SNEHA SUDHA KOMATH

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Education

Ph.D. (1999), University of Hyderabad (Hyderabad), India

Awards/ Honours

SERB-POWER Fellowship, 2021
Invited to co-author Glycosylphosphatidylinositol Anchors (chapter 12) (In: Varki A, Cummings RD, et al., editors. Essentials of Glycobiology 4th ed. CSHL Press; 2022)
Distinguished Alumnus Lecture (2019), School of Chemistry, University of Hyderabad
National Women Bioscientists' Award, 2010
UGC-Junior Research Fellowship/ Senior Research Fellowship
Gold Medalist in Chemistry (M.Sc. Univ. of Hyderabad, 1991)
Ranked all-India 4th in AISSE (1984)

Membership of Academic Bodies/ Societies

Life member, Indian Biophysical Society
Executive member, Protein Society
Life member, Fluorescence Society

Teaching

- Mathematics for Biologists (I semester; Remedial course)
- Chemistry of Macromolecules (I semester; Core course)
- Biophysical Chemistry: Methods and Applications (IV-semester; Optional)
- Membrane Biology (membrane biophysics section) (IV semester; Optional)
- Basic physicochemical principles in the context of Biology (part of Research Methodology pre-PhD course).

Broad Areas of Research Interest

GPI anchor biosynthesis in human pathogenic fungus *Candida albicans* and its comparison with *S. cerevisiae* and mammalian GPI biosynthetic pathways; Enzymology and biophysical chemistry

Major research projects completed: 11 **Current research projects:** 6
Publications in peer-reviewed journals: 61 **Other articles:** 4
Book chapters and other scientific publications: 3 (peer reviewed)

Ph. D. students supervised **M. Phil supervised:** 1
Degree awarded: 23
Thesis in progress: 6
Post-doctoral research supervised: 8 **Masters' and short-term project students:** 68

Details of contributions to scientific research

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GPI Anchor Biosynthesis in Yeast and Fungi

