

## Matthew C. Gibson

Investigator and Dean of the Graduate School  
Stowers Institute for Medical Research  
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### EDUCATION

<b>Ph.D. Zoology</b> University of Washington	2001 Seattle, WA
<b>B.S. Biology</b> Yale University	1994 New Haven, CT

### EXPERIENCE

<b>Dean</b> The Graduate School of the Stowers Institute for Medical Research	2019 – Present
<b>Investigator</b> Stowers Institute for Medical Research	2016 – Present
<b>Associate Investigator</b> Stowers Institute for Medical Research	2012 – 2016
<b>Assistant Investigator</b> Stowers Institute for Medical Research	2006 – 2012 Kansas City, MO
<b>Postdoctoral Fellow</b> Harvard Medical School, Advisor: Norbert Perrimon	2001 – 2006 Boston, MA
<b>Doctoral Student</b> University of Washington, Advisor: Gerold Schubiger	1996 – 2001 Seattle, WA

### GRANTS AND PROFESSIONAL HONORS

#### **Grants**

2019	Coral Bleaching- Human Frontiers Science Program (second round submission)
2015	Drosophila Epithelial Dynamics- National Institutes of Health, R01-GM111733 (current)
2005	Cambridge Templeton Consortium
2002	Fellow, Jane Coffin Childs Memorial Fund for Medical Research
1998	Molecular and Cellular Biology Fellow, University of Washington, Seattle, WA
1996	ARCS Foundation Fellowship, Seattle Chapter

#### **Awards**

2011	Hudson Prize
2006	Burroughs Wellcome Fund Career Award in Biomedical Sciences
2002	Larry Sandler Memorial Award for Outstanding Drosophila Thesis (National)
2000	Harold M. Weintraub Award for Innovative Graduate Research (National)
2000	Outstanding Speaker Prize, Northwest Developmental Biology Conference
1998	Outstanding Speaker Prize, Northwest Developmental Biology Conference

### SELECTED PRESENTATIONS

2020	Seminar, California State University Friday Seminar Series (Chico, CA)
2020	Speaker, 19 <sup>th</sup> Annual Workshop at Bellairs – Emerging Model Systems (Holetown, Barbados)
2020	Seminar, Institute of Cellular and Organismic Biology in Academia Sinica (Taipei, Taiwan)
2019	Seminar, University of Chicago Evolutionary Morphology Series (Chicago, IL)
2019	Speaker, Early Metazoans Workshop (Tutzing, Germany)
2019	Lecturer, Marine Biological Laboratory Physiology Lecturer (Woods Hole, MA)

