical Science	2.15	1.25
Grand Total	360.58	375.59



VISION RESEARCH FOUNDATION

Research Activities:

Research activities during the financial year were satisfying. A number of projects were submitted to the various national and international funding agencies during the year.

During the financial year, 9 research projects and 7 individual fellowship projects were successfully completed and 3 projects submitted to the funding agencies have been approved.

Meetings:

During the year, the meetings of the Board of Management and Institutional Review Board (Ethics Committee)/Research Sub-Committee were conducted.

Manpower Details:

<u>Manpower</u>	<u>As on 31st Mar 2023</u>	<u>As on 31st Mar 2022</u>
Scientists	13	15
Part-time Scientists	55	61
Executives	4	4
Project Staff	13	40
Staff	11	14

Conclusion:

I would like to take this opportunity to place on record my gratitude for all the guidance extended to me by Dr. S S Badrinath, Founder Member; Dr. Ronnie Jacob George, President & Director – Research; and Dr. S Krishnakumar, Deputy Director – Research; and all the members of the Board of Management, and members of the Research Cell/Institutional Review Board (Ethics)/Institutional Biological Safety committees of Vision Research Foundation.

I would like to mention that the achievements/awards received by the scientists, details of completed & ongoing projects, and the articles published in the national and international journals are given separately.



VISION RESEARCH FOUNDATION

My thanks are also due to the Auditors, M/s. S Viswanathan LLP particularly to their partners, Mr. Chella K Srinivasan and Mr. R M Narayanan for their active and invaluable support and our Bankers, HDFC Bank Ltd, Indian Overseas Bank and State Bank of India for their support and co-operation.

I would like to thank the Internal Auditors, M/s. Sundar, Ranganath & Srinivasan, Chartered Accountants, for their active support in conducting internal audit of the Foundation.

The Board of Management places on record their appreciation of the invaluable contribution made by the Research Scientists, Consultants, para-medics and other employees to the continued success of the institution.

Dr S Bhaskaran
Hony. Secretary
Vision Research Foundation



VISION RESEARCH FOUNDATION

HONOURS & AWARDS

- ❖ Ms. Hemavathy Nagarajan received the "Best Poster Award" for her poster presentation entitled "Computational identification of peptidomimetic inhibitors targeting LIMK2-cofilin as a therapeutic modality for glaucoma" at the 28th Annual Meeting of Indian Eye Research Group, ARVO INDIA, ARVO International Chapter Affiliate held on 10th & 11th September 2022.
- ❖ Dr. R. N. Naresh Kumar received the "Prof S Krishnamoorthy Endowment Award for the year 2022" for the best outgoing Ph.D. Student in the 33rd Institutional Award Ceremony of Sankara Nethralaya held at Sri V.D.Swami Auditorium on 26.11.2022.
- ❖ Ms Sruthi Priya M received the Swarnalatha Punshi Best Researcher Award in Basic Science for the year 2022 for her research paper entitled, "MLN4924, neddylation inhibitor suppresses hypoxia induced retinal angiogenesis by targeting Human Antigen R signaling" at the 33rd Institutional Award Ceremony of Sankara Nethralaya held at Sri V.D.Swami Auditorium on 26th November 2022.
- ❖ Dr.S.Sripriya was selected as a DAC Member for PhD at the University of Madras, Taramani Campus, Chennai.
- ❖ Dr. S. R. Bharathidevi was appointed as the external expert member in the Board of Studies for MSc MLT in Clinical Chemistry at the Mahatma Gandhi Medical College & Research Institute, SBV Pillaiyarkuppam, Pondicherry.
- ❖ Ms. Krishna Haridas received the "BAYER-MEDHA Fellowship 2023" for a period of 3 years for perusing Ph.D.
- ❖ Dr. Sowmya Parameswaran, was honored with the "Best Women Science Award" at Holy Cross College, Trichy on 10th March 2023.



VISION RESEARCH FOUNDATION

RESEARCH PUBLICATIONS

International Journals:

