Lalit K. Golani

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QR Code

Current Position (2016 – present) Research Associate, Prof. James M Cook's Research Group, Department of Organic Chemistry, Milwaukee Institute for Drug Discovery, University of Wisconsin-Milwaukee, WI, USA.

Laboratory skills summary (professional expertise)

- Synthesis of challenging complex organic molecules (From mg to multi-gram scale).
- Design multi-step synthetic routes and executing experiments independently.
- Purify compounds by using chromatographic, crystallization, and distillation techniques.
- Analyze and identify compounds using modern spectroscopic techniques.
- Conduct laboratory operations in a safe manner. Writes and maintain records of detail experiments, patents, and journal articles.
- Experience with scientific software such as SciFinder, SciFinder^{n}, ChemDraw, MOE, Chimera, AutoDock Vina, Discovery Studio, Mnova, and EndNote.
- Create and interpret structure activity relationship (SAR). Apply computational for the drug discovery including small molecule docking, protein-ligand binding interactions, homology modeling and free energy calculations.

Education

- **Ph.D.** Medicinal Chemistry, Prof. Aleem Gangjee Research Group (**2010-2016**)
  Graduate School of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA, USA.
- **Master of Pharmacy** Pharmaceutical and Medicinal Chemistry (**2004-2006**)
  Manipal College of Pharmaceutical Sciences (MCOPS), Manipal University, Karnataka, India.
- **Bachelor of Pharmacy** (**1999-2003**) Guru Gobind Singh Indraprastha University, Delhi, India.

Research/Work/Training

- **Research Summary:** Current research involves synthesis of novel α2/α3 $GABA_AR$ subtype selective 1, 4-benzodiazepines and other related heterocyclic molecules. Designing new molecules using molecular modeling.
- **Research Summary (Ph.D.):** Synthesis of novel pyrrolo[2,3-*d*]pyrimidines as classical targeted antifolates. Docking study-using MOE (molecular modeling software). Various chemical reactions successfully carried out (substitution, elimination, addition, rearrangement, oxidation, reduction, carbon-carbon, carbon-heteroatom, and peptide coupling reactions).
- **Research Summary (master's in pharmacy):** Research work involves synthesis of 1,2,4-trioxane molecules from simple, easily available, and cheap starting material.
- **Teaching Experience:** Three and half years of teaching experience as lecturer (Subject taught; Medicinal chemistry and biochemistry)

Additional Skills

- **Molecular modeling software used:** AutoDock Vina, Chimera and MOE
- **Computer & other:** MS Word, Outlook, PowerPoint, and Excel. HTML, CSS, JavaScript, Python (level beginner, self-learned). *Typing speed*: 35-40 wpm. *Languages***:** English and Hindi.

Awards/Medal/Honors

- GATE (Graduate Aptitude Test in Engineering) scholarship by AICTE (All India Council of Technical Education) for two years during post-graduation study.
- Registered Pharmacist since 2004; Delhi Pharmacy Council (Registration No. 016151).

- Teaching/graduate assistantship Duquesne University, Pittsburgh, PA (from 2010 to 2016).
- Travel grand recipient ACS-2019 Orlando.
- Reviewer of J. Org. Chem., J. Med. Chem., Tet. Let, Bio. Med. Chem. Let, Bio. Med. Chem., J. Het. Chem., Synthesis and Future Medicinal Chemistry.

Professional Memberships

- Fellow member of The American Institute of Chemists, Inc. (since 09/12/2020)
- Member of AACR and ACS (since 12/04/2012)

Complete List of Publications *original research/reviews/book chapters/conference presentations* (sorted by year)

1. Cerne, R.; Arnold, L. A.; Poe, M. M.; Smith, L. J.; Jin, X.; Ping, X.; **Golani, L. K.**; Cook, M. J.; Witkin, J. M., GABAkines – Advances in the Discovery, Development, and Commercialization of Positive Allosteric Modulators of $GABA_A$ Receptors. Pharmacology & Therapeutics 2021, (In Publication).