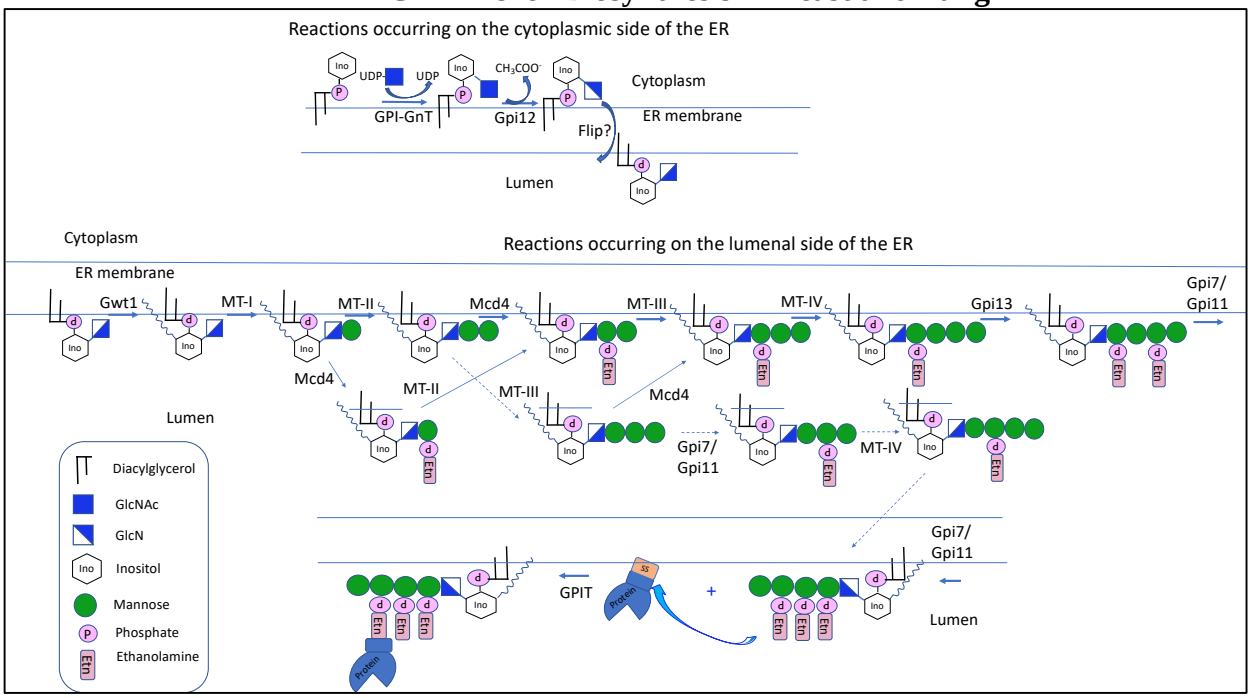

Figure: GPI biosynthetic pathway in yeast and fungi. GPI biosynthesis begins on the cytoplasmic face of the ER by the ER-localized GPI N-acetylglucosaminyl transferase (GPI-GnT) with transfer of GlcNAc from UDP-GlcNAc to PI. GlcNAc-PI is then deacetylated, sequentially decorated by 4 Man residues and 3 EtnP residues. The donor for mannose is Dol-P-Man and of EtnP is phosphatidylethaolamine in all cases. GPI-GnT has six subunits, Gpi1, Gpi2, Gpi3, Gpi15, Gpi19 and Eri1. Gpi12 is a deacetylase, Gwt1 an acyltransferase that attaches an acyl chain at 2-OH of inositol. The GPI intermediate must flip from the cytosolic to the lumenal side of the ER for Gwt1 to act, but a specific flippase has not been identified. MT-I (Gpi14, Pbn1), MT-II (Gpi18, Pga1), MT-III (Gpi10) and MT-IV (Smp3) are the mannosyltransferases. Mcd4, Gpi7, Gpi11, Gpi13 are EtnP transferases. Gpi7 and Gpi11 act independently. GPIT is the transamidase consisting of subunits Gpi8, Gpi16, Gpi17, Gaa1 and Gab1, which removes the GPI attachment signal sequence from proteins and attaches a preformed GPI anchor to their C-terminal ends via a transamidation reaction. The most likely pathway and possible branched pathways are shown. Where evidence is not clear for a specific step, broken arrows, rather than solid arrows are shown. (Komath et al., 2018 IUBMB Life. 70(5):355-383.)

The main focus of the lab currently is **glycosylphosphatidylinositol (GPI) anchor biosynthesis in the human pathogen, *C. albicans*.** The GPI anchor is a complex glycolipid anchor that is ubiquitously present in eukaryotes. An elaborate pathway of roughly 10-12 steps works sequentially to produce the precursor GPI anchor in the endoplasmic reticulum. It is then attached to the C-terminal ends of proteins that carry the GPI attachment signal sequence. A variety of proteins may be held by means of this anchor to the extracellular leaflet of the plasma membrane (and/ or cell wall). In lower eukaryotes the biosynthetic pathway leading to the formation of the complete GPI anchor is essential to the viability and functioning of the organism, making it an attractive drug target; in higher eukaryotes it is critical at certain stages of organismal development, such as in embryogenesis, but not at others.

My lab has been working to understand the molecular details of this pathway. This task is particularly challenging given that it involves mostly multi-subunit membrane-bound enzymes. There are no commercially available substrates for most steps of the pathway and assay protocols that are successful for one system do not always work for another system. Listed below are some of our major contributions to the field:

- We showed that the enzyme complex involved in the first step of GPI anchor biosynthesis in *C. albicans*, the GPI-*N*-acetylglucosaminyltransferase (GPI-GnT), is mutually co-regulated with ergosterol biosynthesis in the organism and is closely linked to Ras signalling/ hyphal morphogenesis and drug-response in the organism. This has ramifications for controlling Candida infection and countering its drug-resistance. While controlling hyphal morphogenesis is seen as a key step towards controlling virulence in this pathogen, ergosterol and the sterol biosynthetic pathway are the most important targets for therapeutic intervention in controlling Candida infections. Current work is focused on better understanding the intra-subunit cross-talk as well as the mechanisms of the cross-talk of this step with ergosterol biosynthesis and Ras signaling in *C. albicans vis-à-vis S. cerevisiae.*.
- We are also interested in comparing the active site of the enzyme involved in the second catalytic step of the pathway, the de-*N*-acetylation of GlcNAc-PI, between organisms. We showed that the *E. histolytica* de-*N*-acetylase is a close homologue of the yeast enzyme and exhibits a unique metal-independent general acid-base pair catalytic mechanism. In contrast the *C. albicans* homologue shows metal-dependent activity in cell-free systems. Current work is focused on studying the *C. albicans*, *S. cerevisiae* and mammalian enzymes.
- We showed that *CaGPI14*, encoding the first mannosyltransferase step, affects growth and hyphal morphogenesis in *C. albicans*. Hyphal morphogenesis is inhibited due to an upregulation of the *HOG1* pathway. We also showed that the cross-talk with ergosterol biosynthesis seen in the case of GPI-GnT is not effective at this step.
- A third line of enquiry in the lab is focused on understanding the GPI transamidation step and the role of signal sequences in GPI anchor attachment. We showed that the *C. albicans* Gpi8 subunit is a metal-dependent endopeptidase. We have developed a simple cell free assay to study this activity. Current work in this project is focused on better understanding the mechanism of its endopeptidase activity. In addition, we are studying the role of four other subunits of the GPI Transamidase (GPIT), CaGpi16, CaGpi17, CaGaa1 and CaGab1, in the transamidase reaction as well exploring their essentiality for the cell. During this process, we also seek to understand the minimal characteristics of a GPI anchor attachment signal sequence that the transamidase can correctly process for GPI-attachment.

Research Publications (* Corresponding Author)

