OMB No. 0925-0001 and 0925-0002 (Rev. 10/15 Approved Through 10/31/2018)

BIOGRAPHICAL SKETCH
DO NOT EXCEED FIVE PAGES.

NAME: Mary J. Mattapallil

eRA COMMONS USER NAME (credential, e.g., agency login): mattapallilm

POSITION TITLE: Staff Scientist (Title 42)

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Kerala Agricultural University, Kerala, India	B.V.Sc. & A.H	07/1990	Veterinary Science & Animal Husbandry
Kerala Agricultural University, Kerala, India	M.V.Sc	08/1992	Animal Breeding & Genetics
Jawaharlal Nehru University, New Delhi, India	Ph.D	09/1996	Molecular Genetics
University of Maryland University College, Maryland, USA	Graduate Certificate (Bioinformatics)	05/2007	Bioinformatics
National Eye Institute, NIH	Post doctoral Fellow	05/2006	Immunology

A. Personal Statement

For the past 15 years I have been actively engaged in research that is focused on delineating the genetic factors involved in the regulation of autoimmune uveitis in Dr. Caspi's lab. I have established the "humanized" mouse model of Experimental Autoimmune Uveitis (EAU) and uncovered the role of human MHC class II genes in susceptibility to autoimmune uveitis directed against retinal antigens. I have been engaged in translational research contributing to our understanding of retinal antigen specific immune responses in uveitis patients, in collaboration with clinicians from NEI Clinical Center. I have extensive experience in antigen specific cell culture assays and flow cytometry techniques using HLA tetramers. In addition, I have a Graduate degree certificate in Bioinformatics from UMUC, MD and a six weeks training course in Bioinformatics at NCBI/NIH as a CoreBio support person for NEI. I have served as the NEI CoreBio support specialist for the past 10 years, supporting researchers within and outside NEI for their bioinformatics needs, and have extensive experience in using various bioinformatic tools for analyzing metagenomics data especially using the Nextgeneration Sequencing technology. My first hand experience of various techniques outlined in this proposal will enable me to successfully undertake the goals of this proposed project.

B. Positions and Honors

Positions and Employment

1992 – 1995 Senior Research Fellow, Jawaharlal Nehru University, New Delhi, India
1995 – 1996 Assistant Professor, Veterinary College, Kerala Agricultural Univ., India
2000 – 2000 Post Graduate Researcher, UC DAVIS, CA
2001 - 2006 Post Doctoral Fellow, NEI, NIH
2006 – 2009 Research Fellow, NEI, NIH
2009 – present Staff Scientist, NEI, NIH

Other Experience and Professional Memberships

2006- Adhoc Reviewer for several journals in the filed of Immunology and Ophthalmology
2006- NIH – Office of Intramural Training and Education – Judge for posters and abstracts
2007- NCBI's CoreBio Team as Bioinformatics support person for NEI
2009- Animal Care and User Committee member
2009- NEI Core facilities User Committee
2009- Organizer and moderator of Journal clubs for Summer Internees
2010 - ARVO member (The Association for Research in Vision and Ophthalmology)

Honors

2014 NIH Director's award – Member of the rd8 mutation discovery team
2012 NEI Director's Team award for outstanding membership of African American, Latino, and Native American students in Vision Research and Ophthalmology
2011 NEI Director's Individual award for scientific excellence, outstanding mentorship, and service to scientific community
2006 through 2015 Performance award for each year
2006 Fellows Award For Research Excellence (FARE), NIH
2004 "The Experimental Uveitis Research Award" Awarded for work entitled "An immunologically privileged retinal antigen elicits tolerance: major role for central selection mechanisms".
1990 Jawaharlal Nehru Memorial award for securing highest Overall GPA in Veterinary Medicine & Animal Husbandry
1984 through 1990 Merit Scholarship each year, Kerala Agricultural Univ. India
1982 through 1984 National Merit Scholarship, Govt. of India