- ❖ Dhiman R, Lakshmipathy M, Lakshmipathy D, K Lily T. "Clinico-microbiological Profile of Nontuberculous Mycobacterial Keratitis" *J Ophthalmic Vis Res.* 2022 Apr 29;17(2):160-169.
- ❖ Agarwal M, Patnaik G, Agarwal S, Iyer G, Anand AR, Ar G, Biswas J, Zierhut M. "Tuberculous Scleritis and Multidrug Resistance", *Ocul Immunol Inflamm.* 2022 May 19;30(4):915-924.
- ❖ Chatterjee A, Ansar S, Gopal D, Vetrivel U, George R, Narayanan J. "Elucidating the Therapeutic Potential of Cell-Penetrating Peptides in Human Tenon Fibroblast Cells" *ACS Omega.* 2022 May 3;7(19):16536-16546.
- ❖ Gore M, Tiwari A, Jahagirdar D, Narayanasamy A, Jain R, Dandekar P. "Three-dimensional spheroids of choroid-retinal vascular endothelial cells as an in-vitro model for diabetic retinopathy: Proof-of-concept investigation" *Curr Res Pharmacol Drug Discov.* 2022 May 21; 3:100111.
- ❖ Srinivasan S, Suresh S, Chendilnathan C, Prakash V J, Sivaprasad S, Rajalakshmi R, Anjana RM, Malik RA, Kulothungan V, Raman R, Bhende M. "Inter-observer agreement in grading severity of diabetic retinopathy in wide-field fundus photographs" *Eye (Lond).* 2023 Apr;37(6):1231-1235. Epub 2022 May 20.
- ❖ Gurudas S, Frudd K, Maheshwari JJ, Revathy YR, Sivaprasad S, Ramanathan SM, Pooleeswaran V, Prevost AT, Karatsai E, Halim S, Chandra S, Nderitu P, Conroy D, Krishnakumar S, Parameswaran S, Dharmalingam K, Ramasamy K, Raman R, Jones C, Eleftheriadis H, Greenwood J, Turowski P. "Multicenter Evaluation of Diagnostic Circulating Biomarkers to Detect Sight-Threatening Diabetic Retinopathy" *JAMA Ophthalmol.* 2022 Jun 1;140(6):587-597.
- ❖ Nagarajan H, Samdani A, Umashankar V, Jeyakanthan J. "Deciphering the conformational transitions of LIMK2 active and inactive states to ponder specific druggable states through microsecond scale molecular dynamics simulation", *J Comput Aided Mol Des.* 2022 Jun;36(6):459-482.
- ❖ Rainu S, Parameswaran S, Krishnakumar S, Singh N. "Dual-sensitive fluorescent nanoprobe for detection of matrix metalloproteinases and low pH in a 3D tumor microenvironment", *J Mater Chem B.* 2022 Jul 20;10(28):5388-5401.



VISION RESEARCH FOUNDATION

- ❖ Baranasic D, Hörtenhuber M, Balwierz PJ, Zehnder T, Mukarram AK, Nepal C, Várnai C, Hadzhiev Y, Jimenez-Gonzalez A, Li N, Wragg J, D'Orazio FM, Relic D, Pachkov M, Díaz N, Hernández-Rodríguez B, Chen Z, Stoiber M, Dong M, Stevens I, Ross SE, Eagle A, Martin R, Obasaju O, Rastegar S, McGarvey AC, Kopp W, Chambers E, Wang D, Kim HR, Acemel RD, Naranjo S, Łapiński M, Chong V, Mathavan S, Peers B, Sauka-Spengler T, Vingron M, Carninci P, Ohler U, Lacadie SA, Burgess SM, Winata C, van Eeden F, Vaquerizas JM, Gómez-Skarmeta JL, Onichtchouk D, Brown BJ, Bogdanovic O, van Nimwegen E, Westerfield M, Wardle FC, Daub CO, Lenhard B, Müller F. "Multiomic atlas with functional stratification and developmental dynamics of zebrafish cis-regulatory elements" *Nature Genet.* 2022 Jul; 54(7):1037-1050.
- ❖ Srinivasan S, Sivaprasad S, Rajalakshmi R, Anjana RM, Malik RA, Kulothungan V, Natarajan V, Raman R, Bhende M. "Early retinal functional alteration in relation to diabetes duration in patients with type 2 diabetes without diabetic retinopathy" *Sci Rep.* 2022 Jul 6;12(1):11422.
- ❖ Vincent A, Natarajan V, Khetan V, Krishnakumar S, Parameswaran S. "Retinoblastoma patient-derived stem cells-an in vivo model to study the role of RB1 in adipogenesis" *Histochem Cell Biol.* 2022 Aug;158(2):181-192.
- ❖ Duraikkannu D, Akbar AB, Sudharshan S, Poongulali S, Kumarasamy N, Jayavelu T, Chatterjee N. "Differential Expression of miRNA-192 is a Potential Biomarker for HIV Associated Immune Recovery Uveitis" *Ocul Immunol Inflamm.* 2023 Apr; 31(3):566-575. Epub 2022 Aug 10.
- ❖ G S, A S, Vetrivel U, Ayyakannu URN. "Chemoprofiling and insilico prioritization of bioactive compounds from *Laetiporus versisporus* (Lloyd) Imazeki reveals potential Bcl-2 inhibitor" *J Biomol Struct Dyn.* 2022 Aug 16:1-13.
- ❖ Amit, C., Ghose, V., Narayanan, J., Padmanabhan, P., Sathe, G., & Elchuri, S. (2022). "Phosphoprotein network analysis of corneal epithelium of keratoconus patients". *Proteomics*, 2022 Sep;22(18):e2100416..
- ❖ Maradani BS, Parameswaran S, Subramanian K. "Development and characterization of DNA aptamer against Retinoblastoma by Cell-SELEX" *Sci Rep.* 2022 Sep 28;12(1):16178.
- ❖ Subramaniam MD, Chirayath RB, Iyer M, Nair AP, Vellingiri B. "Mesenchymal stem cells (MSCs) in Leber's hereditary optic neuropathy (LHON): a potential therapeutic approach for future" *Int Ophthalmol.* 2022 Sep;42(9):2949-2964.



