CURRICULUM VITAE

**Katkar Gajanan Dattatray, Ph.D.**

Interdisciplinary Postdoctoral Fellow,

Department of Cellular and Molecular Medicine,

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CORE EXPERTISE AND AREAS OF INTEREST

Immunology and Pathology, Gene Expression and Regulation, Genomics, Venom toxicology and pharmacology,

EDUCATION

**Doctor of Philosophy in Biochemistry**, University of Mysore, Karnataka, India.

**Duration:** November 2012-December 2016

**Dissertation:** Understanding the molecular mechanism and neutralization of *Echis carinatus* venom-induced toxicities.

**Mentor:** Kemparaju Kempaiah Ph.D.,

**Master of Science**, Genetics and Plant Breeding, University of Agricultural Sciences, Dharwad, India.

**Duration:** August 2008-September 2010

**Thesis:** Assessment of genetic potential of exotic tomato [(*Solanum lycopersicum* Mill.) Wetted] breeding lines for yield and disease resistance.

**Mentor:** Sridevi Onteddu Ph.D.,

**Bachelor of Science**, Agriculture, Panjabrao Deshmukh Agriculture University, Akola, India.

**Duration:** August 2004-July 2008

**RESEARCH EXPERIENCE**

**Institution: University of California, San Diego, USA**

**Duration:** February 2019-Present,

**Position:** Postdoctoral Scholar

**Research focus:** While working with Dr. Ghosh, I got opportunity to work with computational expert Dr. Sahoo, Department of Department of Computer Science and Department of Pediatrics, UC San Diego and pathologist Dr. Soumita Das to exploit an ‘Artificial intelligent’ to understand complex immunological problems in various diseases including COVID19, Multisystem inflammatory syndrome in children (MISC), Inflammatory Bowel Disease (IBD), host-pathogen interaction, and drug development. Working at UC San Diego’s fertile research networked helped me to boost my scientific intellect and career.

**Mentor:** Pradipta Ghosh, M.D.,

**Institute: Institute of Biomedical Research, Academia Sinica, Taipei, Taiwan**

**Duration:** February 2017-November 2018

**Position:** Postdoctoral Scholar

**Research focus:** Conceived the idea and developed experimental design to understanding the role of neutrophil Siglec-E in Vascular Hemostasis and Thrombosis. Mouse neutrophil Siglec-E is a functional ortholog of human Siglec-9, therefore the findings would have possible implications in human Siglec-9 and could be a new therapeutic target in regulation of hemostasis and thrombosis.

**Mentor:** Chau Lee-Young, Ph.D.,

**Institute: Institute of Biomedical Research, Academia Sinica, Taipei, Taiwan**

**Duration:** August 2016-January 2017

**Position:** Research associate

**Research focus:** Joined as research associate during awaiting degree certificate time. I learned various advanced lab techniques including flow cytometry, confocal microscopy and intravital microscopy imaging.

**Mentor:** Chau Lee-Young, Ph.D.,

**Institute: University of Mysore, Karnataka, India**

**Duration:** November 2012-December 2016

**Position:** Doctoral research scholar

**Research focus:** My doctoral research was to investigate the role of immune cells in snake venom-induced local tissue destruction and oxidative stress.

I conceived the idea to understand the role of NETosis in viper venom-induced tissue destruction, which provides a lead for designing new strategies for the possible use of DNase 1 in the management of venom-induced tissue destruction.

**Mentor:** Kemparaju Kempaiah Ph.D.,

**Institute: Department of Genetics and Plant breeding, UAS Raichur, India**

**Duration:** August 2011- March 2012

**Position:** Research Assistant

**Research focus:** Development of saline resistant peanut breeding lines.

**Mentor:** Prakash Kuchnur, Ph.D.,

**Institute: Department of Genetics and Plant breeding, UAS Dharwad, India**

**Duration:** August 2011- March 2012

**Position:** Master’s student

**Research focus:** Development of tomato breeding lines for yield and disease resistance.

**Mentor:** Sridevi Onteddu, Ph.D.,

**TEACHING EXPERIENCE**

**2010 - 2012: Assistant Professor, Department of Genetics and Plant Breeding, UAS, Raichur, India**

Lectured undergraduate class of 80 students, on basic course Genetics and Plant Breeding (GPB101).

