

Sijo Mathew Ph.D.
Assistant Professor (Tenure-Track)
Department of Pharmaceutical Sciences, School of Pharmacy,
North Dakota State University, Fargo, ND, USA
sijo.mathew@ndsu.edu
Phone: 701-231-8214

Major Areas of Research Interests:

- ❖ Role of integrin $\beta 1$, Talin, and Kindlin in pancreatic cancer progression and desmoplasia.
- ❖ Cell motility and Cytoskeleton Dynamics of epithelial cells in cancer metastasis.
- ❖ Integrin $\beta 1$ in acute kidney Injury and recovery.
- ❖ Importance of kindlin isoforms in chronic kidney injury.
- ❖ Cell matrix interactions in growth factor mediated cell signaling in fibrosis.
- ❖ Importance of integrin homodimerization and its critical role in pancreatic cancer cell functions.
- ❖ Define the structure-function relationship of trans-membrane domain of integrin subunits with its adaptor proteins/growth factor receptors.
- ❖ Elucidate the role of membrane phospholipids in modulating these protein-protein interactions.
- ❖ Evaluate small molecule inhibitor binding with membrane proteins using biophysical methods and their physiological importance using functional assays.

- 2018 - Assistant Professor (Tenure-Track)
Department of Pharmaceutical Sciences,
School of Pharmacy, North Dakota State University, Fargo, ND, USA
- 2012 - 2018 Research Assistant Professor
Division of Nephrology and Hypertension, Department of Medicine
Vanderbilt University Medical Center, Nashville, TN, USA
- 2008 –2012 Research Fellow
Division of Nephrology and Hypertension, Department of Medicine
Vanderbilt University Medical Center, Nashville, TN, USA
- 2006 – 2008 Postdoctoral Trainee
Department of Physiology, Univ. of Tennessee Health Science Center, Memphis, TN,
USA
- 2006 Ph.D. (Biotechnology)
Department of Protein Chemistry and Technology
Central Food Technological Research Institute, Mysore, India
- 2000 M.S. University of Agricultural Sciences, GKVK, Bangalore, India
- 1998 B.S. Kerala Agricultural University, Trissur, India

Research Funding

- 2018 – 2022 NDSU faculty startup grant.
- 2016 – 2019 American Heart Association Scientist Development Grant
Title: *Mechanisms whereby integrin beta1 regulate acute kidney injury and recovery*
USD 231,000. Effective 07/01/2016 – 06/30/2019 extendable for 1 year.
- 2015 – 2016 Vanderbilt University Center for kidney diseases pilot and feasibility grant
Title: *Structure function analysis of CD98hc*

- USD 40,000. Effective 7/1/2015 - 6/30/2016
- 2010 – 2012 American Heart Association Greater Southeast Affiliate
GSA Spring 2010 Postdoctoral Fellowship (7/1/2010 to 6/30/2012).
Title: *Structure function analysis of integrin $\alpha 1\beta 1$*
USD 100,000. Effective 7/1/2010 - 6/30/2012
- 2003 – 2005 Senior Research Fellowship
Council of Scientific and Industrial Research New Delhi, India
- 2001– 2003 Senior Research Fellowship
Indian Council of Agricultural Research New Delhi, India
- 1998 – 2000 Junior Research Fellowship
Indian Council of Agricultural Research New Delhi, India

Professional Activities

- 2016 – CHAMP (Council of Hypertension Advisory and Mentoring program)
American Heart association
Role: Mentee
Mentor: Ruisheng Liu,
University of south Florida, School of medicine, Tampa, FL

Memberships

- 2010 – 2016 American Heart Association
2012 – 2016 American Society of Matrix Biology
2009 – 2016 American Society of Nephrology

Editorial Duties

Reviewer for following journals

- a. PLOSone,
- b. Journal of food science.
- c. American Journal of Biomedical and Life Sciences

Editorial board of journal of

- a. Pharmaceutics & Novel Drug Delivery Systems: Current Research,
- b. American Journal of TROPICAL MEDICINE & Public Health,
- c. International Research Journal of biotechnology

Publications/Patents

1. **Sijo Mathew** et al., Talin regulates integrin $\beta 1$ dependent and independent cell functions in ureteric bud development *Development* 144 (22):4148-4158, **2017**.
2. Lu, Z*., **Mathew Sijo*** et al., Implications of the differing roles of the $\beta 1$ and $\beta 3$ transmembrane and cytoplasmic domains for integrin function. *eLife* **2016**;5:e18633
*Authors contributed equally
3. Elias BC*, **Mathew S***, et.al., The integrin beta 1 subunit regulates paracellular permeability of kidney proximal tubule cells. *J Biol Chem.* 2014 Feb 7.PM ID 24509849 **2014**
*Authors contributed equally
4. **Mathew Sijo** et.al., $\beta 1$ Integrin NPxY Motifs Regulate Kidney Collecting Duct Development and Maintenance by Induced-Fit Interactions with Cytosolic Proteins. *Mol Cell Biol.* 32(20):4080-91PMID:22869523 **2012**
5. **Mathew Sijo** et.al., Role of integrins in kidney development. *Pediatric Nephrology* 2012. 27:891-900. PMID:21603909. **2012**