VISION RESEARCH FOUNDATION

- ❖ Gopal, D., Ramani, M., George, R., & Janakiraman, N. "Understanding the cellular response of human tenon fibroblast on polycaprolactone-Aloe vera blend fiber". *Journal of Biomaterials Applications*. 2022 Sep;37(3):375-388.
- ❖ Susarla G, Rizza AN, Li A, Han S, Khan R, Chan W, Lains I, Apivatthakakul A, Brustoski K, Khetan V, Raman R, Igo RP Jr, Iyengar SK, Mathavan S, Sobrin L "Younger Age and Albuminuria are Associated with Proliferative Diabetic Retinopathy and Diabetic Macular Edema in the South Indian GeNetics of DiAbeTic Retinopathy (SIGNATR) Study" *Curr Eye Res*. 2022 Oct;47(10):1389-1396.
- ❖ Alagappan LP, Ramaswamy Y, Sundaramoorthy DK, Bhaskar J, Sarangapani S, Sen P, Raman R, Bhende M, Mathavan S. "Association of HERPUD1 genetic variant rs2217332 with age-related macular degeneration and polypoidal choroidal vasculopathy in an Indian cohort" *Graefes Arch Clin Exp Ophthalmol*. 2023 Apr;261(4):1205-1212. Epub 2022 Oct 12.
- ❖ Sureshkumar, I., Jaganathan, S.S., Asokan, R., Sharada, R.. "Role of conjunctival ultraviolet autofluorescence device, as an indicator of ocular ultraviolet radiation exposure in pterygium and pinguecula among outdoor workers in Southern India". *International Journal of Community Medicine and Public Health*. Vol. 9 No. 10 (2022): October 2022
- ❖ John S, Srinivasan S, Ram K, Sivaprakasam M, Natarajan S. "Efficacy of an Automated Algorithm for Screening Diabetic Retinopathy in Gradable and Ungradable Images in Real-Time Conditions" *Telemed J E Health*. 2023 Jun;29(6):896-902. Epub 2022 Oct 12.
- ❖ Sureshkumar I, Gunalan V, Nareshkumar RN, Sripriya K, Ronnie G, Sharada R, Asokan R "Evaluating the impact of ocular UV exposure for the development for pseudoexfoliation syndrome in a South Indian population". *Clin Exp Optom*. 2022 Nov 14:1-7.
- ❖ Pauly M, Sruthi R, Subramanian K, Giridhar A. "Masson's tumor of the ocular surface - A rare clinical entity" *Oman J Ophthalmol*. 2022 Nov 2;15(3):370-372.
- ❖ Gopal D, Nagarajan H, Muthuvel B, Vetrivel U, George R, Janakiraman N. "Synthesis and Characterization of a Novel Peptide Targeting Human Tenon Fibroblast Cells To Modulate Fibrosis: An Integrated Empirical Approach" *ACS Pharmacol Transl Sci*. 2022 Nov 16;5(12):1254-1266.