2. Witkin, J. M.; **Golani, L. K.**; Smith, L. J., New and Emerging Antiepileptic Drug Targets. In *Burger's Medicinal Chemistry, Drug Discovery and Development, 8th Edition*, 8 ed.; Wiley: **2021**; Vol. 8. (Book Chapter) https://doi.org/10.1002/0471266949.bmc099.pub3

3. Sharma, N.; Sharma, B.; Dhiman, N.; **Golani, L. K.**, PDE3 Inhibition by Cilostazol Ameliorated Behavioral and Biochemical Deficits in Prenatal Alcohol Induced Experimental ADHD. *Current Enzyme Inhibition* **2021,** *17*, 1-1. https://doi.org/10.2174/1573408017666210203202024

4. Sharma, N.; Dhiman, N.; **Golani, L. K.**; Sharma, B., Papaverine ameliorates prenatal alcohol-induced experimental attention deficit hyperactivity disorder by regulating neuronal function, inflammation, and oxidative stress. *Int J Dev Neurosci* **2021,** *81* (1), 71-81. https://doi.org/10.1002/jdn.10076

5. **Golani, L. K.**; Platt, D. M.; Rüedi-Bettschen, D.; Edwanker, C.; Huang, S.; Poe, M. M.; Furtmüller, R.; Sieghart, W.; Cook, J. M.; Rowlett, J. K., 8-Substituted Triazolobenzodiazepines: In Vitro and In Vivo Pharmacology in Relation to Structural Docking at the α1 Subunit-Containing $GABA_A$ Receptor. *Frontiers in Pharmacology* **2021,** *12* (528). https://doi.org/10.3389/fphar.2021.625233

6. Witkin, J. M.; Smith, J. L.; **Golani, L. K.**; Brooks, E. A.; Martin, A. E., Involvement of muscarinic receptor mechanisms in antidepressant drug action. In *Advances in Pharmacology*, Academic Press: **2020**; Vol. 89, pp 311-356. (Book Chapter) https://doi.org/10.1016/bs.apha.2020.03.003

7. Witkin, J. M.; Li, G.; **Golani, L. K.**; Xiong, W.; Smith, J. L.; Ping, X.; Rashid, F.; Jahan, R.; Cerne, R.; Cook, J. M.; Jin, X., The Positive Allosteric Modulator of α 2/3-Containing $GABA_A$ Receptors, KRM-II-81, Is Active in Pharmaco-Resistant Models of Epilepsy and Reduces Hyperexcitability after Traumatic Brain Injury. *J Pharmacol Exp Ther* **2020,** *372* (1), 83-94. https://doi.org/10.1124/jpet.119.260968

8. Pandey, K. P.; Khan, Z. A.; **Golani, L. K.**; Mondal, P.; Mian, Y.; Rashid, F.; Tiruveedhula, V.; Knutson, D. E.; Sharmin, D.; Ahmed, T.; Rezvanian, S.; Zahn, N. M.; Arnold, L. A.; Witkin, J. M.; Cook, J. M., Design, synthesis and characterization of novel gamma-aminobutyric acid type A receptor ligands. *Arkivoc* **2020,** *2020* (Pt 7), 242-256. (Shared First Author) https://doi.org/10.24820/ark.5550190.p011.398

9. Lewter, L. A.; **Golani, L. K.**; Cook, J. M.; Li, J. X., Blockade of α1 subtype $GABA_A$ receptors attenuates the development of tolerance to the antinociceptive effects of midazolam in rats. *Behav Pharmacol* **2020**. https://doi.org/10.1097/FBP.0000000000000614

10. Knutson, D. E.; Smith, J. L.; Ping, X.; Jin, X.; **Golani, L. K.**; Li, G.; Tiruveedhula, V.; Rashid, F.; Mian, M. Y.; Jahan, R.; Sharmin, D.; Cerne, R.; Cook, J. M.; Witkin, J. M., Imidazodiazepine Anticonvulsant, KRM-II-81, Produces Novel, Non-diazepam-like Antiseizure Effects. *ACS Chem Neurosci* **2020,** *11* (17), 2624-2637. https://doi.org/10.1021/acschemneuro.0c00295

11. **Golani, L. K.**; Islam, F.; O'Connor, C.; Dekhne, A. S.; Hou, Z.; Matherly, L. H.; Gangjee, A., Design, synthesis and biological evaluation of novel pyrrolo[2,3-*d*]pyrimidine as tumor-targeting agents with selectivity for tumor uptake by high affinity folate receptors over the reduced folate carrier. *Bioorg Med Chem* **2020,** *28* (12), 115544. https://doi.org/10.1016/j.bmc.2020.115544

12. Biggerstaff, A.; Kivell, B.; Smith, J. L.; Mian, M. Y.; **Golani, L. K.**; Rashid, F.; Sharmin, D.; Knutson, D. E.; Cerne, R.; Cook, J. M.; Witkin, J. M., The α 2,3-selective potentiators of $GABA_A$ receptors, KRM-II-81 and MP-III-80, produce anxiolytic-like effects and block chemotherapy-induced hyperalgesia in mice without tolerance development. *Pharmacol Biochem Behav* **2020,** *196*, 172996. https://doi.org/10.1016/j.pbb.2020.172996