2019 Instructor, Marine Biological Laboratory Embryology Course (Woods Hole, MA)  
2019 Seminar, Hawai'i Institute of Marine Biology (Kane'ohe, HI)  
2019 Seminar, Duke University Medical Center (Durham, NC)  
2019 Seminar, Icahn School of Medicine at Mount Sinai (New York, NY)  
2019 Speaker, Joint Meeting of the German and Israeli Societies of Dev Bio (Vienna, Austria)  
2019 Seminar, Collaborative Specialization in Developmental Biology (Toronto, Canada)  
2018 Speaker, ASCB | EMBO 2018 Meeting (San Diego, CA)  
2018 Seminar, University of Rochester (Rochester, NY)  
2018 Speaker, European Evolutionary Developmental Biology Conference (Galway, Ireland)  
2018 Speaker, EMBL Symposium on Tissue Morphogenesis (Heidelberg, Germany)  
2018 Speaker, SEB Annual Conference (Florence, Italy)  
2017 Speaker, Early Metazoan Workshop (Tutzing, Germany)  
2017 Seminar, Memorial Sloan Kettering Seminar (New York, NY)  
2017 Seminar, Yale University Dept. Genetics (New Haven, CT)  
2017 Seminar, University of Minnesota (Minneapolis, MN)  
2016 Seminar, University of Michigan (Ann Arbor, MI)  
2016 Speaker, Institut Curie Developmental Biology Course (Paris, France)  
2016 Speaker, *Drosophila* Growth and Regeneration Summit (Begur, Spain)  
2016 Speaker, Society for Developmental Biology (Boston, MA)  
2016 Speaker, Keystone: Molecular Basis of Growth and Regeneration (Breckenridge, CO)  
2016 Speaker, Berkeley Growth Symposium (Berkeley, CA)  
2015 Seminar, Princeton University Dept. Molecular Biology (Princeton, NJ)  
2015 Speaker, Pan-American Society for Evolutionary Developmental Biology (Berkeley, CA)  
2015 Seminar, University of Toronto (Toronto, Canada)  
2015 Plenary Speaker, Drosophila Research Conference (Chicago, IL)  
2014 Speaker, Society for Developmental Biology Mid-West Regional Meeting (St. Louis, MO)  
2014 Seminar, Physics of Biological Systems (Munich, Germany)  
2014 Speaker, Santa Cruz Developmental Biology Meeting (Santa Cruz, CA)  
2014 Seminar, Harvard University (Boston, MA)  
2014 Seminar, University of Washington (Seattle, WA)  
2014 Seminar, University of Texas – Austin (Austin, TX)  
2014 Seminar, Vanderbilt University (Nashville, TN)  
2014 Speaker, Society for Integrative and Comparative Biology Meeting (Austin, TX)  
2013 Speaker, Gordon Research Conference (Tuscany, Italy)  
2013 Speaker, London Fly Meeting (London, UK)  
2013 Speaker, Physical Biology of Cancer (Turin, Italy)  
2012 Seminar, Skirball Institute (New York, NY)  
2012 Seminar, Stanford University (Stanford, CA)  
2012 Seminar, Max Planck Institute of Molecular Cell Biology and Genetics (Dresden, Germany)  
2012 Seminar, University of Rochester (Rochester, NY)  
2012 Seminar, University of Hawaii (Honolulu, HI)  
2012 Session Chair, Drosophila Research Conference (Chicago, IL)  
2011 Seminar, University of California – Berkeley (Berkeley, CA)  
2011 Seminar, RIKEN Center for Developmental Biology (Kobe, Japan)  
2011 Speaker, Hydra Meeting, Evangelische Akademie (Tutzing, Germany)  
2010 Seminar, University of Michigan (Ann Arbor, MI)  
2010 Seminar, McGill University (Montreal, Quebec)  
2010 Speaker, Santa Cruz Developmental Biology Conference (Santa Cruz, CA)  
2010 Speaker, Drosophila Research Conference (Washington, DC)  
2010 Seminar, Texas A&M University (College Station, TX)  
2009 Seminar, University of Chicago (Chicago, IL)  
2009 Seminar, University of Missouri – Kansas City (Kansas City, MO)  
2009 Seminar, Oregon Health & Science University (Portland, OR)  
2009 Plenary Speaker, Northwest Society for Developmental Biology (Friday Harbor, WA)  
2009 Speaker, Gordon Research Conference on Developmental Biology (Andover, NH)  
2009 Seminar, University of Kansas Dept. Biomolecular Sciences (Lawrence, KS)

