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I: EDUCATION

2016-Present **Postdoctoral Research Fellow**
Department of Cell and Developmental Biology
Vanderbilt University, Nashville, Tennessee, USA

2011-2016 **Ph.D. in Biology**
Department of Biology
University of Dayton, Dayton, Ohio, USA

2009-2011 **M.S. in Molecular Biology**
Department of Molecular Biology
Umeå University, Umeå, Sweden

2006-2009 **B.Sc (Zoology, Biotechnology, Chemistry)**
Hislop College, Nagpur, Maharashtra, India

II: RESEARCH EXPERIENCE

2016-present Postdoctoral Fellow in the laboratory of Andrea Page-McCaw, PhD
Vanderbilt University, Nashville, TN

- Project 1: Understanding mechanisms of Wnt diffusion in the *Drosophila* developing epithelium
- Project 2: Investigating the regulation of glypican localization and function by proteolytic cleavage and its effect on Wnt signaling

2011-2016 Graduate student in the laboratory of Madhuri Kango-Singh, PhD
University of Dayton, Dayton, OH

- Dissertation title: Investigation of altered cell-cell interactions and signaling mechanisms in *Drosophila* tumor models

2010-2011 Master's degree thesis projects (two theses completed for degree)
Umeå University, Umeå, Sweden

- Project 1 in the laboratory of Jonas von Hofsten, PhD
  Thesis title: Investigating transcriptional regulation of *fast myosin heavy chain* (*fmyhc*) *2.1* gene during zebrafish muscle development
- Project 2 in the laboratory of Jonathan Gilthorpe, PhD
  Thesis title: Investigating a role for extranuclear histones in amyloid formation associated with Parkinson's and Alzheimer's diseases

III. PUBLICATIONS:

RESEARCH ARTICLES

1. **Waghmare I***, Page-McCaw A (2023). Matrix Metalloproteinase2 cleaves and destabilizes Dally-like protein to restrict extracellular Wingless distribution. (Manuscript under revision)

2. Garrett EC, Ruchti E, Bielawski A, Sherer LM, **Waghmare I**, Hess-Homeier D, McCabe BD, Stowers RS, Certel SJ (2023). The matricellular protein *Drosophila* CCN is required for synaptic transmission and female fertility. **Genetics** DOI: 10.1093/genetics/iyac190. Online ahead of print

3. Wang X, LaFever KS, **Waghmare I**[#], Page-McCaw A[#] (2021). Extracellular spreading of Wingless is required for *Drosophila* oogenesis. **PloS Genetics** 17(4):e1009469 DOI: 10.1371/journal.pgen.1009469

4. **Waghmare I**[#], Wang X., Page-McCaw A. (2020). Dally-like Protein sequesters multiple Wnt ligands in the *Drosophila* germarium. **Dev Bio** 464(1):88-102. DOI: 10.1016/j.ydbio.2020.05.004

5. Minata M, Audia A, Shi J, Lu S, Bernstock J, Pavlyukov MS, Das A, Kim SH, Shin YJ, Lee Y, Koo H, Snigdha K, **Waghmare I**, et.al. (2019). Phenotypic plasticity of invasive edge glioma stem-like cells in response to ionizing radiation. **Cell Reports** 26(7):1893-1905.e7. DOI: 10.1016/j.celrep.2019.01.076.

6. Cheng P, Wang J, **Waghmare I**, Sartini S, Coviello V, Zhang Z, Kim SH, Mohyeldin A, Pavlyukov MS, Minata M, Valentim CL, Chhipa RR, Bhat KP, Dasgupta B, La Motta C, Kango-Singh M, Nakano I. (2016). FOXD1-ALDH1A3 signaling is a determinant for the self-renewal and tumorigenicity of mesenchymal glioma stem cells. **Cancer Res** 76(24):7219-7230.

