OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 01/31/2026)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Vivek, Sithara

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

POSITION TITLE: Assistant Professor in the Department of Laboratory Medicine & Pathology

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 DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| All India Institute of Medical Sciences (AIIMS), India | B.S | 07/2008 | Nursing |
| University of Minnesota, Minneapolis | MPH | 12/2012 | Biostatistics and Epidemiology |
| University of Minnesota, Minneapolis | Ph.D. | 05/2023 | Bioinformatics and Computational Biology |
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**A. Personal Statement**

**I am an Assistant Professor in the Department of Laboratory Medicine and Pathology at the University of Minnesota. My training is in bioinformatics and computational biology and my research expertise is in biomarkers of aging and age related diseases specifically in identifying novel blood biomarkers of AD/ADRD. For my Ph.D. dissertation, I developed a framework to integrate high dimensional omics data from blood and developed an interpretable machine learning model to predict dementia.** I have analyzed blood biomarker data from numerous epidemiological studies, including the Health and Retirement Study (HRS), Long Life Family Study (LLFS), Coronary Artery Risk Development in Young Adults (CARDIA) study and High School and Beyond (HS&B). I currently serve as Principal Investigator on the Center for Biodemography and Population Health (CBPH) USC/UCLA pilot grant to study “Deep learning-based blood transcriptome signatures associated with blood biochemical endotypes of Alzheimer’s disease and Alzheimer’s disease-related dementias”. I also currently serve as Principal Investigator on the NIA Biomarker Network Annual Pilot Project to measure neuronal-derived plasma Extracellular Vesicles (EVs) for measurement of dementia biomarkers. I bring a collaborative approach and strong student mentoring to research in translational science. I have extensive experience in statistical analysis of biomarker data from various clinical, experimental and epidemiological studies. In addition, I have experience in developing bioinformatics pipelines for next generation sequencing analysis such as RNAseq, DNA methylation, whole genome sequencing and microbiome sequencing. I have developed an interpretable machine learning model to integrate large-scale genetic variants, epigenetic and transcriptomics markers for dementia classification. With my expertise in analyzing high dimensional omics data, developing advanced machine learning models and partnership with experts in chronic kidney disease (CKD) in CARDIA and Framingham Heart Study (FHS), I aim to make significant scientific contributions to enable prevention and early identification of transition in albuminuria by understanding the molecular mechanisms of metabolic syndrome. This will enhance care and outcomes of patients suffering from chronic kidney diseases in the middle age.

Ongoing projects that I would highlight include:

**Deep learning-based blood transcriptome signatures associated with blood biochemical endotypes of**

**Alzheimer’s disease and Alzheimer’s disease-related dementias**

NIH/NIA P30AG017265 Subcontract to University of Southern California

Alzheimer’s Disease and Alzheimer’s Disease Related Dementias

Role: PI

07/01/23-6/30/24

**Neuronal-derived plasma Extracellular vesicles (EVs) for measurement of dementia biomarkers**

NIH/NIA R24AG054365 Subcontract to Regents of the University of Michigan

Network on Biomarker Collection and Measurement in Population Studies of Aging: 2022-2027

Role: PI

04/01/23-03/31/24

**B. Positions, Scientific Appointments, and Honors**

**Positions and Scientific Appointments**

**2023 - Assistant Professor, Department of Laboratory Medicine and Pathology, Medical School, University of Minnesota**

**2017-2023 Researcher/Computational Biologist, Department of Laboratory Medicine and Pathology, Medical School, University of Minnesota**

**2015-2017 Clinical Research Data Analyst, Clinical Informatics Shared Services, CTSI, University of Minnesota**

**2014-2015 Statistical Programmer Analyst, Division of Biostatistics and Informatics, Health Science Research, Mayo Clinic, Rochester, MN**

**2013 Research Trainee CTSA Metabolomics Core, Mayo Clinic, Rochester, MN**

**Honors**

**2023** Paul E. Strandjord Young Investigator Award, ACLPS

**2022** Paul E. Strandjord Young Investigator Award, ACLPS

2019 Career Enhancement Award, Brain Tumor Program University of Minnesota

**C. Contributions to Science**

**Statistical analysis and Bioinformatics support for multi-center clinical and epidemiological studies: Given my education and training in computational biology, biostatistics and epidemiology, I have provided statistical analysis and bioinformatics support for numerous clinical and epidemiological studies during my academic appointment. My research has been focused on identifying blood biomarkers that are associated with age related diseases such as diabetes and dementia.**