13. Witkin, J. M.; Ping, X.; Cerne, R.; Mouser, C.; Jin, X.; Hobbs, J.; Tiruveedhula, V.; Li, G.; Jahan, R.; Rashid, F.; **Kumar Golani, L.**; Cook, J. M.; Smith, J. L., The value of human epileptic tissue in the characterization and development of novel antiepileptic drugs: The example of CERC-611 and KRM-II-81. *Brain Res* **2019,** *1722*, 146356. https://doi.org/10.1016/j.brainres.2019.146356

14. Witkin, J. M.; Martin, A. E.; **Golani, L. K.**; Xu, N. Z.; Smith, J. L., Chapter Three - Rapid-acting antidepressants. In *Advances in Pharmacology*, Witkin, J. M., Ed. Academic Press: **2019**; Vol. 86, pp 47-96. (Book Chapter) https://doi.org/10.1016/bs.apha.2019.03.002

15. Witkin, J. M.; **Golani, L. K.**; Cerne, R.; Rahman, M. T.; Li, G.; Poe, M. M.; Cook, J. M.; Smith, J. L., Facilitation of Social Support through Negative Allosteric Modulation of α5-Associated $GABA_A$ Receptors: A Novel Mechanism for the Treatment of Depression, Agitation, and Aggression in the Elderly. *OBM Geriatrics* **2019,** *3* (3), 1-1. (Review) https://doi.org/10.21926/obm.geriatr.1903073

16. Witkin, J. M.; Cerne, R.; Davis, P. G.; Freeman, K. B.; do Carmo, J. M.; Rowlett, J. K.; Methuku, K. R.; Okun, A.; Gleason, S. D.; Li, X.; Krambis, M. J.; Poe, M.; Li, G.; Schkeryantz, J. M.; Jahan, R.; Yang, L.; Guo, W.; **Golani, L. K.**; Anderson, W. H.; Catlow, J. T.; Jones, T. M.; Porreca, F.; Smith, J. L.; Knopp, K. L.; Cook, J. M., The α 2,3-selective potentiator of $GABA_A$ receptors, KRM-II-81, reduces nociceptive-associated behaviors induced by formalin and spinal nerve ligation in rats. *Pharmacol Biochem Behav* **2019,** *180*, 22-31. https://doi.org/10.1016/j.pbb.2019.02.013

17. Stutz, P. V.; **Golani, L. K.**; Witkin, J. M., Animal models of fatigue in major depressive disorder. *Physiol Behav* **2019,** *199*, 300-305. (Review) https://doi.org/10.1016/j.physbeh.2018.11.042

18. Smith, J. L.; Ping, X.; Jin, X.; **Golani, L. K.**; Li, G.; Rashid, F.; Jahan, R.; Cook, J. M.; Witkin, J. M., The Positive Allosteric Modulator of α-2/3-Containing γ-Aminobutyric Acid Type A Receptors, KRM-II-81, Is Active in Pharmacoresistant Models of Epilepsy and in Human Epileptic Tissue. *Neurosurgery* **2019,** *66* (Supplement_1). https://doi.org/10.1093/neuros/nyz310_697

19. Moerke, M. J.; Li, G.; **Golani, L. K.**; Cook, J.; Negus, S. S., Effects of the alpha2/alpha3-subtype-selective GABAA receptor positive allosteric modulator KRM-II-81 on pain-depressed behavior in rats: comparison with ketorolac and diazepam. *Behav Pharmacol* **2019,** *30* (5), 452-461. https://doi.org/10.1097/FBP.0000000000000464

20. McCusker, P.; Mian, M. Y.; Li, G.; Olp, M. D.; Tiruveedhula, V.; Rashid, F.; **Golani, L. K.**; Verma, R. S.; Smith, B. C.; Cook, J. M.; Chan, J. D., Non-sedating benzodiazepines cause paralysis and tissue damage in the parasitic blood fluke Schistosoma mansoni. *PLoS Negl Trop Dis* **2019,** *13* (11), e0007826. https://doi.org/10.1371/journal.pntd.0007826

21. **Golani, L.**; Witkin, J.; Cook, J. In *Novel imidazobenzodiazepine GABAA receptor alpha 2/alpha 3 selective PAM for the treatment of refractory/resistance epilepsy*, 257th ACS National Meeting & Exposition, Orlando, Florida, United States, March 31-April 04, 2019, 31/3/2019; **2019**; p MEDI 70. (Conference Poster Presentation) https://www.acs.org/content/dam/acsorg/meetings/national-meetings/spring-2019/technical_program_draft.pdf