7. **Waghmare I**, Kango-Singh M. (2016). Loss of cell adhesion increases tumorigenic potential of polarity deficient *scribble* mutant cells. **PLoS One** 11(6):e0158081. DOI: 10.1371/journal.pone.0158081

8. Kwon H J^, **Waghmare I**, Verghese S, Singh A, Singh A, Kango-Singh M. (2014). *Drosophila* C-terminal Src kinase regulates growth via the Hippo signaling pathway. **Dev Bio** 397(1):67-76.

9. Verghese S, **Waghmare I**, Kwon H^, Hanes K, Kango-Singh M. (2012). Scribble acts in the *Drosophila* Fat-Hippo pathway to regulate Warts activity. **PLoS One** 7(11): e47173.

REVIEW ARTICLES

10. **Waghmare I**[#], Page-McCaw A. (2022). Regulation of Wnt distribution and function by *Drosophila* glypicans**. Journal of Cell Science** 135(3): jcs259405. DOI: 10.1242/jcs.259405

11. **Waghmare I**[#], Page-McCaw A. (2021). Glypicans and cytonemes unite to distribute Wnt ligands. **Journal of Cell Biology** 220 (12): e202110033 DOI: 10.1083/jcb.202110033

12. **Waghmare I**[#], Page-McCaw A[#]. (2018). Wnt Signaling in stem cell maintenance and differentiation in the *Drosophila* germarium. **Genes (Basel)** 9(3), 127; DOI: 10.3390/genes9030127

13. **Waghmare I**, Verghese S, Kango-Singh M. (2015). Hippo growth control pathway and organ size. **eLS** Published online DOI: 10.1002/9780470015902.a0026054.

14. **Waghmare I***, Roebke A^*, Minata M*, Kango-Singh M, Nakano I. (2014). Intercellular cooperation and competition in brain cancers: lessons from *Drosophila* and human studies. **Stem Cells Transl Med** 3(11):1262-8.

BOOK CHAPTER

15. Verghese S*, **Waghmare I***, Singh SR, Kango-Singh M. (2013, 2020). Regulation of growth control in *Drosophila* eye. In 'Molecular Genetics of Axial Patterning, Growth and Disease in *Drosophila* eye' Springer Verlag, (Editors: A. Singh & M. Kango-Singh)

TEACHING NOTE

16. Verghese S, **Waghmare I**, Kango-Singh M. (2012). An undergraduate laboratory exercise aimed to demonstrate regulation of eukaryotic gene expression using the GAL4-UAS system in *Drosophila melanogaster*. (*Drosophila* Information Services)

*** indicates equal contribution by authors**
 # indicates corresponding author
^ indicates undergraduate author

IV. GRANTS AND FELLOWSHIPS:

2022-present K99/R00 Pathway to Independence Award, National Institute of General Medical Sciences (NIGMS)

2020-2021 Ruth L. Kirschstein National Research Service Award (T-32 training grant), National Cancer Institute (NCI), (PI: William Patrick Tansey)

2013-2015 Graduate Student Summer Fellowship, University of Dayton, Dayton, OH

V. PRESENTATIONS:

TALKS

2023 Understanding glypican-based mechanisms of extracellular Wnt distribution
Selected talk, Gordon Research Conference on 'Wnt signaling: Molecular Mechanisms, Embryonic Development and Adult Tissue Homeostasis and Therapeutics, Castelldefels, Barcelona, Spain

2022 How do cells talk to each other: Role of glypicans in establishing intercellular Communication
Invited talk, Kennesaw State University, Kennesaw, GA

2022 *Drosophila* Matrix Metalloproteinase 2 cleaves and destabilizes Dally-like protein to attenuate long-range Wg distribution
Selected talk, Southeast Society for Developmental Biology Conference

University of North Carolina-Chapel Hill, Chapel Hill, NC

2021 Wnt distribution in the *Drosophila* ovary
Selected talk, Cell Dynamics Symposium
Vanderbilt University, Nashville, TN

2019 Dlp (Dally-like protein) regulates functions of multiple Wnts in *Drosophila* germarium
Selected talk, Gordon Research Seminar on 'Wnt Signaling Networks in Development, Disease and Regeneration', West Dover, VT