VISION RESEARCH FOUNDATION

- ❖ Divya, G., Madhura, R., Khetan, V., Rishi, P., & Narayanan, J. "Understanding the mechano and chemo response of retinoblastoma tumor cells". *Open Nano*, Volume 8, November–December 2022.
- ❖ M.Bharathselvi, KN. Sulochana, R.Saravanan and J.Biswas. "Inflammation Mediated Alterations in The Iron Homeostasis of Eales' Disease." *Clinical Research Notes* Dec 2022.
- ❖ Raman R, Vasconcelos JC, Rajalakshmi R, Prevost AT, Ramasamy K, Mohan V, Mohan D, Rani PK, Conroy D, Das T, Sivaprasad S-SMART India Study Collaborators. "Prevalence of diabetic retinopathy in India stratified by known and undiagnosed diabetes, urban-rural locations, and socioeconomic indices: results from the SMART India population-based cross-sectional screening study" *Lancet Glob Health* 2022 Dec;10(12):e1764-e1773.
- ❖ Jeyalatha MV, Vetrivel U, Harinee R, Lakshmi D, Ganesan S, Biswas J, Anand AR. "Draft Genome Sequence of Mycobacterium tuberculosis Strain SNMICRO 2047-20, Isolated from Intraocular Infection", *Microbiol Resour Announc*. 2023 Jan 24;12(1):e0079122.
- ❖ Badrinarayanan L, Nagarajan H, Rishi P, Rishi E, George RJ, Chitipothu S. "Whole-genome sequencing unravels novel genetic determinants and regulatory pathways associated with triamcinolone acetonide-induced ocular hypertension", *Mol Genet Genomics*. 2023 Jan;298(1):13-26.
- ❖ Janani DM, Ramasubramanyan S, Chellappa V, Santhanam R, Manickam R, Shamel J, Balasundaram U. "Whole exome and targeted sequencing reveal novel mutations associated with inherited PCOS condition in an Indian cohort" *J Hum Genet*. 2023 Jan;68(1):39-46. Srinivasan R, Roy K, Mahesh M, Surya J, Raman R. "Anatomical and Functional Outcomes in Delayed Onset versus Concurrent Retinal Detachment in Endophthalmitis" *Clin Ophthalmol*. 2023 Jan 7;17:115-121.
- ❖ Elangovan A, Venkatesan D, Selvaraj P, Pasha MY, Babu HWS, Iyer M, Narayanasamy A, Subramaniam MD, Valsala Gopalakrishnan A, Kumar NS, Vellingiri B. "miRNA in Parkinson's disease: From pathogenesis to theranostic approaches" *J Cell Physiol*. 2023 Feb;238(2):329-354.
- ❖ Agarwal S, Pandey S, Srinivasan B, Anand AR, Iyer G. "Possible Synergistic Role of Cryo-Alcohol Therapy in Infectious Scleritis-Scope and Rationale for Expanding Indications and Review of the Literature" *Cornea*. 2023 Feb 1;42(2):194-203.



VISION RESEARCH FOUNDATION

- ❖ Chen JJ, Flanagan EP, Pittock SJ, Stern NC, Tisavipat N, Bhatti MT, Chodnicki KD, Tajfirouz DA, Jamali S, Kunchok A, Eggenberger ER, Nome MAD, Sotirchos ES, Vasileiou ES, Henderson AD, Arnold AC, Bonelli L, Moss HE, Navarro SEV, Padungkiatsagul T, Stiebel-Kalish H, Lotan I, Wilf-Yarkoni A, Danesh-Meyer H, Ivanov S, Huda S, Forcadela M, Hodge D, Poullin P, Rode J, Papeix C, Saheb S, Boudot de la Motte M, Vignal C, Hacothen Y, Pique J, Maillart E, Deschamps R, Audoin B, Marignier R. "Visual Outcomes Following Plasma Exchange for Optic Neuritis: An International Multicenter Retrospective Analysis of 395 Optic Neuritis Attacks" *Am J Ophthalmol*. 2023 Feb 21;252:213-224. Online ahead of print.
- ❖ Ramasubramanyan S, Vetrivel U, Chitipothu S. "Virtual screening and multilevel precision-based prioritisation of natural inhibitors targeting the ATPase domain of human DNA topoisomerase II alpha Lenin B", *J Biomol Struct Dyn*. 2023 Mar 10:1-19.

National Journals:

- ❖ Subramanian K. "Commentary: A short-term chick embryo in vivo xenograft model to study retinoblastoma cancer stem cells" *Indian J Ophthalmol*. 2022 May;70(5):1712.
- ❖ Alam MS, Pal SS, Krishnakumar S. "Clinical and histopathological profile of primary caruncular lesions" *Indian J Ophthalmol*. 2022 Jun;70(6):1975-1981.
- ❖ Mohan S, Chawla G, Surya J, Raman R. "Response to comment on: Intravitreal anti-vascular endothelial growth factor with and without topical non-steroidal anti-inflammatory in centre-involving diabetic macular edema" *Indian J Ophthalmol*. 2022 Jun; 70(6):2209.
- ❖ Kandeegan S, Kandale K, Periyasamy P, Bhende M, Bhende P, Sinnakaruppan M, Sarangapani S. "Genetic testing in four Indian families with suspected Stickler syndrome" *Indian J Ophthalmol*. 2022 Jul;70(7):2578-2583
- ❖ Ratra D, Ozdek S, Raviselvan M, Elchuri S, Sharma T. "Approach to inherited retinal diseases" *Indian J Ophthalmol*, 2022 Jul;70(7):2305-2315.
- ❖ Krishnan JM, Rajagopal R, Lakshmiathy D, Agarwal S, Anand AR, Therese L, Thangam A, Madhavan HNR. "Role of polymerase chain reaction-based viral detection in pterygia" *Indian J Ophthalmol*. 2023 Feb;71(2):458-463.



