



## Anandi Krishnan

Instructor, Institute for Immunity, Transplantation and Infection

### Bio

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#### ACADEMIC APPOINTMENTS

- Instructor, Institute for Immunity, Transplantation and Infection
- Member, Cardiovascular Institute
- Member, Stanford Cancer Institute

#### HONORS AND AWARDS

- Nominated Member, Minority Recruitment Initiative, American Society of Hematology (2022-26)
- Peer Mentor for Diversity, Equity & Inclusion, Pathology-Stanford Network for Advancement and Promotion (P-SNAP) (2021)
- Young Investigator Award, Thrombosis & Hemostasis Association of North America (2020)
- NIH Clinical Scientist Career Development Award (K08), National Human Genome Research Institute (2018)
- NIH Diversity/Research Reentry Award, National Center for Advancing Translational Sciences (2016)
- ASA-Bugher Foundation Postdoctoral Fellowship, American Heart Association (2008)
- Council of Graduate Schools Dissertation Award, The Pennsylvania State University (2005)
- Outstanding Scholarship in Doctoral Research, American Vacuum Society (2005)
- Focused Giving Grant for Graduate Research, Johnson & Johnson Ethicon (2003)

#### PROFESSIONAL EDUCATION

- Stroke Research Fellow, American Heart Association Bugher Foundation Fellowship , Duke University (2012)
- Fellow, Duke Clinical Research Training Program , Duke University (2011)
- Postdoctoral Fellow, Heart & Vascular Institute, Penn State College of Medicine , Penn State University (2008)
- PhD, Bioengineering (an interdisciplinary program in the biosciences) , Penn State University (2005)

#### LINKS

- Research Webpage: <http://bit.ly/ak-research>

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research studies the mechanisms by which blood platelets respond to disease.

Blood platelets play critical roles in multiple processes and diseases, from their traditional function in hemostasis and wound healing to inflammation, immunity, cancer metastasis and angiogenesis. There is evolving evidence that the molecular signature of platelets may be changed in disease conditions where these processes are altered. Our interests are in identifying the precise mechanisms utilized by platelets in adapting to the disease environment.

To that end, we apply integrative strategies of omics-based discovery (from large clinical cohorts) paired with validation through molecular, cellular, in-vivo and machine learning algorithms. Recent findings have outlined a number of heretofore unrecognized platelet mechanisms that are central to platelet response in disease. One such mechanism we identify is the unfolded protein response (UPR) significant in the platelet translational machinery, proper folding of proteins and protein homeostasis. Current focus of our research is directed toward a molecular understanding of the UPR and the broader integrated stress response in the platelet, and deciphering what fraction, if any, is derived from their parent megakaryocytes. UPR is not the only driving mechanism in platelet response to disease, and substantial current effort is also directed at additional biological triggers, including cross-functional interactions with other immune cells.

