

JESSICA BAKER (nee Vanderploeg)

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EDUCATION:

- 2014 Ph.D., Biology, McMaster University, Hamilton ON
- Supervisor: Dr. Roger Jacobs
- 2009 B.Sc. *with Distinction*, Biology, Trinity Western University, Langley BC

PROFESSIONAL APPOINTMENTS:

- 2020- Associate Professor, Department of Biology, Taylor University, Upland IN
- 2020 - Adjunct Graduate Faculty - Term Limited Appointment, Indiana State University, Terre Haute IN
- 2015-2020 Assistant Professor, Department of Biology, Taylor University, Upland IN
- 2014-2015 Postdoctoral Fellow, Department of Biology, McMaster University, Hamilton ON

BIOLOGY RESEARCH EXPERIENCE and INTERESTS:

- 2015- Personal and student projects, Biology, Taylor University, Upland IN
- *The Drosophila heart as a model of cell specification and tubular organ morphogenesis*
 - *A Gliotactin-dependent planar cell polarity pathway in the Drosophila wing*
- 2014-2015 Postdoctoral fellowship, Biology, McMaster University, Hamilton ON
- *Examining a role for extracellular matrix interactions in Drosophila larval heart structure and function*
- 2009-2014 Ph.D., Biology, McMaster University, Hamilton ON
- *α PS3 β PS1 integrin and its adaptor Talin are essential for Drosophila embryonic heart tubulogenesis*
 - Research key words: genetics, cell and molecular biology, cell polarity, integrin, Talin, microscopy, immunolabeling, protein overexpression, antibody construction
 - Supervisor: Dr. Roger Jacobs
- 2007-2009 Undergraduate Summer/Thesis Projects, Trinity Western University, Langley BC
- *A screen for modifiers of frizzled-independent epithelial planar polarity in Drosophila*
 - Supervisor: Dr. Dennis Venema

PUBLICATIONS:

- 2023 **Baker**, J. A Christian perspective on integrity in Biology research: Fostering God-Honoring Motivations to Encourage Integrity. *Christian Scholar's Review* 52:3 (2023)
- 2023 *Dery, H., Holland, C., and Baker, J.* Embracing ignorance and failure promotes research excellence. *Fine Focus* 8:1 (2023)
- 2017 **Vanderploeg**, J. and Jacobs, J. R. Mapping heart development in flies: Src42A acts non-autonomously to promote heart tube formation in *Drosophila*. *Vet Sci* 4:23 (2017)
- 2017 Raza, Q., **Vanderploeg**, J. and Jacobs, J. R. Matrix Metalloproteinases are required for membrane motility and lumenogenesis during *Drosophila* heart development. *PLoS ONE* 12:e0171905 (2017)
- 2015 **Vanderploeg**, J. and Jacobs, J. R. Talin is required to position and expand the luminal domain of the *Drosophila* heart tube. *Dev Biol* 405:189 (2015)
- 2015 Bogatan, S., Cevik, D., Demidov, V., **Vanderploeg**, J., Panchbhaya, A., Vitkin, A. and Jacobs, J. R. Talin is required continuously for cardiomyocyte remodeling during heart growth in *Drosophila*. *PLoS ONE* 10:e0131238 (2015)
- 2012 **Vanderploeg**, J., Vazquez Paz, L. L., MacMullin, A. and Jacobs J. R. Integrins are required for cardioblast polarisation in *Drosophila*. *BMC Dev Biol* 12:8 (2012)

Manuscripts in preparation:

Holland, C., Tropea, N., Dery, H., Williams, M., Moore, L., Montgomery, D., Alt, K., Jones, G., Chang, H., Chang, W., Hord, A., Hochstedler, H., and Baker, J. A gliotactin-interacting role for MyoII (*zipper*) and MyoII light chain (*spaghetti squash*) in *Drosophila* wing hair planar cell polarity. (PLoS ONE, in preparation)

* Names of Taylor University student researchers are italicized.