VISION RESEARCH FOUNDATION

BOOK CHAPTERS

- ❖ Natarajan, S.N., Gnanasekaran, H., Kandeegan, S., Sundaramurthy, S. and Sripriya, S., 2022. An Overview on the Genetic Etiology, Testing, and Therapeutic Options for Retinitis Pigmentosa. *Genetics of Ocular Diseases*, p.143
- ❖ Ramya Ravi and Bharathidevi Subramaniam Rajesh, Advanced glycation end product induced endothelial dysfunction through ER stress: Unraveling the role of Paraoxonase 2. Published with Intech Open's Jul 2022.



VISION RESEARCH FOUNDATION

COMPLETED PROJECTS

- ❖ Fluorescent Nanoprobes for Squamous cell carcinoma. A step towards developing a rapid tool for Margin clearance. [Dr. Krishnakumar S]
- ❖ Screening of mitochondrial transfer and epigenetic markers in Leber's hereditary optic neuropathy (LHON) cells for its protective effect from mitochondrial dysfunction. [Dr. S. Mohana Devi]
- ❖ Mesenchymal stem cell mitochondrial transfer effectively protects mutant Leber's Hereditary Optic Neuropathy (LHON) cells from mitochondrial damage: Molecular and epigenetic screening of LHON patients. [Dr. S. Mohana Devi]
- ❖ Analysis of protective effect of Mesenchymal stem cell mitochondrial transfer on mutant Leber's Hereditary Optic Neuropathy (LHON) cells from mitochondrial damage [Dr. S. Mohana Devi]
- ❖ Impact of ultra-violet radiation and air pollution on ocular health with emphasis on cataract and pterygium among outdoor workers [Dr. Sharada R]
- ❖ Genome-wide Transcriptome profiling of Human Retinal Cells under diabetic milieu under the context of Egr-1 expression towards deciphering alternative pathways mediating Retinal Angiogenesis. [Dr. Sharada Ramasubramanyan]
- ❖ Smart Polycaprolactone (PCL) Peptide Composite nanofibres for sustained release of 5 Fluoro uracil to modulate wound healing in glaucoma surgery [Dr. J. Narayanan]
- ❖ Injectable self-assembled bruch's membrane mimetic nanofibers for retinal pigment epithelium [Dr. Sowmya P]
- ❖ Rational Design of novel peptide inhibitors targeting DNA-Topoisomerase-II-Beta through virtual screening of combinatorial peptide libraries and in vitro validation of anticancer efficacies [Dr. Srujana Chitipothu]

Individual Fellowship:

- ❖ Longitudinal assessment of retinal structural and functional changes in individuals with diabetes, with and without diabetic retinopathy. Wellcome Trust/DBT Early Career Fellowship [Dr Sangeetha Srinivasan; Supervisor: Dr Muna Bhende]



VISION RESEARCH FOUNDATION

- ❖ A study on genetic regulatory region in DIO3 gene for possible correlation with varying clinical severity in LCA patients. [Dr. N N Srikrupa; Mentor: Dr.S. Sripriya]
- ❖ Development of a novel serological “point -of - care device” to detect AQP-4 antibodies for the differential laboratory diagnosis of neuromylitisoptica (NMO). [Dr. M. Vimalin Jeyalatha; Mentor: Dr. K. Lily Therese]
- ❖ Delineating the importance of Neddylation, an ubiquitin-like molecule in maintenance of blood retinal barrier integrity and its function. [Ms. Sruthi Priya, Mentor: Dr. R. Sharada]
- ❖ Profiling the promoter methylation status of the candidate genes for ocular quantitative traits in primary glaucoma patients. [Ms. Sukanya K; Mentor: Dr. S. Sripriya]
- ❖ Downstream functional analysis and validation of single nucleotide polymorphism associated with Triamcinolone-acetonide and Dexamethasone-induced ocular hypertension among Indian subjects. [Ms.Lakshmi B; Mentor: Dr.Srujana Chitipothu]
- ❖ Modeling cancers associated with RB1 mutation using human induced pluripotent stem cells [Ms. Ambily Vincent; Mentor: Dr. Sowmya Parameswaran]