## PUBLICATIONS

- Zimmermann, B., Robb, S.M.C., Genikhovich, G., Fropf, W.J., Weilguny, L., He, S., Chen, S., Lovegrove-Walsh, J., Hill, E.M., Ragkousi, K., Praher, D., Fredman, D., Moran, Y., **Gibson, M.C.**, Technau, U. (2020) Sea anemone genomes reveal ancestral metazoan chromosomal macrosynteny. *bioRxiv*. 359448.
- Rivera, H.E., Chen, C.-Y., **Gibson, M.C.**, Tarrant, A.M. (2020) Plasticity in parental effects confers rapid larval thermal tolerance in *Nematostella vectensis*. *bioRxiv*. 153148.
- Chen, C.-Y., McKinney, S.A., Ellington, L., **Gibson, M.C.** (2020) Hedgehog signaling is required for endomesodermal patterning and germ cell development in *Nematostella vectensis*. *eLife*. 9: e54573.
- Ikmi, A., Steenbergen, P.J., Anzo, M., McMullen, M.R., Stokkermans, A., Ellington, L.R., **Gibson, M.C.** (2020) Feeding-dependent tentacle development in the sea anemone *Nematostella vectensis*. *Nature Communications*. 11(1), 4399.
- Bauerly, E., Yi, K., **Gibson, M.C.** (2020) Wampa is a dynein subunit required for axonemal assembly and male fertility in *Drosophila*. *Developmental Biology*. 15;463(2):158-168.
- Ramanathan S. P., Krajnc, M., **Gibson, M.C.** (2019) Cell size pleomorphism drives aberrant clone dispersal in proliferating epithelia. *Developmental Cell*. 51(1):49-61. e4.
- Nakajima, Y.I., Lee, Z.T., McKinney, S.A., Swanson, S.K., Florens, L., **Gibson, M.C.** (2019) Junctional tumor suppressors interact with 14-3-3 proteins to control planar spindle alignment. *The Journal of Cell Biology*. 218(6): 1824-1838.
- Gibson, M.C.** (2019) Commentary on “Regeneration, duplication and transdetermination in fragments of the leg disc of *Drosophila melanogaster* (1971).” *Developmental Biology*. 449(2):63-82.
- Karabulut, A., He, S., Chen, C.-Y., McKinney, S., **Gibson, M.C.** (2019) Electroporation of short hairpin RNAs for rapid and efficient gene knockdown in the starlet sea anemone, *Nematostella vectensis*. *Developmental Biology*. 448(1):7-15.
- He, S., Del Viso, F., Chen, C.-Y., Ikmi, A., Kroesen, A.E., **Gibson, M.C.** (2018) An axial Hox code controls tissue segmentation and body patterning in *Nematostella vectensis*. *Science*. 361(6409),1377-1380.
- Akiyama, T., User, S.D., **Gibson, M.C.** (2018) Somatic clones heterozygous for recessive disease alleles of BMPR1A exhibit unexpected phenotypes in *Drosophila*. *eLife*. 7: e35258.
- Guo, L., Accorsi, A., He, S., Guerrero-Hernandez, C., Sivagnanam, S., McKinney, S., **Gibson, M.C.**, Sanchez Alvarado, A. (2018) An adaptable chromosome preparation methodology for use in invertebrate research organisms. *BMC Biology*. 16(1),25.
- Ragkousi, K., **Gibson, M.C.** (2018) Epithelial integrity and cell division: Concerted cell cycle control. *Cell Cycle*. 17(4), 399-400.
- Russell, J.J., Theriot, J.A., Sood, P., Marshall, W.F., Landweber, L.F., Fritz-Laylin, L., Polka, J.K., Olfierenko, S., Gerbich, T., Gladfelter, a., Umen, J., Bezanilla, M., Lancaster, M.A., He, S., **Gibson, M.C.**, Goldstein, B., Tanaka, E.M., Hu, C.-K., Brunet, A. (2017) Non-model model organisms. *BMC Biology*. 15(1), 55.
- Ragkousi, K., Marr, K., McKinney, S., Ellington, L., **Gibson, M.C.** (2016) Cell-Cycle-Coupled Oscillations in Apical Polarity and Intercellular Contact Maintain Order in Embryonic Epithelia. *Current Biology*. 1381-1386.
- Nakajima, Y.-I., **Gibson, M.C.** (2016) Developmental Patterning: Putting the Squeeze on Mis-specific Cells. *Current Biology*. 26(5), R204-R206.
- Akiyama, T. and **Gibson, M.C.** (2015) Decapentaplegic and growth control in the developing *Drosophila* wing. *Nature*. 527:375–378.
- Nakajima, Y. and **Gibson, M.C.** (2015) Epithelial cell division: Aurora kicks Lgl to the cytoplasmic curb.

*Current Biology*. 25(1), R43-R45.

Akiyama, T. and **Gibson, M.C.** (2015) Morphogen transport: Theoretical and experimental controversies. *WIREs Developmental Biology*. 4(2):99-112. Epub 2015 Jan 9.

Ikmi, A., McKinney, S.A., Delventhal, K.M., and **Gibson, M.C.** (2014) TALEN and CRISPR/Cas9-mediated genome editing in the early branching metazoan *Nematostella vectensis*. *Nature Communications*. 5:5486.

Ragkousi, K., **Gibson, M.C.** (2014) Cell division and the maintenance of epithelial order. *Journal of Cell Biology*. 207:181-188.

Gibson W.T., Rubinstein, B.Y., Meyer, E.J., Veldhuis, J.H., Brodland, G.W., Nagpal, R., and **Gibson, M.C.** (2014) On the origins of the mitotic shift in proliferating cell layers. *Theoretical Biology and Medical Modeling*. 11(1):26.

Liang, L., Haug, J., Seidel, C.W. and **Gibson, M.C.** (2014) Functional genomic analysis of the periodic transcriptome in the developing *Drosophila* wing. *Developmental Cell*. 29(1):112-127.

Ikmi, A., Gaertner, B., Seidel, C., Srivastava, M., Zeitlinger, J. and **Gibson, M.C.** (2014) Molecular evolution of the Yap/Yorkie proto-oncogene and elucidation of its core transcriptional program. *Molecular Biology and Evolution*. 31(6):1375-1390.