C. Contribution to Science

1. John, M. V., Parwez. I., Sivaram, M.V.S., Mehta, S., Marwah, N. and Ali, S. (1996). Analysis of VNTR loci in the fish genome using synthetic oliogodeoxy ribonucleotide probes. Gene 172: 191-197.
2. John, M. V., and Ali, S. (1997). Synthetic DNA based genetic markers reveal intra and interspecies DNA sequence variability in the Bubalus bubalis and related genomes. DNA and Cell Biology 16 (3):369-378.
3. Mattapallil, M. J., and Ali, S. (1998). Parentage assessment of an IVF calf from Bubalus bubalis by DNA fingerprinting. Gene 206 (2):209-214.
4. Mattapallil. M.J, and Ali, S. (1999). Analysis of conserved microsatellite sequences suggest a closer relationship between water buffalo Bubalus bubalis and sheep Ovis aries. DNA and Cell Biology 18(6):513-9.
5. Mattapallil, M. J*., Pennesi,G*., Sun, S., Avichezer, D., Silver, P. B., Karabekian, Z., David, C. S.,Hargrave,, P. A., McDowell, J. H., Smith, W. C., Wiggert, B., Donoso, L. A., Chan, C. C and Caspi,R. R. (2003). A humanized model of experimental autoimmune uveitis in HLA Class II TransgenicMice. Journal of Clinical Investigation 111 (8): 1171-1180. *contributed equally to the manuscript
6. Avichezer, D., Grajewski, R. S., Chan, C. C., Mattapallil, M. J., Silver, P. B., Raber, J. A., Liou, G. I., Wiggert, B., Lewis, G. M., Donoso, L. A. and Caspi, R. R. (2003). An immunologically privileged retinal antigen elicits tolerance: a major role for central selection mechanisms. The Journal of Experimental Medicine 198 (11) 1665-1675.
7. Liang, W., Karabekian, Z., Mattapallil, M., Xu, Q., Viley, A.M., Caspi, R. and Scott, D.W. (2006). B cell delivered gene transfer of human S-Ag-Ig fusion protein protects from experimental autoimmune uveitis. Clinical Immunology 118: 35-41.
8. Mattapallil, M. J., Augello, A., Cheadle, C., Teichberg, D., Becker, K.G., Chan, C. C., Mattapallil, J.J., Pennesi, G. and Caspi, R.R. (2008). Differentially expressed genes in MHC-compatible rat strains that are susceptible or resistant to experimental autoimmune uveitis. Invest. Ophthalmol. Vis. Sci. 49(5): 1957-1970.
9. Caspi, R.R., Silver, P.B., Luger, D., Tang, J., Cortes, L.M., Pennesi, G., Mattapallil, M.J., and Chan,C.C. (2008). Mouse models of experimental autoimmune uveitis. Ophthalmic Res. 40(3-4): 169-174.
10. Cortes, L.M., Mattapallil, M.J., Silver, P.B., Donoso, L.A., Liou, G.I., Zhu, W., Chan, C.C., and Caspi, R.R. (2008). Repertoire analysis and new pathogenic epitopes of IRBP in C57BL/6 (H-2_b) and B10.RIII (H-2^r) mice. Invest. Ophthalmol. Vis. Sci. 49(5): 1946-1956.
11. Mattapallil, M. J., Sahin. A., Silver, P.B., Sun, S. H., Chan, C.C., Remmers, E.F., Hejtmancik, J.F., and Caspi,

R.R. (2008). Common genetic determinants of uveitis shared with other autoimmune disorders. J. Immunol. 180(10): 6751-6759.