Prepared laboratory manual, course material, evaluated laboratory write-ups, prepared test question papers and graded all exams during the course.

Guided, encouraged, and inspired students to pursue their career in diversified scientific research.

**2012 - 2016: Doctoral research, University of Mysore, Karnataka, India.**

Trained/guided 3 junior Ph.D., scholars (Rachana Sharma, Swethkumar B and

Naveenkumar SK) and 7 Master’s students (Mahitha Shree Anandachar, Arfath Amreen, Yashaswini Narayana, Annapoorna, Mazhar Ahmed Khan, Manoj Madhusudan,

Somashekar Gowda) for conducting research, manuscript/ thesis preparation.

**2019 - 2021: Undergraduate Bachelors’ students, University of California, San Diego, USA**

**Daniel Toobian,** BISP199 (March 2020-September 2020)

**Yashaswat Malhotra,** BISP199 (September 2020-June 2021)

**2019 - present: Masters students, University of California, San Diego, USA**

**Daniel Toobian,** Masters in Biological sciences, (November 2020-2022)

**Yashaswat Malhotra,** Masters in Biological sciences, (July 2021-till date)

**2019 - 2020: Graduate students, University of California, San Diego, USA**

**Lee Swanson,** BMS PhD scholar (February 2019-February 2020)

**2019 - present: Postdoctoral Scholar, University of California, San Diego, USA**

**Karolin Myer,** Postdoctoral research fellow, (July 2019 - November 2020)

**Madhubanti Mullick,** Postdoctoral research fellow, (June 2020 - present)

**Daniele Parisi,** Postdoctoral research fellow, (November 2021 - present)

**ACADEMIC SERVICES**

**Treasurer and organizing committee member,** Biochemical Society, Mysore, India. (2014-2016).

**Organizing committee member,** in the 3 National and 1 International symposium conducted by Department of Biochemistry and Department of Chemistry, University of Mysore, India, (2012-2016).

**PROFESSIONAL AFFILIATIONS**

1. American Association of Immunology, (AAI) Minneapolis, MN, USA

2. American Heart Association: TX, USA

2. Biochemical Society, Mysore, KA, India.

3. International Society for Infectious Diseases (ISID)

4. International Society for Environmental Information Sciences (ISEIS)

**AWARDS AND STUDENT SCHOLARSHIPS**

**Recipient,** Intersect Postdoctoral Fellowship award for Computational Scientists and Immunologists, awarded by The American Association of Immunologists 2021. (Workplace CMM, UC San Diego)

**Recipient,** Postdoctoral research fellowship award, Academia Sinica, Taiwan, 2017-2018.

**Recipient,** University Grants Commission- Junior Research Fellowship (UGC-JRF/SRF), awarded by Government of India, through National level exam held in June-2011 to pursue Doctor of Philosophy (PhD), (63rd all India rank).

Qualified National Eligibility Test (NET) for Lectureship in Life sciences conducted by CSIR-UGC.

Qualified National Eligibility Test (NET) for Lectureship in Genetics and Plant Breeding Conducted by Indian Council of Agricultural Research, India.

**Recipient,** Junior Research Fellowship-Indian Council of Agricultural Research, India, awarded government of India fellowship from through 13th All India Competitive Examination (AIEEA-2008) held in June-2008 to pursue Master of Science degree in Genetics and Plant Breeding.

Achieved ‘Top student’ prize in school from first to tenth standard during 1998-2000.