Research Papers/ Invited Review Articles

1. Naithani S, **Komath SS**, Nonomura A, Govindjee G. 2021. Plant lectins and their many roles: Carbohydrate-binding and beyond. ***J. Plant Physiol.***153531, ISSN 0176-1617, https://doi.org/10.1016/j.jplph.2021.153531. (Online ahead of print)
2. Lupo V, Won S, Frasquet M, Schnitzler MS, **Komath SS**, Pascual-Pascual SI, Espinós C, Svaren J, Sevilla T. 2020. Bi-allelic mutations in EGR2 cause autosomal recessive demyelinating neuropathy by disrupting the EGR2-NAB complex. ***Eur J Neurol***. 2020 27(12):2662-2667. doi: 10.1111/ene.14512.
3. Nonomura AM, Shevela D, **Komath SS**, Biel KY, And Govindjee G. (2020) The carbon reactions of photosynthesis: role of lectins and glycoregulation. Photosynthetica 58(5): 1090-1097. DOI: 10.32615/ps.2020.064
4. Sah SK, Shefali S, Yadav A, Som P, **Komath SS***. 2020. The caspase-like Gpi8 subunit of Candida albicans GPI transamidase is a metal-dependent endopeptidase. ***Biochem Biophys Res Commun***. 23 April 2020, 525(1):61-66.
5. Chandraker A, **Komath SS***. 2020. Expression, purification, and characterization of N-acetylglucosaminylphosphatidylinositol de-N-acetylase (ScGpi12), the enzyme that catalyses the second step of GPI biosynthesis in S. cerevisiae. ***Yeast.*** 2020 Jan;37(1):63-72. doi: 10.1002/yea.3457. Epub 2019 Dec 29.
6. Parveen S, Singh, S and **Komath SS***. 2019. *Saccharomyces cerevisiae* Ras2 restores filamentation but cannot activate the first step of GPI anchor biosynthesis in *Candida albicans*. ***Biochem. Biophys. Res. Commun***. 517(4):755-761. doi: 10.1016/j.bbrc.2019.07.128.
7. Jain P, Garai P, Sethi SC, Naqvi N, Yadav B, Kumar P, Singh SL, Yadav U, Bhatnagar S, Rahul, Puri N, Muthuswami R, **Komath SS***. 2019. Modulation of azole sensitivity and filamentation by Gpi15, encoding a subunit of the first GPI biosynthetic enzyme, in Candida albicans. ***Sci Rep.*** 2019 Jun 11;9(1):8508. doi: 10.1038/s41598-019-44919-4.
8. Jain P, Sethi SC, Pratyusha VA, Garai P, Naqvi N, Singh S, Pawar K, Puri N, **Komath SS*.** 2018. Ras signaling activates glycosylphosphatidylinositol anchor biosynthesis via the GPI-N-acetylglucosaminyl transferase (GPI-GnT) in *Candida albicans*. ***J Biol Chem***. 293(31), 12222-12238. 10.1074/jbc.RA117.001225
9. Pratyusha VA, Victoria GS, Khan MF, Haokip DT, Yadav B, Pal N, Sethi SC, Jain P, Singh SL, Sen S, **Komath SS*.** 2018. Ras hyperactivation versus overexpression: Lessons from Ras dynamics in Candida albicans. ***Sci. Rep.*** 2018 Mar 27;8(1):5248. doi: 10.1038/s41598-018-23187-8.
10. Yadav U, Rai T, Sethi SC, Chandraker A, Khan M, **Komath SS*. 2018.** Characterizing *N*-acetylglucosaminylphosphatidylinositol de-*N*-acetylase (CaGpi12), the enzyme that catalyzes the second step of GPI biosynthesis in *Candida albicans.* ***FEMS Yeast Res***. 18(7), foy067.
11. **Komath SS***, Singh SL, Pratyusha VA, Sah SK. 2018. Generating anchors only to lose them: The unusual story of glycosylphosphatidylinositol anchor biosynthesis and remodeling in yeast and fungi. ***IUBMB Life.*** 70(5):355-383. doi: 10.1002/iub.1734. Critical Review.
12. Soni S, Jain BP, Gupta R, Sudhakar D, Kar K, **Komath SS***, Goswami S.* 2018. Biophysical Characterization of SG2NA Variants and their Interaction with DJ-1 and Calmodulin *in vitro.* ***Cell Biochem. Biophys***. 76(4):451-461.