Selected CONFERENCE and SYMPOSIUM PRESENTATIONS:

- 2023 *Holland, C., Tropea, N., Dery, H., Williams, M., Chang, H., Chang, W., Hord, A., Alt, K., Moore, L., Jones, G., Montgomery, D., Hochstedler, H., and Baker, J.* Pointing us in the right direction: Sqh and Zip in *Drosophila* wing planar cell polarity. Presentation at the March 2023 64th GSA Annual *Drosophila* Research Conference (Chicago, IL)
- 2022 Baker, J. Pointing us in the right direction: the *Drosophila* wing as a model of planar cell polarity. Invited seminar presentation (Ball State University, Muncie IN)

- 2022 *Holland, C., Montgomery, D., Hochstedler, H., and Baker, J.* Is Myo II Required for Gliotactin Dependent Planar Cell Polarity? Poster presentation at the November 2022 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI), the Fall 2022 Celebration of Scholarship, Taylor University (Upland, IN), and the Spring 2023 Butler Undergraduate Research conference.
- 2022 *Dery, H., Williams, M., and Baker, J.* Myosin II is required for *Drosophila* wing planar cell polarity. Poster presentation at the November 2022 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI), the Fall 2022 Celebration of Scholarship, Taylor University (Upland, IN), and the Spring 2023 Butler Undergraduate Research conference.
- 2022 *Tropea, N., Chang, H., Chang, W., Hord, A., and Baker, J.* Myosin II Dynamics During Gliotactin-mediated PCP. Poster presentation at the November 2022 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI) and the Fall 2022 Celebration of Scholarship, Taylor University (Upland, IN)
- 2021 Vanderploeg, J. Encouraging integrity in (Biology) research. Distinguished Faculty Lecture, Taylor University (Upland, IN)
- 2021 *Williams, M. and Vanderploeg, J.* Myosin II is required for *Drosophila* wing planar cell polarity. Virtual poster presentation for the Spring 2021 Celebration of Scholarship, Taylor University (Upland, IN)
- 2021 *Jones, G. and Vanderploeg, J.* Fruit fly research: Gliotactin dependent Myosin II *Drosophila* wing polarity. Virtual poster presentation for the Spring 2021 Celebration of Scholarship, Taylor University (Upland, IN)
- 2020 *Rovenstine, L. and Vanderploeg, J.* *D. melanogaster* as a model for cell specification and morphogenesis. Virtual poster presentation at the November 2020 West Michigan Regional Undergraduate Science Research Conference.
- 2019 *Alt, K., Moore, L., Burden, H., and Vanderploeg, J.* Is Myosin II required for *Drosophila* wing planar cell polarity? Presentation at the November 2019 Midwest *Drosophila* Conference (Allerton, IL)
- 2019 *Hoeksema, M., Burden, H., and Vanderploeg, J.* The fruit fly heart as a model of cell specification. Student presentation at the November 2019 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI) and October 2019 Homecoming Weekend Celebration of Scholarship, Taylor University (Upland, IN)