**ABSTRACTS AND PRESENTATIONS**

1. **Katkar GD.** AI-guided use of balanced peroxisome proliferator-activated receptor a/g dual agonist finetunes macrophage responses in inflammatory bowel disease. ***AAI VIRTUAL***. 05/14/21; 316734; 36 (Block symposia)

2. **Katkar GD** et al., AI-guided use of balanced peroxisome proliferator-activated receptor a/g dual agonist finetunes macrophage responses in inflammatory bowel disease. Author(s): ***AAI VIRTUAL***. Katkar GD. 05/15/21; 317023; 36 (Poster presentation)

**3. Katkar GD**, Girish KS, Kemparaju K. Lupeol derivative mitigates *Echis carinatus* venom-induced tissue destruction by neutralizing venom toxins and protecting collagen and angiogenic receptors on inflammatory cells. ***5th Annual Conference of Toxinological Society of India,*** Organized by Little Flower Hospital, Angamaly and Sree Narayana Institute of Medical Sciences, Chalakka, Kochin. Nov 21st - 22nd 2015.

4. **Gajanan D. Katkar,** B.N. Harish Babu, S.B. Revanappa, V. Rudra Naik, Suma Biradar, M.P. Basavarajappa, B.N. Geetha Kumari and K.G. Parameshwarappa. Field reaction of Safflower advanced breeding lines to leaf spots caused by Alternaria carthami. ***International Conference on Agricultural & Horticultural Sciences***. September 14-15, 2012 Hyderabad International Convention Centre, India