13. Singh SL and **Komath SS***. 2017. Fluorescently Labelled Aerolysin (FLAER) Labelling of Candida albicans Cells. ***Bio-protocol*** 7(11): e2303. DOI: 10.21769/BioProtoc.2303.
14. Singh SL, Rai RC, Sah SK, **Komath SS*.** 2016. The catalytic subunit of the first mannosyltransferase in the GPI biosynthetic pathway affects growth, cell wall integrity and hyphal morphogenesis in Candida albicans. 2016. ***Yeast.*** Aug;33(8):365-83. doi: 10.1002/yea.3179.
15. Gupta M, Mazumder M, Dhatchinamoorthy K, Nongkhlaw M, Haokip DT, Gourinath S, **Komath SS**, Muthuswami R. 2015. Ligand-induced conformation changes drive ATP hydrolysis and function in SMARCAL1. ***FEBS J.*** 282(19):3841-59. doi: 10.1111/febs.13382.
16. Shah AH, Rawal MK, Dhamgaye S, **Komath SS**, Saxena AK, and Prasad R. 2015. Mutational Analysis of Intracellular Loops Identify Cross Talk with Nucleotide Binding Domains of Yeast ABC Transporter Cdr1p. ***Sci. Rep.*** 5:11211. doi: 10.1038/srep11211.
17. Pawar K, Yadav A, Prasher P, Mishra S, Singh B, Singh P and **Komath SS***. 2015. Identification of an indole-triazole-amino acid conjugate as highly effective antifungal agent. ***Journal Article Med. Chem. Commun***. Online Manuscript doi: 10.1039/C5MD00156K.
18. Ahmad MF, Mann PG and **Komath SS*.** 2015. A Signal with a Difference: The role of GPI anchor signal sequence in dictating conformation and function of the Als5 adhesin in Candida albicans. ***Adv. Exp. Med. Biol***. 842:147-163. doi: 10.1007/978-3-319-11280-0_10. (Invited article)
19. Anshuman, Singh SL, Yadav B and **Komath SS***. 2014. *Saccharomyces cerevisiae* Gpi2, an accessory subunit of the enzyme catalyzing the first step of glycosylphosphatidylinositol (GPI) anchor biosynthesis, selectively complements some of the functions of its homolog in *Candida albicans.* ***Glycoconj. J***. 31(6-7):497-507. doi: 10.1007/s10719-014-9536-8. (Invited article)
20. Yadav B, Bhatnagar S, Ahmad MF, Jain P, Pratyusha VA, Kumar P, **Komath SS***. 2014. First step of glycosylphosphatidylinositol (GPI) biosynthesis cross-talks with ergosterol biosynthesis and Ras signaling in *Candida albicans*. ***J Biol Chem.*** 289(6):3365-82. doi: 10.1074/jbc.M113.528802. Epub 2013 Dec 19.
21. Pooja, Parasher P, Singh P, Panwar K, Vikramdeo KS, Mondal N, **Komath SS***. 2014. Synthesis of amino acid appended indoles: Appreciable anti-fungal activity and inhibition of ergosterol biosynthesis as their probable mode of action. ***Eur. J. Med. Chem***. 80: 325-339.
22. Ashraf M, Sreejith P, Yadav U and **Komath SS***. 2013 Catalysis by N-acetyl-D-glucosaminylphosphatidylinositol de-N-acetylase (PIG-L) from *Entamoeba histolytica*: New roles for conserved residues. ***J. Biol. Chem.*** 288:7590-7595. doi: 10.1074/jbc.M112.427245. Epub 2013 Jan 22.
23. Rawal MK, Khan MF, Kapoor K, Goyal N, Sen S, Saxena AK, Lynn AM, Tyndall JDA, Monk BC, Cannon RC, **Komath SS**, and Prasad R. 2013. Insight into PDR ABC pump drug transport through mutagenesis of Cdr1p transmembrane domains. ***J. Biol. Chem***. 288(34):24480-93. doi: 10.1074/jbc.M113.488353. Epub 2013 Jul 3.
24. Victoria GS, Yadav B, Hauhnar L, Jain P, Bhatnagar S and **Komath SS***. 2012. Mutual Co-Regulation Between GPI-N-acetylglucosaminyl Transferase and Ergosterol Biosynthesis in *Candida albicans*. ***Biochem. J.*** 443(3):619-25.
25. Ahmad MF, Yadav B, Kumar P, Puri A, Mazumder M, Ali A, Samudrala G, Muthuswami R, and **Komath SS***. 2012. The GPI anchor signal sequence dictates the folding and functionality of the ALS5 adhesin from *Candida albicans*. ***PLoS One*** 7(4):e35305.
26. Dutta P, Tanti GK, Sharma S, Goswami SK, **Komath SS**, Mayo MW, Hockensmith JW, Muthuswami R. 2012. Global Epigenetic Changes Induced by SWI2/SNF2 Inhibitors Characterize Neomycin-Resistant Mammalian Cells. ***PLoS One*** 7(11):e49822.

27. Nongkhlaw M., Gupta M., **Komath S. S.** and Muthuswami R. 2012. Motifs Q and I are required for ATP hydrolysis but not for ATP binding in SWI2/SNF2 proteins. ***Biochemistry*** 51(18):3711-22.
28. Ashraf M, Yadav B, Sreejith, Kumar KS, Vats D, Muthuswami R and **Komath SS***. 2011. The *N*-Acetyl-D-glucosaminylphosphatidylinositol de-*N*-acetylase from *Entamoeba histolytica*: Metal alters catalytic rates but not substrate affinity. ***J. Biol. Chem***. **286:** 2543-2549. doi:10.1074/jbc.c110.178343
29. Singh P, Verma P, Yadav B, **Komath SS***. 2011. Synthesis and evaluation of indole-based new scaffolds for antimicrobial activities-Identification of promising candidates. ***Bioorg Med Chem Lett***. 2011 Jun 1;21(11):3367-72.
30. Victoria GS, Kumar P and **Komath SS***. 2010. The *Candida albicans* homolog of PIG-P: Gene dosage and role in growth and filamentation. ***Microbiology***. 156**,** 3041-3051.
31. Singh P, Kaur J, Yadav B and **Komath SS***. 2010. Targeting efflux pumps—*In vitro* investigations with acridone derivatives and identification of a lead molecule for MDR modulation. ***Bioorg. Med. Chem***. 18:4212–4223.
32. Pandey, G., Fatma, T., Cowsik, S. M. and **Komath SS**.* 2009. Specific interaction of jacalin with phycocyanin, a fluorescent phycobiliprotein**.** ***J. Photochem. Photobiol. B. Biol***. 97(2):87-93.
33. Pandey, G., Fatma, T and **Komath SS**.* 2009. Specific interaction of the legume lectins, concanavalin A and peanut agglutinin, with phycocyanin**.** ***Photochem. Photobiol***. 85(5):1126-33.
34. Singh P, Kaur J, Yadav B and **Komath SS***. 2009. Design, synthesis and evaluation of acridone derivatives using *Candida albicans*- Search for MDR modulators led to identification of an anti-candidiasis agent. ***Bioorg. Med. Chem***. 17(11):3973-9. Epub 2009 Apr 18.
35. Nongkhlaw M, Jha DK, Hockensmith, JW, **Komath SS*** and Muthuswami R**.*** 2009. Elucidating the mechanism of DNA-dependent ATP hydrolysis mediated by DNA-dependent ATPase A, a member of the SWI2/SNF2 protein family. ***Nucleic Acid Research*** 37(10):3332-41. Epub 2009 Mar 26.
36. Oswal N, Sahni NS, Bhattacharya A, **Komath SS***, Muthuswami R.* 2008. Unique motifs identify PIG-A proteins from glycosyltransferases of the GT4 family. ***BMC Evol Biol***. Jun 4;8:168.
37. Rai V, Gaur M, Kumar A, Shukla S, **Komath SS** *, Prasad R**.*** 2008. A novel catalytic mechanism for ATP hydrolysis employed by the N-terminal nucleotide-binding domain of Cdr1p, a multidrug ABC transporter of *Candida albicans*. ***Biochim Biophys Acta. (Biomembranes)*** 1778(10):2143-53.
38. Rai V, Gaur M, Shukla S, Shukla S, Ambudkar SV, **Komath SS** and Prasad R**.** 2006. Conserved Asp327 of Walker B motif in the N-terminal Nucleotide Binding Domain (NBD-1) of Cdr1p of *Candida albicans* has acquired a new role in ATP hydrolysis. ***Biochemistry.*** 45(49):14726-39.
39. **Komath SS***, Kavitha M, Swamy MJ**.*** 2006. Beyond carbohydrate binding: New directions in plant lectin research. ***Org Biomol Chem***. 4(6):973-88. **Most downloaded paper of the month**.
40. Prasad R, Gaur NA, Gaur M and Komath SS. 2005. Efflux Pumps in Drug Resistance of *Candida*. ***Infect Disord Drug Targets***. 6(2):69-83.
41. Saini P, Prasad T., Gaur NA, Shukla S., Jha S, Komath SS., Khan LA, Haq QMR and Rajendra Prasad. 2005. Alanine scanning of transmembrane helix 11 of Cdr1p ABC antifungal efflux pump of Candida albicans: identification of amino acid residues critical for drug efflux. ***J Antimicrob Chemother***. 56:77-86.