VISION RESEARCH FOUNDATION

ONGOING PROJECTS

- ❖ Metabolomic biomarker identification from serum of non-infectious and infectious Uveitis patients [Dr.Jyotirmay Biswas]
- ❖ Ocular Biological Senescence evaluation and science study (OBSESS) [Dr. Nivedita Chattarjee]
- ❖ Controlling immunosuppressive properties of T regulatory cells with retinal glia: implications for tubercular uveitis [Dr. Nivedita Chattarjee]
- ❖ RNA guided Nucleases targeted genome editing for retinitis Pigmentosa [Dr. Sowmya Parameswaran]
- ❖ Generation of oligodendrocytes from induced pluripotent stem cells: A step towards cell based therapy for demyelinating diseases [Dr. Sowmya Parameswaran]
- ❖ Artificial Intelligence for Affordable Screening and Prediction of Diabetic Retinopathy in the Framework of Big Data (Dr.Rajiv Raman)
- ❖ In silico conformational analysis and design of inhibitors targeting LIM kinases in cancer [Dr.Srujana Chitipothu]
- ❖ Evaluation of novel cell-penetrating peptide inhibitors targeting Neuronal Protein 3.1 (P311) in ocular fibrosis using 3D model of Tenon' capsule fibroblasts [Dr. Sharada Ramasubramanyan]
- ❖ Epitranscriptomics of N6-methyl adenosine (m6A) occupied mRNAs in hypoxia-Induced retinal endothelial cells: Implications in intraocular vascular diseases. [Dr. Sharada Ramasubramanyan]
- ❖ To delineate the role of Zinc alpha 2 glycoprotein as a novel target in diabetic retinopathy [Dr. S. R. Bharathidevi]
- ❖ To decipher the therapeutic potential of paraoxonase in modulating pericyte loss in relevance to diabetic retinopathy. [Dr. S. R. Bharathidevi]
- ❖ Does Hyperglycemia Alter Copper Homeostasis in Diabetic Retinopathy? [Dr. S R Bharathidevi]
- ❖ Genotype Analysis of Selected Pediatric Retinal Dystrophies (PRDs) and the Phenotype Correlations: A possible genotype based prediction model. [Dr Sinnakaruppan Mathavan]



VISION RESEARCH FOUNDATION

- ❖ Identify of miRNA biomarkers between anti-VEGF responders and non-responders of PDR and diabetes without DR. [Dr. Sinnakaruppan Mathavan]
- ❖ In Search of the causative genetic/ molecular events in Bardet Biedl Syndrome patients excluded for mutations in candidate genes.[Dr.S Sripriya]
- ❖ A study on the DNA methylation pattern of the ocular quantitative trait loci/ genes in primary open angle glaucoma [Dr.S Sripriya]

Individual Fellowship:

- ❖ Molecular and epigenetic screening of Leber's Hereditary Optic Neuropathy(LHON) [Ms. Aswathy P Nair; Mentor: Dr. S Mohana Devi]
- ❖ Studying HIV Mediated Changes at Blood Retinal Barrier on an in vitro Model [Ms. Kamini Khatak; Mentor: Dr. Nivedita Chattarjee]
- ❖ In silico conformational analysis and design of inhibitors targeting LIM kinases in cancer" [Ms.Hemavathy N; Mentor – Dr.Srujana Chitipothu & Dr.J.Jeyakanthan Alagappa University]



VISION RESEARCH FOUNDATION

PARTICIPATION IN CONFERENCES

- ❖ Dr M Bharathselvi attended a webinar on "Characterization of Biologics and Complex substances by using Light Scattering" on 6th July 2022.
- ❖ Dr M Bharathselvi attended a webinar on "Improving the Quality of your Chromatography Data by Implementing Sample Prep Techniques" on 11th July 2022.
- ❖ Dr. M.Bharathselvi attended the workshop on "Clinical Diagnostics highlighting the importance of Mass Spectrometry " at Spinco Towers on 28th July 2022.
- ❖ Dr.S.Sripriya attended the KOVEYE 2022 - the 69th Annual Conference of Tamil Nadu Ophthalmic Association at Coimbatore from 5th to 7th August 2022 at Coimbatore on 7th August 2022 and she made a presentation on "Genetic Screening for Inherited Ophthalmic Diseases.
- ❖ Mr. Prakash and Dr. Shyam Sundar participated in the DATACON 2022 (2nd Edition of the Annual Conference of the International Association for Healthcare Data Analytics (IAHDA) Workshop organised by The Sankara Nethralaya Academy on 27th August 2022.
- ❖ Dr.S.Sripriya, Dr. S. R. Bharathidevi, Dr.J.Narayanan Dr. M. Bharathselvi, Dr. J. Shyam Sundar Ms. Rizza A.N, Ms. Lakshmi Priyanka AL, Ms Krishna Haridas, Ms Afrin J Fathima, Ms Aswathy P Nair, Dr. Lakshmi B, Ms Hemavathy Nagarajan, Ms.Jayavigneshwari, Mr Rajesh Nagarajan and Ms Lavanya Easwaran, attended the 28th Indian Eye Research Group (IERG) – ARVO 2022 held at LV Prasad Eye Institute, Hyderabad from 10th to 11th September 2022.