- 2018 *Moore, L., Chang, H., Hord, A., Chang, W., and Vanderploeg, J.* Pointing us in the right direction: A genetic approach to studying frizzled-independent planar cell polarity. Presentation at the November 2018 Midwest *Drosophila* Conference (Allerton, IL)
- 2018 *Moore, L., Vanderploeg, J.* Fruit fly research: Structural dynamics of *Drosophila* planar cell polarity. Student presentation at the November 2018 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI) and October 2018 Homecoming Weekend Celebration of Scholarship, Taylor University (Upland, IN)
- 2018 *Chang, H., Hord, A., Chang, W., and Vanderploeg, J.* PCP localization and screen for novel PCP proteins. Student presentation at the November 2018 West Michigan Regional Undergraduate Science Research Conference (Grand Rapids, MI) and October 2018 Homecoming Weekend Celebration of Scholarship, Taylor University (Upland, IN)
- 2018 *Rutherford, J., Reynolds, C., Moore, L., and Vanderploeg, J.* Fruit fly research, pointing us in the right direction: a genetic approach to identify novel PCP candidates. Student poster presentation at the April 2018 Heritage Weekend Celebration of Scholarship, Taylor University (Upland, IN)
- 2017 *Hord, A., Chang, H., Chang, W., and Vanderploeg, J.* Now in 3-D: Fluorescent dynamics of developing cells. Student poster presentation at the October 2017 Homecoming Celebration of Scholarship, Taylor University (Upland, IN)
- 2017 Moore, J., Dewar, J., and Vanderploeg, J. Stratifying Biology research in an undergraduate Biology program. Seminar session at the 2017 NABT Professional Development Conference (St. Louis, MO)
- 2017 *Barnett, D., Crosley, A., Phillips, C., and Vanderploeg, J.* Fruit fly research: Pointing us in the right direction. Student oral presentation at the May 2017 Celebration of Scholarship, Taylor University (Upland, IN)
- 2016 Vanderploeg, J. A Tal(in) of a broken heart: Tubulogenesis through the lens of the *Drosophila* heart. Invited seminar presentation (Goshen College, Goshen IN)
- 2016 Vanderploeg, J. A Tal(in) of a broken heart Integrin adhesion instructs *Drosophila* heart tube development. Invited seminar presentation for the American Society for Microbiology's BSU chapter (Ball State University, Muncie IN)

* Names of Taylor University student researchers are italicized.

Selected AWARDS, GRANTS, and EQUIPMENT AQUISITIONS:

- 2023 Course Design Grant – teaching grant to design BIO 440 Research Proposal and BIO 460 Research Communication (Bedi Center for Teaching and Learning, Taylor University, \$700).
- 2023 BCTLE Presenting a Paper Grant – for the 64th GSA *Drosophila* conference (Bedi Center for Teaching and Learning, Taylor University, \$700)
- 2022 “The Fruit Fly as a Genetic Model of Development” – research grant funded by the Fund for Faculty Scholarship and the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$14,279)
- 2021 Distinguished Faculty Lecturer Award, School of Natural and Applied Sciences (Taylor University, \$500 + 3 hour load reassignment)
- 2020 “*Drosophila melanogaster* heart and wing research” – research grant funded by the Fund for Faculty Scholarship and the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$1,200 and \$11,600)
- 2019 “Heart specification and development in the *Drosophila melanogaster* (fruit fly) model” – research grant funded by the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$6,889.60)
- 2018-2019 “Fruit fly research - pointing us in the right direction” – research grant funded by the Women’s Giving Circle (Taylor University, \$5,000)
- 2018 “Further investigations on possible factors of cell polarity using *Drosophila melanogaster* (the “fruit fly”) as a model organism” – research grant funded by the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$10,834.40)
- 2017 “*Drosophila melanogaster* and planar cell polarity” – research grant funded by the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$14,279.20)
- 2016-2017 “Biology – Labeling Kit for Confocal Fluorescent Microscope” – research grant funded by the Women’s Giving Circle (Taylor University, \$3,500)
- 2016 Confocal Fluorescence Microscope fundraising and acquisition – worked with the university advancement team to raise funds through internal and external fundraising (Taylor University, \$180,000)
- 2016 “Planar Cell Polarity” – research grant funded by the Faculty Mentored Undergraduate Summer Scholarship (Taylor University, \$10,834.40)

- 2016 “BIO 203 Genetics Lab Redesign with Vertical articulation with BIO 201 and BIO 312, 450, 452, 462, and 471” – educational grant funded by the Bedi Center for Teaching and Learning Excellence (Taylor University, \$500).
- 2015-2016 “The Fruit Fly as a Biological Tool for Faculty-Mentored Student Research” – research grant funded by the Women’s Giving Circle (Taylor University, \$4,500)
- 2011-2014 Alexander Graham Bell Canada Graduate Scholarship – doctoral grant funded by the Natural Sciences and Engineering Research Council of Canada (McMaster University, \$105,000)
- 2009 Alexander Graham Bell Canada Graduate Scholarship – master’s degree grant funded by the Natural Sciences and Engineering Research Council of Canada (McMaster University, \$17,500)