**PUBLISHED RESEARCH PAPERS**

**Publications while working at UC San Diego**

* 1. **Katkar GD**, Mahitha Shree Anandachar, Saptarshi Sinha, Stella-Rita Ibeawuchi, Celia R. Espinoza, Jane Coates, Yashaswat S. Malhotra, Madhubanti Mullick, Vanessa Castillo, Daniella T. Vo, Debashis Sahoo, Pradipta Ghosh. Coupling of NOD2 to GIV is Required for Bacterial Sensing. ***BioRxiv,*** 2022. doi: <https://doi.org/10.1101/2022.04.26.489574> First author (Under review at Cell reports).
  2. Saptarshi Sinha, Vanessa Castillo, Celia R. Espinoza, Courtney Tindle, Ayden G. Fonseca, Jennifer M. Dan, **Gajanan D. Katkar,** Soumita Das, Debashis Sahoo, Pradipta Ghosh. COVID-19 lung disease shares driver AT2 cytopathic features with Idiopathic pulmonary fibrosis. ***EBioMedicine.*** 2022 Aug;82:104185. doi: 10.1016/j.ebiom.2022.104185. Epub 2022 Jul 20. PMID: 35870428
  3. **Katkar, G. D**., Sayed, I. M., Anandachar, M. S., Castillo, V., Vidales, E., Toobian, D., Usmani, F., Sawires, J. R., Leriche, G., Yang, J., Sandborn, W. J., Das, S., Sahoo, D., & Ghosh, P. (2022). Artificial intelligence rationalized balanced PPARα/γ dual agonism resets dysregulated macrophage processes in inflammatory bowel disease. ***Commun Biol***, 5(1), 231. doi:10.1038/s42003-022-03168-4. First author
  4. **Ghosh P#**, Katkar GD#, Shimizu C#, Kim J, Khandelwal S, Tremoulet AH, Kanegaye J, Pediatric Emergency Medicine Kawasaki Disease Research Group, Bocchini J, Das S, Burns JC, Sahoo D. (2022) An AI-guided signature reveals the nature of the shared proximal pathways of host immune response in MIS-C and Kawasaki disease. ***Nat Commun,*** 13: 2687. Co-first author, equal contribution.
  5. Muntjewerff, E. M., Tang, K., Lutter, L., Christoffersson, G., Nicolasen, M. J. T., Gao, H., **Katkar, G. D**., Das, S., Ter Beest, M., Ying, W., Ghosh, P., El Aidy, S., Oldenburg, B., van den Bogaart, G., & Mahata, S. K. (2021). Chromogranin A regulates gut permeability via the antagonistic actions of its proteolytic peptides. ***Acta Physiol (Oxf)***, 232(2), e13655. doi:10.1111/apha.13655
  6. Mustafa, M., Abd El-Hafeez, A. A., Abdelhamid, D., **Katkar, G. D**., Mostafa, Y. A., Ghosh, P., Hayallah, A. M., & Abuo-Rahma, G. E. A. (2021). A first-in-class anticancer dual HDAC2/FAK inhibitors bearing hydroxamates/benzamides capped by pyridinyl-1,2,4-triazoles. ***Eur J Med Chem***, 222, 113569. doi:10.1016/j.ejmech.2021.113569
  7. Reynoso, S#., Castillo, V#., **Katkar, G. D#**., Lopez-Sanchez, I., Taheri, S., Espinoza, C., Rohena, C., Sahoo, D., Gagneux, P., & Ghosh, P. (2021). GIV/Girdin, a non-receptor modulator for Gαi/s, regulates spatiotemporal signaling during sperm capacitation and is required for male fertility. ***Elife***, 10. doi:10.7554/eLife.69160. Co-first author, equal contribution
  8. Sahoo, D#., **Katkar, G. D#**., Khandelwal, S., Behroozikhah, M., Claire, A., Castillo, V., Tindle, C., Fuller, M., Taheri, S., Rogers, T. F., Beutler, N., Ramirez, S. I., Rawlings, S. A., Pretorius, V., Smith, D. M., Burton, D. R., Alexander, L. E. C., Duran, J., Crotty, S., Dan, J. M., Das, S., & Ghosh, P. (2021). AI-guided discovery of the invariant host response to viral pandemics. ***EBioMedicine***, 68, 103390. doi:10.1016/j.ebiom.2021.103390. Co-first author, equal contribution.
  9. Sahoo, D., Swanson, L., Sayed, I. M., **Katkar, G. D**., Ibeawuchi, S. R., Mittal, Y., Pranadinata, R. F., Tindle, C., Fuller, M., Stec, D. L., Chang, J. T., Sandborn, W. J., Das, S., & Ghosh, P. (2021). Artificial intelligence guided discovery of a barrier-protective therapy in inflammatory bowel disease. ***Nat Commun***, 12(1), 4246. doi:10.1038/s41467-021-24470-5
  10. Tindle, C., Fuller, M., Fonseca, A., Taheri, S., Ibeawuchi, S. R., Beutler, N., **Katkar, G. D**., Claire, A., Castillo, V., Hernandez, M., Russo, H., Duran, J., Crotty Alexander, L. E., Tipps, A., Lin, G., Thistlethwaite, P. A., Chattopadhyay, R., Rogers, T. F., Sahoo, D., Ghosh, P., & Das, S. (2021). Adult stem cell-derived complete lung organoid models emulate lung disease in COVID-19. ***Elife***, 10. doi:10.7554/eLife.66417
  11. Sayed, I. M., Suarez, K., Lim, E., Singh, S., Pereira, M., Ibeawuchi, S. R., **Katkar, G.D**., Dunkel, Y., Mittal, Y., Chattopadhyay, R., Guma, M., Boland, B. S., Dulai, P. S., Sandborn, W. J., Ghosh, P., & Das, S. (2020). Host engulfment pathway controls inflammation in inflammatory bowel disease. ***FEBS j***, 287(18), 3967-3988. doi:10.1111/febs.15236
  12. Swanson, L., **Katkar, G. D**., Tam, J., Pranadinata, R. F., Chareddy, Y., Coates, J., Anandachar, M. S., Castillo, V., Olson, J., Nizet, V., Kufareva, I., Das, S., & Ghosh, P. (2020). TLR4 signaling and macrophage inflammatory responses are dampened by GIV/Girdin. ***Proc Natl Acad Sci***, 117(43), 26895-26906. doi:10.1073/pnas.2011667117

**Review Articles**

* 1. Girish, K. S., **Katkar, G. D**., Harrison, R. A., & Kemparaju, K. (2019). Research into the Causes of Venom-Induced Mortality and Morbidity Identifies New Therapeutic Opportunities. ***Am J Trop Med Hyg***, 100(5), 1043-1048. doi:10.4269/ajtmh.17-0877
  2. Toobian, D., Ghosh, P., & **Katkar, G. D**. (2021). Parsing the Role of PPARs in Macrophage Processes. ***Frontiers in Immunology***, 12(5513). doi:10.3389/fimmu.2021.783780. Senior corresponding author.