12. Cortes, L.M., Avichezer, D., Silver, P.B., Luger, D., Mattapallil, M.J., Chan, C.C., and Caspi, R.R. (2008). Inhibitory peptide analogs derived from a major uveitogenic epitope protect from anti-retinal autoimmunity by inducing type 2 and regulatory T cells. J, Leukoc. Biol. 84(2): 577-585.
13. Eberly, M.D., Kader, M., Hassan, W., Rogers, K.A., Zhou, J., Mueller, Y.M., Mattapallil, M.J., Piatak, M jr., Lifson, J.D., Katsikis, P,D., Roederer, M., Villinger, F., and Mattapallil, J.J. (2009). Increased IL-15 production is associated with higher susceptibility of memory CD4 T cells to simian immunodeficiency virus during acute infection. J Immunol. 182(3): 1439-1448.
14. Mattapallil, M.J., Silver, P.B., Mattapallil, J.J., Horai, R., Karabekian, Z., McDowell, J.H., Chan, C.C., James, E.A., Kwok, W.W., Sen, H.N., Nussenblatt, R.B., David, C.S., and Caspi, R.R. 2011. Uveitis associated epitopes of retinal antigens are pathogenic in the humanized mouse model of uveitis and identify autoaggressive T cells. J. Immunol. 2011, 187(4): 1977-1985. (Corresponding Author) (Cover page)
15. Zhou, R., Horai, R., Mattapallil, M.J., and Caspi, R.R. A new look at immune privilege of the eye: dual role for the vision-related molecule retinoic acid. J Immunol. 2011, 187(8):4170-7.
16. Zhou, R., Horai, R., Silver, P.B., Mattapallil, M.J., Zárate-Bladés, C.R., Chong, W.P., Chen, J., Rigden, R.C., Villasmil, R., and Caspi, R.R. The living eye "disarms" uncommitted autoreactive T cells by converting them to Foxp3(+) regulatory cells following local antigen recognition. J Immunol. 2012, 188(4):1742-50.
17. Mattapallil, M.J., Wawrousek, E.F., Chan, C.C., Zhao, H., Roychoudhury, J., Ferguson, T.A., and Caspi, R.R. (ARVO: 2nd most read article of FY2012) The Rd8 mutation of the Crb1 gene is present in vendor lines of C57BL/6N mice and embryonic stem cells, and confounds ocular induced mutant phenotypes. Invest Ophthalmol Vis Sci. 2012, 53(6):2921-7.
18. Kyger, M., Worley, A., Huan, J., McDowell, H., Clay Smith, W., Burrows, G.G., Mattapallil, M.J., Caspi, R.R., and Adamus, G. Effective arrestin-specific immunotherapy of experimental autoimmune uveitis with RTL: A prospect for treatment of human uveitis. Trans. Vis. Sci. Tech. 2013, 2(2).
19. London, A., Benhar, I., Mattapallil, M.J., Mack, M., Caspi, R.R., and Schwartz, M. Functional macrophage heterogeneity in a mouse model of autoimmune central nervous system pathology. J Immunol. 2013, 190(7):3570-8.
20. Horai, R., Silver, P.B., Chen, J., Agarwal, R.K., Chong, W.P., Jittayasothorn, Y., Mattapallil, M.J., Nguyen, S., Natarajan, K., Villasmil, R., Wang, P., Karabekian, Z., Lytton, S.D., Chan, C.C., and Caspi, R.R. Breakdown of immune privilege and spontaneous autoimmunity in mice expressing a transgenic T cell receptor specific for a retinal autoantigen. J Autoimmun. 2013, 44:21-33.
21. Chong, W.P., Horai, R., Mattapallil, M.J., Silver, P.B., Chen, J., Zhou, R., Sergeev, Y., Villasmil, R., Chan, C.C., and Caspi, R.R. IL-27p28 inhibits central nervous system autoimmunity by concurrently antagonizing Th1 and Th17 responses. J Autoimmun. 2014, 50:12-22.
22. Mattapallil, M.J., Silver, P.B., Cortes, L.M., St.Leger, A.J., Jittayasothorn, Y., Kielczewski, J., Moon, J.J., Chan, C.C., and Caspi, R.R. Characterization of a new epitope of IRBP that induces moderate to severe uveoretinitis in mice with H-2^b haplotype. Invest Ophthalmol Vis Sci. 2015, 56:5439-49.
23. Chong, W.P., Panhuys, N.V., Chen, J., Silver, P.B., Jittayasothorn, Y., Mattapallil, M.J., Germain, R., and Caspi, R.R. NK-DC crosstalk controls the autopathogenic Th17 response through an innate IFN-γ/IL-27 axis. Journal of Experimental Medicine. 2015, 212: 1739-52.
24. He, C., Yu, C.R., Mattapallil, M.J., Sun, L., Larkin, J., and Egwuagu,C. SOCS1-mimetic Peptide Suppresses Chronic Intraocular Inflammatory Disease (Uveitis). Mediators of Inflammation. 2016, 2016:2939370.
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27. Dambuza, I.M., He, C., Yu, C.R., Wang, R., Mattapallil, M.J., Wingfield, P.T., Caspi, R.R., and Egwuagu, C.E. IL-12p35 induces expansion of IL-10 and IL-35 expressing regulatory B cell (Bregs) and ameliorates autoimmune disease. Nature Communications. 2017 (Revision submitted).

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

1. **Bedside to Bench (B2B) – ORD/NIH** Mattapallil (Co-PI) FY2011-FY2013 ($200,000)
   "Development of antigen specific biomarkers for autoimmune uveitic disease"

2. **NIH Intramural Funding**