Porunelloor Mathew, PhD
Graduate School of Biomedical Sciences
Microbiology, Immunology & Genetics
Email: Porunelloor.Mathew@unthsc.edu

Area of Expertise

The general research area of Dr. Mathew's laboratory is Cancer Immunology. His research focuses on the Cellular and Molecular Biology of human natural killer (NK) cells and their recognition by cancer cells. NK cells are a subpopulation of lymphocytes that play an important role against cancer and various viral and bacterial infections.
Dr. Mathew is one of the pioneers who identified, cloned, and characterized several receptors expressed on human NK cells including 2B4 (CD244, SLAMF4), CS1 (CD319, SLAMF7) and LLT1 (CLEC--2D). Research in his laboratory has identified their ligands, elucidated the signaling pathways, and also determined the transcriptional regulation of these genes in health and disease conditions. Dr. Mathew has shown that anti--CS1 antibody activates NK cell cytotoxicity against various cancer cells. The FDA has approved a humanized anti--CS1 mAb, Empliciti, as a breakthrough drug for multiple myeloma treatment. Thus, his research has led to the development of novel NK cell based immunotherapy for cancer. Current focus is identification of markers for cancer stem cells (CSCs) and targeting CSCs to NK cell mediated killing.

Qualifications

BS in Physics, University of Kerala

MS in Biochemistry, University of Poona

PhD in Biochemistry, University of Poona

Recent Publications

Role of LLT1 and PCNA as Natural Killer Cell Immune Evasion Strategies of HCT 116 Cells
Malaer, J. D. & Mathew, P. A., Dec 2020, In: Anticancer Research. 40, 12, p. 6613-6621 9 p.

Roles of nk cell receptors 2b4 (Cd244), cs1 (cd319), and llt1 (clec2d) in cancer
Buller, C. W., Mathew, P. A. & Mathew, S. O., Jul 2020, In: Cancers. 12, 7, p. 1-15 15 p., 1755.

2B4 (CD244, SLAMF4) and CS1 (CD319, SLAMF7) in systemic lupus erythematosus and cancer
Malaer, J. D., Marrufo, A. M. & Mathew, P. A., Jul 2019, In: Clinical Immunology. 204, p. 50-56 7 p.

A novel ligand on astrocytes interacts with natural cytotoxicity receptor NKp44 regulating immune response mediated by NK cells
Bowen, K. E., Mathew, S. O., Borgmann, K., Ghorpade, A. & Mathew, P. A., Feb 2018, In: PLoS ONE. 13, 2, e0193008.

CS1 (SLAMF7, CD319) is an effective immunotherapeutic target for multiple myeloma
Malaer, J. D. & Mathew, P., 1 Jan 2017, In: American Journal of Cancer Research. 7, 8, p. 1637-1641 5 p.

Blimp-1/PRDM1 regulates the transcription of human CS1 (SLAMF7) gene in NK and B cells
Kim, J. R., Mathew, S. O. & Mathew, P. A., Jan 2016, In: Immunobiology. 221, 1, p. 31-39 9 p.

Overexpression of LLT1 (OCIL, CLEC2D) on prostate cancer cells inhibits NK cell-mediated killing through LLT1-NKRP1A (CD161) interaction
Mathew, S. O., Chaudhary, P., Powers, S. B., Vishwanatha, J. K. & Mathew, P. A., 2016, In: Oncotarget. 7, 42, p. 68650-68661 12 p.

NKp44 and natural cytotoxicity receptors as damage-associated molecular pattern recognition receptors
Horton, N. C. & Mathew, P. A., 2015, In: Frontiers in Immunology. 6, FEB, 00031.

CS1 (SLAMF7) inhibits production of proinflammatory cytokines by activated monocytes
Kim, J. R., Horton, N. C., Mathew, S. O. & Mathew, P. A., Aug 2013, In: Inflammation Research. 62, 8, p. 765-772 8 p.

YY1 and a unique DNA repeat element regulates the transcription of mouse CS1 (CD319, SLAMF7) gene
Dongre, P., Mathew, S., Akopova, I., Gryczynski, I. & Mathew, P., Jul 2013, In: Molecular Immunology. 54, 3-4, p. 254-263 10 p.

Sponsored Projects

Blocking Inhibitory Signal to Natural Killer Cells to Eliminate Breast Cancer
Mathew, P.
Intramural Research(UNTHSC)
15/01/12 → 14/01/13

Cell Surface Exosomal PCNA is a Novel Marker for Cancer Stem Cells and Enables Escape from Natural Killer Cell Effector Function (For: Nathan Horton)
Mathew, P.
Intramural Research(UNTHSC)
1/09/13 → 31/08/14

CHARACTERIZATION OF HUMAN 2B4 AND 2B4 GENE KNOCKOUT MICE
Mathew, P. & MATHEW, P. A.
National Cancer Institute
17/01/01 → 31/12/06

CS1-Targeted Immunotherapy for Acute Lymphoblastic Leukemia (ALL) in Children
Mathew, S., Mathew, P. & Bowman, P.
Intramural Research(UNTHSC)
1/09/13 → 31/08/15

Exosomal-Annexin A2 Promotes Metastasis in Triple-negative Breast Cancer
Chaudhary, P. & Mathew, P.
Intramural Research(UNTHSC)
1/06/17 → 31/05/18

Ligand for Natural Cytotoxicity Receptor NKp44
Mathew, P. & MATHEW, P. A.
National Institute of Allergy and Infectious Diseases
1/03/07 → 28/02/09

MOLECULAR BASIS OF NK CELL RECOGNITION AND ACTIVATION
Mathew, P., YUAN, D., KUMAR, V. & Bennett, M.
1/10/96 → 30/09/97

Molecular Characterization of NKp44 Ligand on Astrocytes
Mathew, P. & Mathew, S.
NINDS: Neurological Disorders & Stroke
1/02/17 → 31/01/19

Molecular Characterization of NKp44 Ligand on Astrocytes
Mathew, P.
National Institute of Neurological Disorders and Stroke
1/02/17 → 31/01/20

NKp44 Regulates Natural Killer Cell Effector Function through Recognition of Cell Surface PCNA(For: Nathan Horton)
Mathew, P.
Intramural Research(UNTHSC)
3/12/12 → 2/12/13