

TEN BEST PUBLICATIONS

* Corresponding Author

- Kalarikkal M, Saikia R, Oliveira L, Bhorkar Y, Lonare A, Varshney P, Dhamale P, Majumdar A, **Joseph J***. Nup358 restricts ER-mitochondria connectivity by modulating mTORC2/Akt/GSK3 β signalling. **EMBO Rep.** 2024 Jul 18. doi: 10.1038/s44319-024-00204-8 (**Selected as cover page article for the October 2024 Issue**).

This paper reveals localization of annulate lamellae (AL) at the ER-mitochondria contact sites (ERMCSs). Moreover, the role of Nup358, an AL-resident protein in restricting ERMCSs through regulation of mTORC2/Akt/GSK3 β signalling was established. This potentially links nucleo-cytoplasmic transport machinery to ERMCS functions.

- Sahoo MR, Gaikwad S, Khuperkar D, Ashok M, Helen M, Yadav SK, Singh A, Magre I, Deshmukh P, Dhanvijay S, Sahoo PK, Ramtirtha Y, Madhusudhan MS, Gayathri P, Seshadri V, **Joseph J***. Nup358 binds to AGO proteins through its SUMO-interacting motifs and promotes the association of target mRNA with miRISC. **EMBO Rep.** 2017 Feb;18(2):241-263.

Here, AL were shown to associate with mRNP granules such as P-bodies and stress granules. Depletion of the AL-resident nucleoporin Nup358 resulted in disappearance of P-bodies. Further studies revealed a role for Nup358 in miRNA-mediated gene regulation by acting as a scaffold for coupling the association of miRNA-induced silencing complex with the target mRNA.

- Magre I, Fandade V, Damle I, Banerjee P, Yadav SK, Sonawane M*, **Joseph J***. Nup358 regulates microridge length by controlling SUMOylation-dependent activity of aPKC in zebrafish epidermis. **J Cell Sci.** 2019 Jun 17;132(12):jcs224501. (**Cover page article**) (**Also selected for First Author interview**)

In collaboration with Dr. Mahendra Sonawane (TIFR, Mumbai), we find that Nup358 controls microridges, polarized actin appendages on the epidermal cells of zebrafish, though regulating SUMOylation-dependent activity of aPKC activity.

- Banerjee P, Markande S, Kalarikkal M, **Joseph J***. SUMOylation modulates the function of DDX19 in mRNA export. **J Cell Sci.** 2022 Feb 15;135(4):jcs259449. (**Selected for First Author interview**)

This paper identified the role of Nup358, an AL-resident protein, in regulating mRNA export through SUMOylation of DDX19, a critical player in mRNA export.

- Murawala P, Tripathi MM, Vyas P, Salunke A, **Joseph J***. Nup358 interacts with APC and plays a role in cell polarization. **J Cell Sci.** 2009 Sep 1;122(Pt 17):3113-22.

Here, interaction of Nup358 with APC and involvement of Nup358 in polarized cell migration were established.

- Chavan S, Khuperkar D, Lonare A, Panigrahi S, Bellare J, Rapole S, Seshadri V, **Joseph J***. RanGTPase links nucleo-cytoplasmic transport to the recruitment of cargoes into small extracellular vesicles. **Cell Mol Life Sci.** 2022 Jul 2;79(7):392.

Here, RanGTPase, a crucial player in nucleo-cytoplasmic transport, was shown to recruit soluble cargoes into small extracellular vesicles (sEVs) and thereby function in inter-cellular communication.

- Yadav SK, Magre I, Singh A, Khuperkar D, **Joseph J***. Regulation of aPKC activity by Nup358 dependent SUMO modification. **Sci Rep.** 2016 Sep 29;6:34100.

In this paper, Nup358, a SUMO E3 ligase, was shown to SUMOylate aPKC and regulate its activity was established.

- Khuperkar D, Kamble A, Singh A, Ghate A, Nawadkar R, Sahu A*, **Joseph J***. Selective recruitment of nucleoporins on vaccinia virus factories and the role of Nup358 in viral infection. **Virology.** 2017 Dec;512:151-160.

Here, in collaboration with Dr. Arvind Sahu (NCCS, Pune), differential recruitment of nucleoporins to cytoplasmic viral factories of Vaccinia virus was discovered. Moreover, role of Nup358 in viral infection was established.

- Deshmukh P, Singh A, Khuperkar D, **Joseph J***. (2021). Acute necrotizing encephalopathy-linked mutations in Nup358 impair interaction of Nup358 with TNRC6/GW182 and miRNA function. **Biochem. Biophys. Res. Commun.** 559:230-237.

In this paper, ANE-1 causing mutation in Nup358 was shown to compromise its interaction with GW182/TNRC6, a component of miRISC, implicating mis-regulation of miRNA pathway as a causal mechanism in ANE-1 pathogenesis.

- Deshmukh P, Markande S, Fandade V, Ramtirtha Y, Madhusudhan MS, **Joseph J*** (2021). The miRISC component AGO2 has multiple binding sites for Nup358 SUMO-interacting motif. **Biochem. Biophys. Res. Commun.** 556:45-52.

From this study, the SUMO-interacting motifs from Nup358 were proposed to have multiple binding sites on AGO2.