42. Rai V, Shukla S, Jha S, **Komath SS*** and Prasad R.* 2005 Functional characterization of N-terminal nucleotide binding domain (NBD-1) of a major ABC drug transporter Cdr1p of *Candida albicans*: Uncommon but conserved Trp326 of Walker B is important for ATP binding. ***Biochemistry***. 44: 6650-6661.
43. Kenoth R, **Komath SS** and Swamy MJ. 2003. Physicochemical and saccharide-binding studies on the galactose-specific seed lectin from *Trichosanthes cucumerina*. ***Arch. Biochem. Biophys***. 413(1):131-138.
44. Manoj N, Jeyaprakash AA, Pratap JV, **Komath SS**, Kenoth R, Swamy MJ, Vijayan M. 2001. Crystallization and preliminary X-ray studies of snake gourd lectin: homology with type II ribosome-inactivating proteins. ***Acta Crystallogr. D Biol. Crystallogr***. **57**:912-9144.
45. **Komath SS**, Kenoth R. Swamy MJ. 2001. Thermodynamic analysis of saccharide binding to snake gourd (*Trichosanthes anguina*) seed lectin. Fluorescence and absorption spectroscopic studies. ***Eur J Biochem***. 268:111-119.
46. **Komath SS**, Bhanu K, Maiya BG and Swamy MJ. 2000. Binding of porphyrins to jacalin [jack fruit (*Artocarpus integrifolia*) agglutinin]. Absorption and fluorescence spectroscopic investigations. ***Biosci. Rep***. 20:265-276.
47. **Komath SS,** Kenoth R, Giribabu L, Maiya BG and Swamy MJ. 2000. Fluorescence and absorption spectroscopic studies on the interaction of porphyrins with snake gourd (*Trichosanthes anguina*) seed lectin. ***J. Photochem. Photobiol. (B. Biology)*** 55:49-55.
48. Chaudhary A, Vasudha S, Rajagopal K, **Komath SS**, Garg N, Yadav M, Mande SC and Sahni G. 1999. Function of the central domain of streptokinase in substrate plasminogen docking and processing as revealed by site-directed mutagenesis. ***Protein Science***, 8:2791-2805.
49. Padma P**, Komath SS**, Nadimpalli SK and Swamy MJ. 1999. Purification in high yield and characterization of a new galactose-specific lectin from the seeds of *Trichosanthes cucumerina*. ***Phytochemistry***, 50**:** 363-371.
50. **Komath SS** and Swamy MJ. 1998. Fluorescence quenching, time resolved fluorescence and chemical modification studies on the tryptophan residues of snake gourd (*Trichosanthes anguina*) seed lectin. ***J. Photochem. Photobiol.(B. Biology)*** 50:108-118.
51. Padma P, **Komath SS**, Swamy MJ. 1998. Fluorescence quenching and time-resolved fluorescence studies on the *Momordica charantia* (bitter gourd) seed lectin. ***Biochem. Mol. Biol. Int.*** 45(5), 911-920.
52. **Komath SS**, Nadimpalli SK. and Swamy M J. 1998. Identification of histidine residues in the sugar binding site of snake gourd (*Trichosanthes anguina*) seed lectin. ***Biochem. Mol. Biol. Int***. 44(1):107-16.
53. **Komath SS** and Swamy MJ. 1998. Further characterisation of the saccharide specificity of snake gourd (Trichosanthes anguina) seed lectin. ***Current Science***, 75(6): 608-611.
54. Bhanu K, **Komath SS** and Swamy MJ. 1997. Interaction of porphyrins with concanavalin A and pea lectin. ***Current Science***. 73(7):598-602.
55. Ramakrishnan M, **Komath SS**, Sheeba V and Swamy MJ. 1997. Differential scanning calorimetric studies on the thermotropic phase transitions of dry and hydrated forms of *N*-acylethanolamines of even chainlengths. ***Biochim. Biophys. Acta.*** 1329(2):302-10.
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57. Vijayadamodar GV, **Komath SS**, Roy S and Bagchi B. 1994. Dielectric relaxation in dipolar solid rotator phases. ***Phase Transitions***. 50:21-45.
58. Roy S, **Komath SS** and Bagchi B. 1993. Molecular theory of ultrafast solvation in liquid acetonitrile. ***J. Chem. Phys***. 99(4):3139-3058.