2018 Dally-like (Dlp) regulates activities of Wnt ligands in *Drosophila* ovaries
Selected talk, Gordon Research Conference on 'Tissue Niches and Resident Stem Cells in Adult Epithelia', Waterville Valley, NH

2016 Investigation of Altered Cell-cell Interactions and Signaling Mechanisms in *Drosophila* Tumor Models
Invited talk, Seattle Children's Hospital, Seattle, WA

2016 Investigation of Altered Cell-cell Interactions and Signaling Mechanisms in *Drosophila* Tumor Models
Invited talk, Vanderbilt University, Nashville, TN

2015 Altered signaling module in *Drosophila* epithelial cancer model
Invited talk, University of Cincinnati, Blue Ash College, Blue Ash, OH

2015 *Drosophila* model to study cancers of neuroectodermal origin
Ohio Miami Valley Neuroscience Day, Wright State University, Fairborn, OH

2013 Analysis of Yorkie activity in *scribble* mutant cells challenged with different cell competitive environments
University of Dayton Brother Joseph W. Stander Symposium, University of Dayton, Dayton, OH

SELECTED POSTERS: (Complete list [>50] of international, local, and regional poster presentations available on request.)

2023 **Waghmare I**, Page-McCaw A. *Drosophila* Matrix Metalloproteinase 2 cleaves and destabilizes Dally-like protein to attenuate Wg distribution.
The annual *Drosophila* conference, Chicago, IL
Gordon Research Seminar and Conference on 'Wnt signaling: Molecular Mechanisms, Embryonic Development and Adult Tissue Homeostasis and Therapeutics, Castelldefels, Barcelona, Spain

2021 **Waghmare I**, Page-McCaw A. *Drosophila* Matrix Metalloproteinase 2 cleaves and destabilizes Dally like protein to attenuates Wg distribution.
The annual *Drosophila* conference (virtual)

2020 **Waghmare I**, Page-McCaw A. *Drosophila* Matrix Metalloproteinase 2 cleaves and destabilizes Dally like protein to attenuates Wg distribution.

The annual ASCB conference (virtual)

2019 **Waghmare I**, Wang X, Page-McCaw A. Dally-like (Dlp) inhibits activities of Wnt ligands in the *Drosophila* ovaries
Gordon Research Seminar and Conference on 'Wnt Signaling Networks in Development, Disease and Regeneration', West Dover, VT

2018 **Waghmare I**, Wang X, Page-McCaw A. Dally-like differentially regulates Wnt ligands in *Drosophila* germarium to promote germline stem Cell maintenance and differentiation
59th Annual *Drosophila* Research Conference, Philadelphia, PA
Gordon Research Seminar and Conference on 'Tissue Niches and Resident Stem Cells in Adult Epithelia', Waterville Valley, NH

2017 **Waghmare I**, Wang X, Page-McCaw A. Regulation of Dlp cleavage by *Drosophila* Mmp2 **58th Annual *Drosophila* Research Conference**, San Diego, CA

VI. TEACHING

2023 Lecturer for Introduction to Developmental Biology, CBIO 8312, taught 'Lineage Tracing' as a part of the 8-week bootcamp summer course Vanderbilt University, Nashville, TN

2020 Co-leader for 16-week FOCUS (Facilitating Open Communication to Understand Science) class (2-credit course), Vanderbilt University, Nashville, TN
***Conducted remotely**

2019 Teaching assistant for the 8-week bootcamp summer course (Introduction to Developmental Biology, CBIO 8312), Program in Developmental Biology, Vanderbilt University, Nashville, TN

2019 Lecturer for Introduction to Developmental Biology, CBIO 8312, taught 'Lineage Tracing' as a part of the 8-week bootcamp summer course Vanderbilt University, Nashville, TN

2011-2016 Graduate Teaching Assistant, Biology Department, University of Dayton, Dayton, OH