6. **Mathew S**, et.al., Effect of Zinc Salts on the Structure and Function of Actomyosin From Pelagic Fish. *Process Biochemistry*. 2009;44:7;704-709 doi:10.1016/j.procbio.2009.02.018 **2009**
7. **Mathew S**, et.al., Potential molecular mechanism for c-Src kinase-mediated regulation of intestinal cell migration. *J Biol Chem*. 2008;283:22709-722. PMID:18482983 **2008**
8. **Mathew S** and Prakash V. Changes in structural and Functional Attributes of Fish Mince Proteins in Presence of Co-solvent During Frozen Storage. *International Journal of Food Properties*. 2007;10 (1) :47–59. DOI: 10.1080/10942910600684252 **2007**
9. **Mathew S** and Prakash V. Effect of calcium salts on the properties of proteins from Oil sardine (*Sardinella longiceps*) during frozen storage. *J Food Sci*. 2006;71(4):E178 -83. DOI 10.1111/j.1750-3841.2006.00025 **2006**
10. **Mathew S** and Prakash V. Polyhydric Alcohols Mediated Inhibition of Calcium Activated Adenosine Triphosphatase Activity of Fish Skeletal Muscle Actomyosin. *International Journal of Food Properties*. 2005;8(2):255-65. DOI: 10.1081/JFP-200060226 **2005**
11. **Mathew S**, Karthikeyan M, Shamasundar BA. Effect of water washing of shark (*Scoliodon laticaudus*) meat on the properties of proteins with special reference to gelation. *Nahrung*. 2002;46(2):78-82. PMID:12017996. **2002**
12. **Mathew S** and Shamasundar BA. Effect of ice storage on the functional properties of proteins from shark (*Scoliodon laticaudus*) meat. *Nahrung*. 2002;46:220-6. PMID:12224414. **2002**.
13. Paul J. Barrett, Jiang Chen, Min-Kyu Cho, Ji-Hun Kim, Zhenwei Lu, **Sijo Mathew**, Dungeng P, Yuanli Song, Wade D. Van Horn, Tiandi Zhuang, and Charles R. Sanders. The Renaissance of Protein NMR. *Biochemistry*. 2013 Feb 26;52(8):1303-20. PMID:23368985. **2013**
14. Lu, Zhenwei; Van Horn, W; Chen, Jiang; **Mathew, Sijo**; Zent, Roy; Sanders, Charles (2012). Bicelles at Low Concentration. *Mol Pharm*. 2012 Apr 2;9(4):752-61. PMID: 22221179 **2012**
15. Borza CM, Chen X, **Mathew S**, Mont S, Sanders CR, Zent R, Pozzi A. Integrin $\{\alpha\}_1\{\beta\}_1$ promotes caveolin-1 dephosphorylation by activating T cell protein-tyrosine phosphatase. *J Biol Chem*. 2010. 285(51):40114-24. PMID: 20940300 **2010**
16. Tomar A, George SP, **Mathew S**, Khurana S. Differential effects of lysophosphatidic acid and phosphatidylinositol 4,5-bisphosphate on actin dynamics by direct association with the actin-binding protein villin. *J Biol Chem*. 2009;284:35278–82 PMID: 19808673 **2009**
17. Khurana S, Tomar A, George SP, Wang Y, Siddiqui MR, Guo H, Tigyi G, **Mathew S**. (2008). Autotaxin and Lysophosphatidic acid stimulate intestinal cell motility by redistribution of the actin modifying protein villin to the developing lamellipodia. *Exp Cell Res*. 2008;314:530-42. PMID:18054784. **2008**
18. George SP, Wang Y, **Mathew S**, Srinivasan K, Khurana S. Dimerization and actin-bundling properties of villin and its role in the assembly of epithelial cell brush borders. *J Biol Chem*. 2007;282:26528–41. PMID:17606613. **2007**
19. Karthikeyan M, **Mathew S**, Shamasundar BA, Prakash V. Fractionation and properties of sarcoplasmic proteins from oil sardine (*Sardinella longiceps*): Influence on the thermal gelatin behavior of washed meat. *J Food Sci*. 2006;69(3):FEP 79-84. DOI 10.1111/j.1365-2621.2004.tb13367 **2006**
20. Karthikeyan M, Shamasundar BA, **Mathew S**, Ramesh Kumar P, Prakash V. Physico-chemical and functional properties of proteins from pelagic fatty fish (*Sardinella longiceps*) as a function of water washing. *International Journal of Food Properties*. 2004;7(3):353-65. DOI: 10.1081/JFP-200032913 **2004**
21. Venugopal V, Kakatkar A, Bongirwar DR, Karthikeyan M, **Mathew S**, Shamasundar BA. (2002). Gelation of shark meat under mild acidic conditions: Physicochemical and rheological

characterization of the gel. J Food Sci. 67(7):2681-6. DOI 10.1111/j.1365-2621.2002.tb08798.
2002

Patents

22. **Sijo Mathew** and V. Prakash. A process for inhibiting the adenosinetriphosphatase (ATPase) activity of fish actomyosin using heavy metals. Patent No.517/DEL/2004; C07K9/00; C12N9/99
23. **Sijo Mathew** and V. Prakash. A process for inhibiting the adenosinetriphosphatase (ATPase) activity of fish actomyosin patent No. 550/DEL/2004; C07H21/04; C12N9/10