TEACHING EXPERIENCE:

- 2020- Associate Professor of Biology, Taylor University
 Directed Research (Fall 2020-2021, Summer 2020, 2022)
 Cell Biology and Genetics lab (Fall 2020-2022, Spring 2021, 2023)
 Developmental Biology (Fall 2020, 2022)
 Microbiology and Immunology (Spring 2021-2023)
 Research Methods (January 2021-2023)
 Research Proposal (Summer 2022-2023)
 Biology Practicum (various semesters)
 Molecular Genetics lab (Fall 2023)
- 2015-2020 Assistant Professor of Biology, Taylor University
 Molecular Genetics lab (Fall 2016)
 Directed Research (Spring 2016-2020)
 Microbiology and Immunology (Spring 2016-2020)
 Cell Biology and Genetics lab (Fall 2015 - 2019 and Spring 2016-2020)
 Research Methods (Fall 2015, Fall 2016, January 2018-2020)
 Developmental Biology (Fall 2015, 2017-2019)

PROFESSIONAL MEMBERSHIPS:

- 2022-2023 Genetic Society of America
- 2016-2019 Genetic Society of America
- 2016-2018 Indiana Academy of Science
- 2015-2016 National Association of Biology Teachers
- 2010 American Scientific Association

PROFESSIONAL SERVICE:

2023-	Faculty Secretary (including Faculty Council)
2022-2023	Editorial Board, Lux et Fides: A Journal for Undergraduate Christian Scholars
2023	Dean of Global Engagement Search Committee
2022-2023	New Faculty Mentor
2022-2023	Faculty Search, Biology
2021-2023	Curriculum Management Committee (secretary)
2021-2022	Faculty Search (chair), Biology
2021-2022	University Assembly
2020-2021	SNAS, Curriculum Management Committee
2017-2020	Enrollment and Athletics Committee
2019-2020	Faculty Search, Biology
2019	University Librarian Search Committee
2019	Colleagues' College Planning Committee
2017-2019	Faculty Salary Compensation task force
2018	Women's Lacrosse Head Coach Search Committee, faculty representative
2016-2018	Euler Safety Committee
2016-2017	University Librarian Search Committee

COMMUNITY SERVICE and INVOLVEMENT:

2015-	Member, Marion Reformed Presbyterian Church <ul style="list-style-type: none"> Helped with bulletin preparation, communion set-up, childcare, sound board and sermon recording, app development, meal preparation, yard and building maintenance days, church cleaning
2020-2022	Faculty sponsor, Taylor Women's Lacrosse Club
2019-2022	Board Member, The King's Academy (K-12 private school)
2019-2020	Assistant Coach, Taylor Women's Lacrosse Team
2016-2019	Faculty sponsor, Taylor Women's Lacrosse Club

- 2009-2015 Member, Providence Canadian Reformed Church
- Served as church librarian, nursery attendant, on the Outreach Committee
- 2009-2015 Volleyball Player, Hamilton Christian Women's Volleyball League
- 2011-2014 Partner's for Life Champion, Canadian Blood Services
- Coordinated my church's partnership with Canadian Blood Services
- 2010-2014 Volleyball Coach, Guido de Bres High School
- Nationally certified through the NCCP (2007)
- 2014 Volunteer, Escola Cristã João Calvino/ John Calvin Christian School, Brazil
- Constructed an outdoor shade-providing structure for the school children
- 2013 Science in the Community Instructor, Guido de Brés High School
- 2011-2013 Tutor and Mentor
- Met weekly for scheduled sessions with a high school-age student with Down Syndrome
- 2011 Volunteer, Dulce Refugio orphanage, Aguascalientes, Mexico
- Aided in the construction of a new dormitory building for underprivileged children and fellowshipped with the children and full-time staff