59. **Komath SS** and Bagchi B. 1993. Solvation dynamics in a Brownian dipolar lattice. Comparison between computer simulation and various molecular theories of solvation dynamics. ***J. Chem. Phys*.** 98(11):8987-8993.
60. Roy S, **Komath SS** and Bagchi B. 1993. Dielectric friction and solvation dynamics: novel results on relaxation in dipolar liquids. ***Proc. Indian Acad. Sci. (Chem. Sci.).*** 105(1): 79-85.
61. Chattopadhyay A, **Komath SS** and Raman B. 1992. Aggregation of lasalocid A in membranes: a fluorescence study. ***Biochim. Biophys. Acta*.** 1104:147-150.

***Book Chapters and Posters (peer-reviewed*)**

62. **Komath SS**, Mori F, Ferguson MAJ, Hart GW, Kinoshita T. 2022. Glycosylphosphatidylinositol Anchors (chapter 12) (In: Varki A, Cummings RD, et al., editors. ***Essentials of Glycobiology*** 4th ed. CSHL Press; 2022). In press.
63. Nonomura A, Shevela D, **Komath SS**, Biel K, Govindjee G. 2020. Plant Growth Regulator for Photosynthesis, Govindjee's Educational Poster Series, 2020, July 2020, DOI: 10.13140/RG.2.2.30634.44480
64. **Komath SS***, Ahmad FA and Mazumder M. 2013. Cloning, expression and functional characterization of Als5, an adhesin from *Candida albicans*. ***Protein Purification and Analysis – Methods and Applications***. ISBN: 978-1477555-05-7. iConcept Press. (invited)

Other Publications

65. **Komath SS.** 2020. Our parallel universes: Eyes must see, ears must listen, the heart must seek. ***South Asia Monitor.*** Published 22 July 2020. https://southasiamonitor.org/culture/our-parallel-universes-eyes-must-see-ears-must-listen-heart-must-seek.
66. **Komath SS.** 2019. For a place at the high-table: A compelling case of Indian women in Science. ***Dialogue (Science, Scientists, and Society),*** 12 April 2019. https://doi.org/10.29195/DSSS.02.01.0018.

    Translated into Hindi **स्नेहा सुधा कोमथ**. 2020. भारत में विज्ञान के क्षेत्र में महिलाओं की स्थिति. ***Srote***, 02 September (https://bit.ly/3b7NESG)
67. **Komath SS.** 2018. STEM: The Gender Gap. ***Deccan Chronicle*.** Published Jun 3, 2018 (Discourse). https://www.deccanchronicle.com/discourse/030618/stem-the-gender-gap.html.
68. **Komath SS**. 2008. Frames of science? ***Current Science*** 94(11): 1363-64.

Professional review of scientific work

***Reviewed manuscripts for*:** Nature Communication, Scientific Reports, ACS Omega, Future Microbiology, BMC Microbiology, Current Genetics, Fungal Genetics and Biology, IUBMB Life, Journal of Photochemistry and Photobiology B: Biology, Spectroscopy Letters, BBA (Biomembranes), International Journal of Biological Macromolecules (IJBM), Process Biochemistry, Pathogens and Global Health, Biological Chemistry, Journal of Bacteriology, Assay and Drug Development Technologies, Physiology and Molecular Biology of Plants, Journal of Basic Microbiology, Current Science, Resonance.

Reviewed grants for: Department of Biotechnology; Department of Science and Technology/ Science and Engineering Research Board; Research Council of KU Leuven, Belgium

Invited Talks in 2021

1. Dressed to Kill: Coordinated expression of GPI anchored virulence factors with hyphal morphogenesis in the human pathogenic fungus, *Candida albicans*. Talk given at **NASI-DDUC Webinar Series Women in Science Lecture Workshop**, conducted at Deen Dayal Upadhyay College, Delhi University, 24th February, 2021.

2. Speaker at webinar on **STIP 2020 and the Future of Scientific Research in India**, organized by Zakir Hussain Centre For Education Studies, Jawaharlal Nehru University, New Delhi on 11th March 2021.

3. Women in Science: Gender issues and lab cultures. Talk given **on invitation by the Internal Complaints Committee**, Shiv Nadar University, Noida (UP), 3rd March, 2021.