In the conference, the oral presentations were made by Ms. Rizza A.N on "Epigenetic Biomarker in Diabetic Retinopathy Cohorts of a South Indian Population", Dr. S. R. Bharathidevi on "In Silico design and development of mutated PON2 by site directed mutagenesis and assessment of its function in In Vitro Cell Model of HRECS upon CML treatment", Dr. Lakshmi B on "Frequency, Risk Factors, and Genetic determinants associated with Intravitreal Steroid-induced Ocular Hypertension"; Dr. J. Narayanan on "Mechanobiological Investigations on Corneal epithelial cells and Keratoconus as a model system" and Ms Lavanya Easwaran on "Microfluidics of t regulatory cells and tubercular uveitis (TBU).

Poster presentations were made by Ms. Lakshmi Priyanka AL on "Genotype and Phenotype Correlation in Polypoidal Choroidal Vasculopathy in Indian Population", Ms Krishna Haridas on "Metabolomic Biomarkers in Human Ophthalmic Disease: A Systematic Review", Ms Afrin J Fathima on



VISION RESEARCH FOUNDATION

"Promoter deletions in TTC8 gene segregates with disease in two unrelated Bardet Biedl syndrome cases from India", Ms. Aswathy P Nair on "A study on the protective effect of mitochondria in Leber's Hereditary Optic Neuropathy (LHON)"; Dr. M. Bharathselvi on "Inflammation mediated alterations in the iron homeostasis of Eales' Disease", Dr. J. Shyam Sundar on "The impact of air pollution and UV exposure on ocular surface among outdoor workers in South Indian population – A Prospective Study", Ms Hemavathy Nagarajan on "Computational identification of peptidomimetic inhibitors targeting LIMK2-cofilin as a therapeutic modality for glaucoma"; Ms. Jayavigneshwari on "Synthesis and characterization of natural biomaterial composite nanofibers for ocular drug delivery systems" and Mr Rajesh Nagarajan on "Comparison of corneal endothelial cells and power parameters between HIV positive patients on ART and normal patients with age related macular degeneration".

- ❖ Ms Kamini Khatak and Ms Lavanya Easwaran participated in the 44th All India Cell Biology Conference and International Symposium, organized by the Dept. of Biochemistry, University of Kashmir at Srinagar, J&K, from 2nd to 3rd September, 2022.
- ❖ Dr.S.Sripriya attended the 1st International Global Eye Genetics Consortium (GEGC) (Hybrid) on 20th November 2022 held at Mumbai and she made a paper presentation on "Genetics Aspects of series of Retinal Detachment cases due to Stickler's syndrome".
- ❖ Dr.S.Mathavan attended in the 1st International Congress of "Global Eye Genetics Consortium" (Hybrid) held on 19th & 20th November 2022 at Mumbai. He gave an invited talk on "Genetics of Diabetic Retinopathy in the South Indian Population".
- ❖ Ms Hemavathy Nagarajan participated in the "2nd International Conference cum Workshop on "Recent Trends in Structural Bioinformatics and Computer Aided Drug Design"[ICSBCADD'2022]" at Alagappa University, Karaikudi from 21st to 25th November 2022. She gave a presentation on "Microsecond molecular dynamics simulations probing the conformational landscape of LIMK1"
- ❖ Dr. M. Bharathselvi participated in the Spinco workshop "5th National Conference on Frontiers in MS Technology and Emerging Applications" on 24th November 2022.
- ❖ Mr. Kishore attended a "Workshop on Chick Embryo: An emerging preclinical animal model for cancer research" held at the School of Medical Sciences, University of Hyderabad from 8th to 9th December 2022.