22. Cerne, R.; Fisher, J. L.; Siemian, J. N.; Smith, J. L.; **Golani, L. K.**; Knutson, D. E.; Cook, J. M.; Witkin, J. M., Improvements in the Pharmacological Profile of Diazepam by KRM-II-81, an Imidazodiazepine Positive Allosteric Modulator of α 2/3-Containing $GABA_A$ Receptors: Preclinical Data Predict Enhanced Efficacy for Epilepsy, Chronic Pain, Anxiety, and Depression. *Pharmaceutical Sciences And Biomedical Analysis Journal* **2019,** *2* (1), 117. https://scientificliterature.org/Pharmaceutics/Pharmaceutics-19-117.pdf

23. Berro, L. F.; Ruedi-Bettschen, D.; Cook, J. E.; **Golani, L. K.**; Li, G.; Jahan, R.; Rashid, F.; Cook, J. M.; Rowlett, J. K.; Platt, D. M., $GABA_A$ Receptor Subtypes and the Abuse-Related Effects of Ethanol in Rhesus Monkeys: Experiments with Selective Positive Allosteric Modulators. *Alcohol Clin Exp Res* **2019,** *43* (5), 791-802. https://doi.org/10.1111/acer.14000

24. Methuku, K. R.; Li, X.; Cerne, R.; Gleason, S. D.; Schkeryantz, J. M.; Tiruveedhula, V.; **Golani, L. K.**; Li, G.; Poe, M. M.; Rahman, M. T.; Cook, J. M.; Fisher, J. L.; Witkin, J. M., An antidepressant-related pharmacological signature for positive allosteric modulators of alpha2/3-containing $GABA_A$ receptors. *Pharmacol Biochem Behav* **2018,** *170*, 9-13. https://doi.org/10.1016/j.pbb.2018.04.009

25. Li, G.; **Golani, L. K.**; Jahan, R.; Rashid, F.; Cook, J. M., Improved Synthesis of Anxiolytic, Anticonvulsant and Antinociceptive α 2/alpha3-GABA(A)ergic Receptor Subtype Selective Ligands as Promising Agents to Treat Anxiety, Epilepsy, as well as Neuropathic Pain. *Synthesis (Stuttg)* **2018,** *50* (20), 4124-4132. https://doi.org/10.1055/s-0037-1610211

26. **Golani, L. K.**; Wallace-Povirk, A.; Deis, S. M.; Wong, J.; Ke, J.; Gu, X.; Raghavan, S.; Wilson, M. R.; Li, X.; Polin, L.; de Waal, P. W.; White, K.; Kushner, J.; O'Connor, C.; Hou, Z.; Xu, H. E.; Melcher, K.; Dann, C. E., 3rd; Matherly, L. H.; Gangjee, A., Tumor Targeting with Novel 6-Substituted Pyrrolo [2,3-*d*] Pyrimidine Antifolates with Heteroatom Bridge Substitutions via Cellular Uptake by Folate Receptor alpha and the Proton-Coupled Folate Transporter and Inhibition of de Novo Purine Nucleotide Biosynthesis. *J Med Chem* **2016,** *59* (17), 7856-76. https://doi.org/10.1021/acs.jmedchem.6b00594

27. Gangjee, A.; **Golani, L.**; Dann, C.; Deis, S.; Wallace-Povirk, A.; Hou, Z.; Matherly, L. In *Synthesis and biological evaluation of novel 6-substituted pyrrolo[2,3-d]pyrimidines with substituted nitrogen bridges as targeted antifolates*, 252nd ACS National Meeting & Exposition, Philadelphia, PA,, **2016**; pp MEDI-76. (Conference Poster Presentation) https://www.acs.org/content/dam/acsorg/meetings/national-meetings/program-book/2016-philadelphia.pdf

28. Gangjee, A.; **Golani, L.**; Wallaceb, A.; Matherly, L. H. In *Abstract 4544: Synthesis and biological evaluation of novel 6-substituted pyrrolo[2,3-d]pyrimidines as targeted antifolates*, AACR 106th Annual Meeting 2015; April 18-22, 2015; Philadelphia, PA, United States, **2015**; pp 4544-4544. (Conference Poster Presentation) https://doi.org/10.1158/1538-7445.Am2015-4544

29. Gangjee, A.; **Golani, L.**; Wallace, A.; O'Connor, C.; Matherly, L. H. In *Synthesis and biological evaluation of novel 6-substituted pyrrolo[2,3-d]pyrimidines as targeted antifolates*, 250th ACS National Meeting & Exposition, Boston, MA, United States, August 16-20, 2015, Boston, Massachusetts American Chemical Society: Boston, Massachusetts **2015**; pp MEDI-369. (Conference Poster Presentation) https://www.acs.org/content/dam/acsorg/meetings/national-meetings/program-book/2015-boston.pdf