1. **Vivek S.**, Faul J, Crimmins EM, Thyagarajan B, Guan W. Explainable variational autoencoder (E-VAE) model using genome-wide SNPs to predict dementia. Under review in Journal of Biomedical Informatics.
2. Wang S, Prizment A, Moshele P, **Vivek S**, Blaes AH, Nelson HH, Thyagarajan B. Aging measures and cancer: Findings from the Health and Retirement Study. medRxiv [Preprint]. 2023 Sep 23:2023.09.20.23295845. doi: 10.1101/2023.09.20.23295845. PMID: 37790462; PMCID: PMC10543046.
3. Panikkar, D., **Vivek, S.**, Crimmins, E., Faul, J., Langa, K. M., & Thyagarajan, B. (2023). Pre-Analytical Variables Influencing Stability of Blood-Based Biomarkers of Neuropathology. J Alzheimers Dis. doi:10.3233/jad-230384
4. **Vivek, S.**, Crimmins, E. M., Prizment, A. E., Meier, H. C. S., Ramasubramanian, R., Barcelo, H., . . . Thyagarajan, B. (2023). Age-related Differences in T-cell Subsets and Markers of Subclinical Inflammation in Aging Are Independently Associated with Type 2 Diabetes in the Health and Retirement Study. Canadian Journal of Diabetes. doi:https://doi.org/10.1016/j.jcjd.2023.05.01
5. **Vivek S**, Nelson HH, Prizment AE, Faul J, Crimmins EM, Thyagarajan B. Cross sectional association between cytomegalovirus seropositivity, inflammation and cognitive impairment in elderly cancer survivors. Cancer Causes & Control. 2022;33(1):81-90.
6. Ramasubramanian R, Meier HCS, **Vivek S**, et al. Evaluation of T-cell aging-related immune phenotypes in the context of biological aging and multimorbidity in the Health and Retirement Study. Immunity & Ageing. 2022/07/20 2022;19(1):33. doi:10.1186/s12979-022-00290-z
7. Thyagarajan B, Faul J, **Vivek S**, et al. Age-related differences in T cell subsets in a nationally representative sample of people over age 55: Findings from the Health and Retirement Study. The journals of gerontology Series A, Biological sciences and medical sciences. Oct 11 2021;doi:10.1093/gerona/glab300
8. **Vivek S**, Carnethon MR, Prizment A, et al. Association of the extent of return to fasting state 2-hours after a glucose challenge with incident prediabetes and type 2 diabetes: The CARDIA study. Diabetes Research and Clinical Practice. 2021;180:109004.
9. Prizment AE, Staley C, Onyeaghala GC, **Vivek S**, Thyagarajan B, Straka RJ, Demmer RT, Knights D, Meyer KA, Shaukat A, Sadowsky MJ, Church TR. Randomised clinical study: oral aspirin 325 mg daily vs placebo alters gut microbial composition and bacterial taxa associated with colorectal cancer risk. Alimentary pharmacology & therapeutics. 2020;52(6):976-987.
10. Thyagarajan B, Shippee N, Parsons H, **Vivek S**, Crimmins E, Faul J, Shippee T. How does subjective age get “under the skin”? The association between biomarkers and feeling older or younger than one’s age: The Health and Retirement Study. Innovation in aging. 2019;3(4):igz035.
11. Thyagarajan B, Barcelo H, Crimmins E, Weir D, Minnerath S, **Vivek S**, Faul J. Effect of delayed cell processing and cryopreservation on immunophenotyping in multicenter population studies. J Immunol Methods. 2018;463:61-70. doi:10.1016/j.jim.2018.09.007
12. Romee R, Cooley S, Berrien-Elliott MM, Westervelt P, Verneris MR, Wagner JE, Weisdorf DJ, Blazar BR, Ustun C, DeFor TE, **Vivek S**, Peck L, DiPersio JF, Cashen AF, Kyllo R, Musiek A, Schaffer A, Anadkat MJ, Rosman I, Miller D, Egan JO, Jeng EK, Rock A, Wong HC, Fehniger TA, Miller JS. First-in-human phase 1 clinical study of the IL-15 superagonist complex ALT-803 to treat relapse after transplantation. Blood. Jun 7 2018;131(23):2515-2527. doi:10.1182/blood-2017-12-823757
13. Jha GG, Gupta S, Tagawa ST, Koopmeiners JS, **Vivek S**, Dudek AZ, Cooley SA, Blazar BR, Miller JS. A phase II randomized, double-blind study of sipuleucel-T followed by IDO pathway inhibitor, indoximod, or placebo in the treatment of patients with metastatic castration resistant prostate cancer (mCRPC). American Society of Clinical Oncology; 2017.
14. Ferzoco RM, Hallberg EJ, **Vivek S**, et al. Real-world self-reported adherence to endocrine therapy in a large longitudinal cohort of breast cancer patients. American Society of Clinical Oncology; 2015.
15. Abishek Sasidharan VV, **Sithara Pillai**, Fayaz Khan. Correlation between obesity and balance in school children. International Journal of Therapy and Rehabilitation. 2014;