Courses taught:

BIO 151	Investigations in Biology Lab I: Cell and Molecular Biology
BIO 152	Concepts of Biology Laboratory II: Evolution and Ecology
BIO 101L	General Biology Lab (for non-biology majors)
BIO 551P1	Bio-instrumentation
BIO 552 P2	Bio-instrumentation
BIO 440	Cell Biology Lab

2015 Conducted a 2-day workshop on 'Model organisms and their biological significance', for high school students with emphasis on 'Genetic tools in *Drosophila*' and '*Drosophila* as a model to study tumors', The Learning Center, Nasik, India

2010 Conducted a 4-day workshop for high school students on 'Molecular biology of cancer', The Learning Center, Nasik, India

2008 Delivered lectures on syllabus pertaining to Higher Secondary Certificate Examination, for high school students, The Learning Center, Nasik, India

VII. MENTORING

2021 Undergraduate student, Cindy Nwokedi, Vanderbilt University, Nashville, TN

2018 High school student Calisa Henry through the Aspirnaut Summer Internship program, Vanderbilt University, Nashville, TN

2017-2018 Individualized Mentoring and Instructional Support (IMIS) mentoring program for four students, Department of Cell and Developmental Biology, Vanderbilt University, Nashville, TN

2011-2016 >15 undergraduate students during doctoral studies, University of Dayton, Dayton, OH

VIII. HONORS AND AWARDS:

RESEARCH-RELATED

2023 Cell Dynamics Postdoc Achievement Award, Vanderbilt University, Nashville, TN

2022 Selected Southeastern Conference Emerging Scholars Fellow, Vanderbilt University, Nashville, TN

2021 Best poster award in postdoc category at the annual 'Program in Developmental Biology' retreat, Vanderbilt University, Nashville, TN

2021 Winner of the 'Cell and Developmental Biology image competition (CDB)' at the annual CDB retreat, Vanderbilt University, Nashville, TN

2015 1st prize for poster presentation at the Sigma Xi annual poster presentation competition, University of Dayton, Dayton, OH

2015 1st prize for Ohio Miami Valley Neuroscience Day poster presentation Miami University, Miami, OH

2014 2nd prize for poster presentation at the Sigma Xi annual poster presentation competition
University of Dayton, Dayton, OH

TEACHING-RELATED

2016 Graduate Student Showcase Outstanding Teaching Award, University of Dayton, Dayton, OH

2015 The Graduate Teaching Award of Excellence for the Outstanding Teaching of Advanced Biology Laboratory Classes, University of Dayton, Dayton, OH

IX. SERVICE, OUTREACH AND LEADERSHIP

2021-2022 Member, Faculty Search Committee, Department of Cell and Developmental Biology, Vanderbilt University, Nashville, TN

2020-present Member, Diversity, Inclusion, and Equity committee, Department of Cell and Developmental Biology, Vanderbilt University, Nashville, TN

- 2020-2021: Member of the 'Discovery Sciences Emerging Scholars' (DSES) subcommittee, which led efforts to seek and invite outstanding scholars from underrepresented categories to present and highlight their research at Vanderbilt.
- 2021-present: Member of the 'Outreach' subcommittee, which aims to develop and implement scientific outreach efforts in collaboration with Title 1 middle/high school level and existing resources at Vanderbilt.

2020-2022 Member, Dean's Advisory Council for Mental Health and Wellness, Vanderbilt University School of Medicine Basic Sciences, Nashville, TN

2022 Co-organizer for the Gordon Research Seminar on 'Epithelium Dynamics During Development, Regeneration, Disease and Aging' scheduled for July 11-12, 2020, Ventura Beach Marriott, Ventura, CA, US (cancelled); rescheduled for July 2022.

2019-2021 Lead organizer for journal club in Program in Developmental Biology

2018-present Manuscript reviewer for

- PLoS One,
- PeerJ,
- Stem Cell Reports,
- Journal of Cell Biology
- PLoS Genetics