## Publications

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### PUBLICATIONS

- **Enkurin: A novel marker for myeloproliferative neoplasms from platelet, megakaryocyte, and whole blood specimens.** *bioRxiv : the preprint server for biology*  
Seetharam, S. M., Liu, Y., Wu, J., Fechter, L., Murugesan, K., Maecker, H., Gotlib, J., Zehnder, J., Paulmurugan, R., Krishnan, A.  
2023
- **IFITM3 regulates fibrinogen endocytosis and platelet reactivity in non-viral sepsis.** *The Journal of clinical investigation*  
Campbell, R. A., Manne, B. K., Banerjee, M., Middleton, E. A., Ajanel, A., Schwertz, H., Denorme, F., Stubben, C., Montenont, E., Saperstein, S., Page, L., Tolley, N. D., Lim, et al  
2022
- **Evaluation of Immune Evasion in SARS-CoV-2 Delta and Omicron variants.** *Computational and structural biotechnology journal*  
Chaudhari, A. M., Joshi, M., Kumar, D., Patel, A., Bharat Lokhande, K., Krishnan, A., Hanack, K., Filipek, S., Liepmann, D., Renugopalakrishnan, V., Paulmurugan, R., Joshi, C.  
2022
- **Inhaled Gold Nano-star Carriers for Targeted Delivery of Triple Suicide Gene Therapy and Therapeutic MicroRNAs to Lung Metastases: Development and Validation in a Small Animal Model.** *Advanced therapeutics*  
Liu, Y., Sukumar, U. K., Jugniot, N., Seetharam, S. M., Rengaramachandran, A., Sadeghipour, N., Mukherjee, P., Krishnan, A., Massoud, T. F., Paulmurugan, R.  
2022; 5 (8)
- **Whole-genome CRISPR screening identifies N-glycosylation as a genetic and therapeutic vulnerability in CALR-mutant MPN.** *Blood*  
Jutzi, J. S., Marneth, A. E., Ciboddo, M., Guerra-Moreno, A., Jiménez-Santos, M. J., Kosmidou, A., Dressman, J. W., Liang, H., Hamel, R. S., Lozano, P. R., Rumi, E., Doench, J., Gotlib, et al  
2022
- **Platelet Heterogeneity in Myeloproliferative Neoplasms** *ARTERIOSCLEROSIS THROMBOSIS AND VASCULAR BIOLOGY*  
Thomas, S., Krishnan, A.  
2021; 41 (11): 2661-2670
- **Platelet transcriptome identifies progressive markers and potential therapeutic targets in chronic myeloproliferative neoplasms** *CELL REPORTS MEDICINE*  
Shen, Z., Du, W., Perkins, C., Fechter, L., Natu, V., Maecker, H., Rowley, J., Gotlib, J., Zehnder, J., Krishnan, A.  
2021; 2 (10)
- **Camouflaged Hybrid Cancer Cell-Platelet Fusion Membrane Nanovesicles Deliver Therapeutic MicroRNAs to Presensitize Triple-Negative Breast Cancer to Doxorubicin.** *Advanced functional materials*  
Liu, Y., Sukumar, U. K., Kanada, M., Krishnan, A., Massoud, T. F., Paulmurugan, R.  
2021; 31 (41)
- **Toward platelet transcriptomics in cancer diagnosis, prognosis and therapy** *British Journal of Cancer*  
Krishnan, A., Thomas, S.

2021

- **Increased Mortality and Bleeding in a Large Cohort of Patients on Heparin Anticoagulation Therapy with Discordant Anti-Factor Xa Activity and Activated Partial Thromboplastin Time (PTT); Implications for Clinical Management**  
Gombar, S., Boothroyd, D., Krishnan, A., Sharifi, H., Hsu, J., Zehnder, J.  
AMER SOC HEMATOLOGY.2019
- **Platelet Transcriptomic Signatures in Myeloproliferative Neoplasms** *Blood*  
Krishnan, A., Zhang, Y., Perkins, C., Gotlib, J., Zehnder, J.  
2017; 130: 5288
- **The effect of surface contact activation and temperature on plasma coagulation with an RNA aptamer directed against factor IXa** *JOURNAL OF THROMBOSIS AND THROMBOLYSIS*  
Krishnan, A., Vogler, E. A., Sullenger, B. A., Becker, R. C.  
2013; 35 (1): 48-56
- **Antithrombotic therapy for ischemic stroke: guidelines translated for the clinician** *JOURNAL OF THROMBOSIS AND THROMBOLYSIS*  
Krishnan, A., Lopes, R. D., Alexander, J. H., Becker, R. C., Goldstein, L. B.  
2010; 29 (3): 368-377
- **Mixology of protein solutions and the Vroman effect** *LANGMUIR*  
Krishnan, A., Siedlecki, C. A., Vogler, E. A.  
2004; 20 (12): 5071-5078
- **Platelet transcriptome yields progressive markers in chronic myeloproliferative neoplasms and identifies putative targets of therapy** *bioRxiv*  
Shen, Z., Du, W., Perkins, C., Fechter, L., Natu, V., Maecker, H., Rowley, J., Gotlib, J., Zehnder, J. L., Krishnan, A.  
2021
- **Platelet Transcriptomic Signatures in Myeloproliferative Neoplasms**  
Krishnan, A., Zhang, Y., Perkins, C., Gotlib, J., Zehnder, J. L.  
AMER SOC HEMATOLOGY.2017
- **Effects of limb posture on reactive hyperemia** *EUROPEAN JOURNAL OF APPLIED PHYSIOLOGY*  
Krishnan, A., Lucassen, E. B., Hogeman, C., Blaha, C., Leuenberger, U. A.  
2011; 111 (7): 1415-1420
- **Volumetric interpretation of protein adsorption: Interfacial packing of protein adsorbed to hydrophobic surfaces from surface-saturating solution concentrations** *BIOMATERIALS*  
Kao, P., Parhi, P., Krishnan, A., Noh, H., Haider, W., Tadigadapa, S., Allara, D. L., Vogler, E. A.  
2011; 32 (4): 969-978
- **A real-time device for converting Doppler ultrasound audio signals into fluid flow velocity** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Herr, M. D., Hogeman, C. S., Koch, D. W., Krishnan, A., Momen, A., Leuenberger, U. A.  
2010; 298 (5): H1626-H1632
- **Interfacial energetics of protein adsorption from aqueous buffer to surface with varying hydrophilicity** *LANGMUIR*  
Cha, P., Krishnan, A., Fiore, V. F., Vogler, E. A.  
2008; 24 (6): 2553-2563
- **Interfacial energetics of protein adsorption from aqueous buffer to surfaces with varying hydrophilicity** *Langmuir*  
P Cha, A Krishnan, VF Fiore, EA Vogler  
2008; 24 (6): 2553
- **The role of the cyclooxygenase products in evoking sympathetic activation in exercise** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Cui, J., McQuillan, P., Momen, A., Blaha, C., Moradkhan, R., Mascarenhas, V., Hogeman, C., Krishnan, A., Sinoway, L. I.  
2007; 293 (3): H1861-H1868
- **Interfacial energetics of blood plasma and serum adsorption to a hydrophobic self-assembled monolayer surface** *BIOMATERIALS*  
Krishnan, A., Cha, P., Liu, Y. H., Allara, D., Vogler, E. A.