**Publications during doctoral research work at University of Mysore, India**

* 1. Girish KS, **Katkar GD**, Harrison RA, Kemparaju K. Research into the Causes of Venom-Induced Mortality and Morbidity Identifies New Therapeutic Opportunities. ***Am J Trop Med Hyg.*** 2019 May;100(5):1043-1048.
  2. Kemparaju K, Girish KS, **Katkar GD.** Reply to 'Evidence that neutrophils do not promote *Echis carinatus* venom-induced tissue destruction’. ***Nat Commun.*** 2018;9(1):2303.
  3. Swethakumar B, NaveenKumar SK, **Katkar GD**, Girish KS, Kemparaju K. Inhibition of Echis carinatus venom by DNA, a promising therapeutic molecule for snakebite management. **Biochim Biophys Acta. General Subjects** 2018;1862(5):1115-1125.
  4. Sharma RD, **Katkar GD**, Sundaram MS, Swethakumar B, Girish KS, Kemparaju K. Melatonin inhibits snake venom and antivenom induced oxidative stress and augments treatment efficacy. ***Acta Trop.*** 2017 May;169:14-25. doi: 10.1016/j.actatropica.2017.01.004. Epub 2017 Jan 12. PMID: 28089603
  5. **Katkar GD,** Sundaram MS, NaveenKumar SK, Swethakumar B, Sharma RD, Paul M, Vishalakshi GJ, Devaraja S, Girish KS, Kemparaju K. NETosis and lack of DNase activity are key factors in Echis carinatus venom-induced tissue destruction. ***Nat Commun***., 2016; 19; 7:11361.

***Received notable public attention****:*

**PRESS:** [Asian scientist](https://www.asianscientist.com/2016/04/in-the-lab/snakebite-neutrophil-dnase-scaled-viper/?alm_mvr=0)**,** [Nature Asia](http://www.natureasia.com/ja-jp/research/highlight/10640), [Discover magazine](https://www.discovermagazine.com/science-sushi?p=5645).

* 1. **Katkar GD**, Sharma RD, Vishalakshi GJ, Naveenkumar SK, Madhur G, Thushara RM, Narender T, Girish KS, Kemparaju K. Lupeol derivative mitigates *Echis carinatus* venom-induced tissue destruction by neutralizing venom toxins and protecting collagen and angiogenic receptors on inflammatory cells. ***Biochim Biophys Acta. General Subjects*** 2015;1850(12):2393-409.
  2. Sharma RD, **Katkar GD**, Sundaram MS, Paul M, NaveenKumar SK, Swethakumar B, Hemshekhar M, Girish KS, Kemparaju K. Oxidative stress-induced methemoglobinemia is the silent killer during snakebite: a novel and strategic neutralization by melatonin. ***J Pineal Res.*** 2015; 59(2):240-54.
  3. **Katkar GD**, Sundaram MS, Hemshekhar M, Sharma DR, Santhosh MS, Sunitha K, Rangappa KS, Girish KS, Kemparaju K. Melatonin alleviates *Echis carinatus* venom-induced toxicities by modulating inflammatory mediators and oxidative stress. ***J Pineal Res***., 2014; 56(3):295-312.

***Publications during master’s degree***

* 1. **GD Katkar**, O Sridevi, PM Salimath, SP Patil. Combining ability analysis for yield, its contributing characters and fruit quality parameters of exotic Tomato (Lycopersicon esculentum Mill.) breeding lines. ***Electronic Journal of Plant Breeding*** 3 (3), 908-915.
  2. SL Basavaraju, SB Revanappa, K Prashant, Anand Kanatti, HC Sowmya, **KD Gajanan**, N SrinivasBio-ecology and management of arecanut scale, Parasaissetia nigra (Neitner) and mealybug, Dysmicoccus brevipes (Cockerell). ***Indian Journal of Agricultural Research*** 47 (5), 436-440.
  3. SB Revanappa, PY Kamannavar, AG Vijaykumar, M Ganajaxi, **KD Gajanan**, B Arunkumar, PM Salimath. Genotype x environment interaction and stability analysis for grain yield in blackgram (Vigna mungo L.) ***Legume Research-An International Journal*** 35 (1), 56-58.