VISION RESEARCH FOUNDATION

- ❖ Dr. S. R. Bharathidevi and Mr. Prakash U attended the 45th All India Cell Biology Conference and International Symposium on Biology of Development Diseases organized by the Department of Zoology, Banaras Hindu University, Varanasi, on 20th to 22nd January 2023. Dr. S. R. Bharathidevi made a poster presentation on "Understanding Cellular and Molecular signalling of copper in retinal diseases with vascular dysfunction" and Mr. Prakash on "Zinc Alpha 2 glycoprotein is augmented by hyperglycemia in retinal cells".
- ❖ Dr. Sowmya Parameswaran attended the Research in Progress Seminar Series at Sri Ramachandra Medical College, Chennai, on 9th February 2023. She gave a presentation on "Patient derived induced pluripotent stem cells for modelling retinoblastoma"
- ❖ Dr.S.Mathavan participated in the "International Conference on Consortium of Universal Research Erudition - (ICURE)" held at Madurai Kamaraj University, Madurai, from 3rd to 6th March, 2023. He gave an invited talk on "Genomic biomarkers for diabetic retinopathy of south Indian cohorts".
- ❖ Dr S Mathavan attended the International Conference on Biotechnology at the Rajalakshmi Engineering College, Chennai, on 11th March, 2023 and delivered an invited lecture on "Biotechnology Teaching and Research: A motivational talk to students".
- ❖ Dr S Bharathi Devi attended webinars on "Inside cell culture today issue and improve handling of your frozen samples"; "Multiplexing IHC webinar and showing interest in antibodies, fluorophore and evos microscope"; "How to design successful immunohistochemistry"; "Cytosmart cell counter"; "Understanding RNA sequence analysis : a beginners guide" and "Good culture for your cells-preventing contamination".



VISION RESEARCH FOUNDATION

DISTINGUISHED VISITORS

- ❖ Dr. Pala B Rajesh, Vice President, Royal College of Surgeons of Edinburgh, UK, visited our foundation on 4th April 2022 and his comments were "Hoping to establish long term relationship".
- ❖ Dr. Rajiv Janardhanan, Dean (Research), Faculty of Medical & Health Sciences, SRM Institute of Science & Technology, Chengalpattu, and his team visited our foundation on 30th April 2022.
- ❖ Mr. Christoph Vonwiller, Regional Vice President of Surgical Vision Asia Pacific, Johnson & Johnson Vision, Japan, visited our foundation on 21st July 2022.
- ❖ Dr. Madhan Jeyaraman & his team from Sri Lalithambigai Medical College, Chennai, visited our laboratories on 24th August 2022.
- ❖ Dr. Patrick L Green, Professor and Associate Dean for Research and Graduate Studies, Ohio State University, visited our foundation and laboratories on 29th August 2022 and he gave an invited talk on "Retroviruses and Cancer" at Sri V.D.Swami Auditorium.
- ❖ Dr. Jun Hyung Park, Chief Executive Officer, 3BIGS Company Ltd (Korean-based Bioinformatics company) visited the research laboratories on 30th August 2022.
- ❖ Dr. Jayant V Iyer, Senior Consultant and Medical Director at The Straits Eye Centre, Singapore visited our foundation and research laboratory on 6th September 2022 to observe the facility.
- ❖ Prof. Mike McGuckin, Deputy Dean, Faculty of Medicine, Dentistry and Health Sciences, Prof. Dirk Strugnell, Microbiologist and Immunologist, School of Biological Sciences and Prof. Peter Doherty Institute, Associate Prof. Chris Waterworth, School of Health Sciences. Dr Vidyasagar Head, Visual & Cognitive Neuroscience Laboratory, University of Melbourne visited the research laboratories on 12th September 2022
- ❖ Ms.Amanda Edgar, Senior Lecturer, Learning Spaces Innovation, Deakin University, Australia, visited the research laboratories on 27th September 2022.
- ❖ Dr. Natalia Ramon Brim & Dr. Carlos Aguero, from National University of Tucuman, Argentina visited our foundation and research laboratories on 13th October 2022 to observe the facility.



VISION RESEARCH FOUNDATION

- ❖ Dr Shantanu Pradhan, Dr. Greeshma Thiruvikraman, and their students from IIT Madras visited the nanobiotechnology lab on 18th October 2022
- ❖ Dr. Nirmal Joe, Sr. Regional Director & Dr. Gopinath from Ministry of Health & Family Welfare, Government of India, Chennai, visited the research laboratories on 20th January 2023 to observe the facility.
- ❖ Col. Madan Deshpande from Sewa Sadan Eye Hospital, Bhopal visited our research laboratories on 20th January 2023. His comments were "Real research. We are lucky to have such leading facility available in the country".
- ❖ Lieutenant General A Arun, General Officer Commanding (GOC), Dakshin Bharat Area, Indian Army visited our foundation on 10th February 2023. He gave an inspirational talk on "The Power of I...".