30. **Golani, L. K.**; George, C.; Zhao, S.; Raghavan, S.; Orr, S.; Wallace, A.; Wilson, M. R.; Hou, Z.; Matherly, L. H.; Gangjee, A., Structure-activity profiles of novel 6-substituted pyrrolo[2,3-*d*]pyrimidine thienoyl antifolates with modified amino acids for cellular uptake by folate receptors alpha and beta and the proton-coupled folate transporter. *J Med Chem* **2014,** *57* (19), 8152-66. https://doi.org/10.1021/jm501113m

31. **Golani, L. K.**; Gangjee, A.; Cherian, C.; Orr, S.; Mitchell-Ryan, S.; Polin, L.; Wallace, A.; Matherly, L. H. In *Abstract 1620: Synthesis and preclinical evaluation of novel 6-substituted pyrrolo[2,3-d]pyrimidines as targeted antifolates*, AACR Annual Meeting 2014; April 5-9, 2014; San Diego, CA, United States, **2014**; pp 1620-1620. (Conference Poster Presentation) https://doi.org/10.1158/1538-7445.Am2014-1620

32. Gangjee, A.; Zhao, S.; **Kumar, L.**; Cherian, C.; Orr, S.; Huang, J.; Hou, Z.; Matherly, L. H. In *Abstract 5492: Study the variation of the glutamate moiety of AG94, a targeted, potent GARFTase inhibitor, as antitumor agents with the 2-amino-6-substituted pyrrolo[2,3-d]pyrimidine scaffold*, AACR 104th Annual Meeting **2013**; Apr 6-10, 2013; Washington, DC, United States, 2013; pp 5492-5492. (Conference Poster Presentation) https://doi.org/10.1158/1538-7445.Am2013-5492

33. Gangjee, A.; **Kumar, L.**; Cherian, C.; Orr, S.; Etnyre, E.; Matherly, L. H. In *Abstract 4765: Synthesis and evaluation of nonclassical 6-substituted pyrrolo[2,3-d]pyrimidine antifolates: Role of terminal amino acid moiety in membrane transport and antitumor activity*, AACR 103rd Annual Meeting **2012**; Mar 31-Apr 4, 2012; Chicago, IL, United States, 2012; pp 4765-4765. (Conference Poster Presentation) https://doi.org/10.1158/1538-7445.Am2012-4765

34. **Kumar, L.**; Kaushik, N.; Malik, A.; Kumar, P., Synthesis of Admantane Substituted Spiro 1,2,4-TrioxanesUsing Simple and Cheap Starting Material. *Asian Journal of Chemistry* **2009,** *21* (5), 3540-3546. http://www.asianjournalofchemistry.co.in/user/journal/viewarticle.aspx?ArticleID=21_5_30

35. Mittan, D. S.; Kumar, P.; Prasad, S. V.; **Kumar, L.**; Kumar, S., Development and validation of new spectroscopic method for the estimation of furazolidone in bulk and solid dosage form. *Oriental Journal of Chemistry* **2008,** *24* (3), 1009-1012. http://www.orientjchem.org/?p=25035

36. Kumar, P.; Srivastava, V.; **Kumar, L.**, Development of new reversed-phase HPLC method for the determination of Mangiferin in Mangifera indica Linn. *Biosci Biotechnol Res Asia* **2008,** *5* (1), 383-388. http://www.biotech-asia.org/?p=6915

37. **Kumar, L.**; Kumar, P.; Kaushik, N., Synthesis of 3-(1-phenyl-vinyl)-1, 2, 5-trioxa-spiro undecane and its derivatives. *Oriental Journal of Chemistry* **2008,** *24* (2), 595-600.http://www.orientjchem.org/?p=23922

38. **Kumar, L.**; Kumar, P.; Kaushik, N., Synthesis of 8-(1-phenyl-vinyl)-6, 7, 10-trioxa-spiro [4.5] decane and its derivatives. *Organic Chemistry: An Indian Journal* **2008,** *4* (4). http://www.tsijournals.com/abstract/synthesis-of-81phenylvinyl6-7-10trioxaspiro-45-decane-and-its-derivatives-5258.html

39. Jain, R.; Nandakumar, K.; Srivastava, V.; Vaidya, S. K.; Patel, S.; Kumar, P.; **Kumar, L.**, Anticonvulsant Activity of Aqueous Extract of Aquilaria Agallocha. *Biomedical and Pharmacology Journal* **2008,** *1* (1), 121-126. http://biomedpharmajournal.org/?p=251