Details of Funded Research Projects

Current Projects:

1. Exploring the mechanism of endopeptidase activity of Candida albicans Gpi8. Approved. **SERB-POWER Fellowship**. 2021.
2. Studying the catalytic subunit of the GPI *N*-acetylglucosaminyl transferase in *Candida albicans.* Approved for funding by **DBT**. 2021. Rs. 88.57 lakhs
3. Activation of GPI *N*-acetylglucosaminyl transferase in *Candida albicans*. Approved for funding by **SERB(DST)**. 2021. Rs. 63.22 lakhs (March 2021-2024)
4. Role of *ERG5* and *ERG4* in *Candida albicans* and the effect of ergosterol loss on GPI anchor biosynthesis, transport and location. **CSIR**, India (May 2019-2022). Rs. 16.5 lakhs
5. Structure-function analysis of GPI biosynthetic enzymes. (Co-PI). Project funded by **DBT** (2019-2022). Rs. 113.10 lakhs.
6. Elucidating the cross-talk between histone acetyltransferases and ATP-dependent chromatin remodelers proteins in *C. albicans* and mammalian cells. (Co-PI). Project funded by **STARS** (2019-2022). Rs. 94.0 lakhs

Major projects completed

S. No.	Title	Cost in Lakhs of Rupees	Duration	Roles as PI/Co-PI	Agency
1.	GPI transamidase in *Candida albicans*.	49.554	Dec 2017-2020	PI	DBT
2.	GPI biosynthesis and Ras signaling in *Candida albicans*	59.198	June 2013-May 2016	PI	DBT
3.	Cross-talk between GPI biosynthesis and Ras signaling in *S. cerevisiae*	92.106	Feb 2014-2017	PI	DST
4.	Tailoring glycosylphosphatidylinositol substrates and substrate mimetics to study host-pathogen interactions	81.74	Mar 2015-2018	PI	DST (Special call)

5.	Mammalian Pig-L: Cloning, purification and characterization of GlcNAc-PI de-N-acetylase activity	15.00	Oct 2014-2017	PI	CSIR
6.	Targeting ABC transporters: Development of multi drug resistance modulators and fluorescent probes	16.70	May2012-15	Co-PI (independent funding)	DST
7.	Studying the mechanism of de-N-acetylation by a novel de-N-acetylase (PIG-L) from *Entamoeba histolytica*	17.55	Nov 2013-2016	PI	CSIR
8.	Investigating the role of PIG-H, an accessory protein in the first step of GPI anchor biosynthesis in *Candida albicans*	35.42	Feb 2012-2015	PI	DBT
9.	Role of PIG-P in *Candida albicans.*	7.032	April 2006-09	PI	UGC
10.	Understanding the deactylation step catalyzed by PIG-L gene product during GPI Biosynthesis in *Candida albicans*	12.0	June 2007-2010	PI	CSIR
11.	Understanding the Initial Steps in the GPI Biosynthesis Pathway in Candida albicans	32.70	Nov 2005-2008	PI	DBT

Funding support received under Umbrella Projects:

1. DRS & CAS, SLS, JNU
2. DST-PURSE
3. UGC-RNW
4. University with Potential for Excellence grant received by JNU: Analysis of the GPI anchor signal sequence of the Als5 adhesin in *Candida albicans* (2014- 2019).
5. DBT-BUILDER

Details of Research Supervision

Post-doctoral researchers associated with the lab in different capacities:

1. Dr. Subhash Chandra Sethi (Project Fellow)
2. Dr. Priyanka Jain (Project Fellow)
3. Dr. Anandita Banerjee (currently SRF in a DBT funded project and now selected as U.G.C. D.S. Kothari Post-Doctoral Fellow)
4. Dr. Shabnam Akhtar **(**U.G.C. D.S. Kothari Post-Doctoral Fellow)
5. Dr. Sudisht K. Sah (worked as SRF in DBT funded project, 2019)
6. Dr. Dominic Thangminlen Haokip (PDF in DBT-BUILDER project, 2015-2016)
7. Dr. Madhuri Singh (U.G.C. D.S. Kothari Post-Doctoral Fellow 2013-14)
8. Dr. Archana Sehgal (DST Young Scientist 2004-2007)

MPhil/ PhD Research

	Name	Enrolled	Degree awarded	Present Address
1.	Dr. Ramesh C. Rai	2003	2010	Project Scientist, Immunology group; International Centre for Genetic Engineering and Biotechnology, Aruna Asaf Ali Marg, New Delhi, India-110067 E mail: rairamesh@gmail.com
2.	Dr. Pravin Kumar (co-supervised by Dr. Rohini Muthuswami)	2004	2010	Project Associate National Institute of Plant Genome Research, New Delhi, 110067, India E mail: csirpravin@gmail.com pravin_dbt@yahoo.co.in
3.	Dr. Mohammad Ashraf Khan	2005	2013	C/o Sub-Divisional Agricultural Officer Pahalgam, Headquarter-Mattan (Near Poultry Project Office) , District-Anantnag Jammu And Kashmir -192125. e-mail: ashraf912001@yahoo.com
4.	Dr. Guiliana Victoria Soraya	2006	2011	Programme Manager Erasmus Mundus EMJMD NANOMED at Université de Paris
5.	Dr. Bhawna Yadav	2007	2013	Post-doctoral Fellow, Fungal Research Group School of Medical Sciences Institute of Medical Sciences, Foresterhill University of Aberdeen Aberdeen AB25 2ZD UK
6.	Dr. Usha Yadav	2010	2016	NPDF, AIIMS, New Delhi
7.	Dr. Priyanka Jain	2010	2016	Currently fellow in a DBT-sponsored project
8.	Dr. Snehlata Singh	2011	2017	Scientist C, DBT
9.	Dr. Pratyusha Vavilala	2011	2017	Assistant Prof. (ad hoc) DU
10.	Dr. Pareeta Gajraj	2011	2017	Lecturer, Jyoti Vidyapeeth Women's University
11.	Tarun K. Rai	2012	Deregistered	
12.	Anshuman	2012 2014	2014 M. Phil. 2020 Ph. D.	Continued research for Ph.D. Current details not available
13.	Shazia Parveen	2013	Deregistered	
14.	Anupriya Chandarker	2013	2020	Degree awarded (NA)
15.	Sudisht Sah	2013	2018	Research Associate, University of Rochester Medical Center, New York, USA
16.	Pramitha Garai	2014	2020	Degree awarded. Current details not available
17.	Subhash Chandra Rai	2015	2021	Degree awarded. Currently Project Fellow
18.	Shailja Shefali	2017	continuing	Co-supervisor Prof. S. Gourinath
19.	Monika Bharati	2018	continuing	
20.	Yatin Suneja	2019	continuing	
21.	Simran Sharma	2019	continuing	Co-supervisor Prof. S. Gourinath
22.	Isaac Cherian	2020	continuing	