2006; 27 (17): 3187-3194

- **Interfacial rheology of blood proteins adsorbed to the aqueous-buffer/air interface** *BIOMATERIALS*  
Ariola, F. S., Krishnan, A., Vogler, E. A.  
2006; 27 (18): 3404-3412
- **Interfacial energetics of globular?blood protein adsorption to a hydrophobic interface from aqueous-buffer solution** *J. Royal Soc. Interface*  
Krishnan A, YH Liu, P Cha, D Allara, EA Vogler  
2006; 3 (7): 283
- **Scaled interfacial activity of proteins at a hydrophobic solid/aqueous-buffer interface.** *Journal of biomedical materials research. Part A*  
Krishnan, A., Liu, Y., Cha, P., Allara, D., Vogler, E. A.  
2005; 75 (2): 445-457
- **An evaluation of methods for contact angle measurement** *COLLOIDS AND SURFACES B-BIOINTERFACES*  
Krishnan, A., Liu, Y. H., Cha, P., Woodward, R., Allara, D., Vogler, E. A.  
2005; 43 (2): 95-98
- **Liquid-vapor interfacial tension of blood plasma, serum and purified protein constituents thereof** *BIOMATERIALS*  
Krishnan, A., Wilson, A., Sturgeon, J., Siedlecki, C. A., Vogler, E. A.  
2005; 26 (17): 3445-3453
- **An Evaluation of Goniometric Methods** *J. Coll. Interface*  
A Krishnan, YH Liu, P Cha, DL Allara, EA Vogler  
2005; 43: 95
- **Scaled interfacial activity of proteins at the liquid-vapor interface.** *Journal of biomedical materials research. Part A*  
Krishnan, A., Sturgeon, J., Siedlecki, C. A., Vogler, E. A.  
2004; 68 (3): 544-557
- **Traube-rule interpretation of protein adsorption at the liquid-vapor interface** *LANGMUIR*  
Krishnan, A., Siedlecki, C. A., Vogler, E. A.  
2003; 19 (24): 10342-10352
- **Traube-rule interpretation of protein adsorption at the liquid-vapor interface** *Langmuir*  
Krishnan A, Siedlecki CA, Vogler EA  
2003; 19 (24): 10342