Co-supervision of Ph. D. students registered in JNU

	Name	Degree awarded	Co-Supervisor
1.	Dr. Versha Rai	2007	Prof. Rajendra Prasad

2.	Dr. Lalremruata Haunhar	2013	Dr. Rohini Muthuswami
3.	Dr. Sudhuman Singh	2013	Prof. Biren Mallick
4.	Dr. Pratishtha Rai	2018	Prof. Sudha M. Cowsik
5.	Shatrunjai Giri	continuing	Prof. Biren Mallick

Co-supervision of Ph. D. students registered outside JNU

	Name	Degree awarded	Co-supervisor	Institution at which registered
6.	Dr. Jatinder Kaur	2009	Dr. Palwinder Singh	GNDU, Amritsar
7.	Dr. Md. Faiz Ahmad	2012	Prof. Anwar Alam	Jamia Milia Islamia University
8.	Dr. Gunjan Pandey	2012	Prof. Tasneem Fatma Prof. S. M. Cowsik	Jamia Milia Islamia University
9.	Dr. Kalpana Pawar	2017	Prof. Balwinder Singh	Uttarakhand Technical University

Masters dissertation for students registered in JNU

	Name	YEAR	Current positions
1.	Lakshman	2003-04	Assistant Professor, Krea University
2.	Soraya	2004-05	Programme Manager Erasmus Mundus EMJMD NANOMED at Université de Paris
3.	Yukti Aggarwal	2005-06	Process Engineer, Intel Corporations
4.	Nidhi	2005-06	Not available
5.	Sutirtha Datta	2006-07	Not available
6.	Shailesh Kumar	2008-09	Staff Scientist-III, NIPGR
7.	Aditi Verma	2010-11	Scientific Officer D, TIFR
8.	Pooja Sanduja	2011-12	Postdoctoral Researcher, Boston Children's Hospital
9.	Mukesh Kumar	2011-12	Not available
10.	Anupama Yadav	2011-12	Not available
11.	Rohini Datta	2012-13	Postdoctoral scholar, Stanford University
12.	Shikha Srivastava	2014-15	Graduate student, University of Louisville, Kentucky, USA
13.	Shafaque Zahra	2016-17	Ph.D. Student, NIPGR
14.	Punnag Som	2018-19	Not available
15.	Neha Agarwal	2019-20	Ph.D. Student, CDRI, Lucknow
16.	Anuradha Gupta	2020-21	Ph.D., National Institute of Immunology, New Delhi
17.	Sakshi Seth	2020-21	IISER, Mohali
18.	Aqsa Qureshi	2021-22	Working on MSc project dissertation currently

Other short-term project students/ technical assistants/project fellows*

Total ~ 50

YEAR	Name
2004-2007	Sreejith, Masum Saini, Hina
2008	Priyanka Kumari, Roxy Vats, Gowhar Ahmad Bhat
2009	Pooja Joshi, Kokila S Kumar, Aditi Nelly
2010	Amrita Puri, Farheen Mirza, Ankita Dasgupta, Chetna Sai, Thomas Sarah Babu,
2011	Sujeet Kumar, Sugandha Singh, Safir Ahmad, Shilpi Bhatnagar, Lavanya Nambiar, Shefali Gupta
2012	Kiran Bora, Tilak Kumar Gupta, Sudhanshu Mudgal, Md. Abdul Yaseen, Snigdha

2014	Suad, Deepanshi, Muskan Bhatia, Prerna Sharma (DBT-BUILDER)
2015	Sanjana Ailani, Jasleen Kaur, Roshni Gupta, Dr. Namita Rokana (SRF 2015-16)
2016	Sonali Singh (Project Assistant 2016-2018), Prerna, Lekha Nath, Ruchi, Sumit Kumar, Nikita
2017-2018	Rajnandan, Sree Lakshmi, Lakshman, Malavika Ghosh, Neha, Dr. Saquib Mahmood; Yashica Adhlakha
2019-2020	Madiha Abbas, Kamakshi, Yash Mishra

***Please bring to my notice any errors/ omissions in this list**

Lab assistants: Deepak Kumar; Ved Prakash