Nakajima, Y., Meyer, E.J., Kroesen, A., McKinney, S.A. and **Gibson, M.C.** (2013) Epithelial junctions maintain tissue architecture by directing planar spindle orientation. *Nature*. 500(7462):359-362.

Fritz, A.E., Ikmi, A., Seidel, C., Paulson, A., **Gibson, M.C.** (2013) Mechanisms of tentacle morphogenesis in the sea anemone, *Nematostella vectensis*. *Development*. 140:2212-2223.

Kanakousaki, K. and **Gibson, M.C.** (2012) A differential requirement for SUMOylation in proliferating and non-proliferating cells during *Drosophila* development. *Development*. 139(15): 2751-2762.

Gibson, W.T. and **Gibson, M.C.** (2012) Growing cells push back under pressure. *Cell*. 149: 259–261.

Gibson, W.T., Veldhuis, J.H., Rubinstein, B., Cartwright, H.N., Perrimon, N., Brodland, G.W., Nagpal, R., and **Gibson, M.C.** (2011) Control of the mitotic cleavage plane by local epithelial topology. *Cell*. 144(3):427- 438.

Meyer, E.J., Ikmi, A., and **Gibson, M.C.** (2011) Interkinetic nuclear migration is a broadly conserved feature of pseudostratified epithelia. *Current Biology*. 21:485-491.

Szuperák, M., Salah, S., Meyer, E.J., Nagarajan, U., Ikmi, A., and **Gibson, M.C.** (2011) Feedback regulation of *Drosophila* BMP signaling by the novel extracellular protein, Larval Translucida. *Development*. 138:715-724.

Ikmi, A., and **Gibson, M.C.** (2010) Identification and in vivo characterization of NvFP-7R, a developmentally regulated red fluorescent protein of *Nematostella vectensis*. *PLoS One*. 5(7):E11807.

Gibson, W.T. and **Gibson, M.C.** (2009) Cell topology, geometry and morphogenesis in proliferating epithelia. *Current Topics in Developmental Biology*. 89: 87-114.

Patel, A.B., Gibson, W.T., **Gibson, M.C.**, and Nagpal, R. (2009) Modeling and inferring cleavage patterns in proliferating epithelia. *PLoS Computational Biology*. 5(6): e1000412.

Nagpal, R., Patel, A., and **Gibson, M.C.** (2008) Problems and paradigms: Epithelial topology. *BioEssays*. 30(3):260-266.

**Gibson, M.C.** (2007) Bicoid by the numbers: quantifying a morphogen gradient. *Cell*. 130:14-9.

**Gibson, M.C.**, Patel, A., Nagpal, R., and Perrimon, N. (2006) An emergent geometric order in proliferating metazoan epithelia. *Nature*. 442:1038.

**Gibson, M.C.**, and Perrimon, N. (2005) Extrusion and Death of DPP/BMP-compromised epithelial cells in the developing *Drosophila* wing. *Science*. 307:1785. (Cover Image)

**Gibson, M.C.**, and Perrimon, N. (2003) Apicobasal polarization: epithelial form and function. *Current Opinion in Cell Biology*. 15:747.

**Gibson, M.C.**, Lehman, D., and Schubiger, G. (2002) Lumenal transmission of Decapentaplegic in *Drosophila* imaginal discs. *Developmental Cell*. 3:451.

Hrdlicka, L., **Gibson, M.C.**, Kiger, A., Micchelli, C., Schober, M., Schock, F., Perrimon, N. (2002) Analysis of twenty-four Gal4 lines in *Drosophila melanogaster*. *Genesis*. 34: 51.

**Gibson, M.C.**, and Schubiger, G. (2001) *Drosophila* peripodial cells, more than meets the eye? *BioEssays*. 23:691.

**Gibson, M.C.**, and Schubiger, G. (2000) Peripodial cells regulate proliferation and patterning in *Drosophila* imaginal discs. *Cell*. 103: 343. (Cover Image)

Griffin, K.J.P., Stoller, J., **Gibson, M.C.**, Chen, S., Yelon, D., Stanier, D. Y. R., and Kimelman, D. (2000) A conserved role for H15-related T-box transcription factors in zebrafish and *Drosophila* heart formation. *Developmental Biology*. 218:235.

**Gibson, M.C.** and Schubiger, G. (1999) Hedgehog is required for activation of engrailed during regeneration of fragmented *Drosophila* imaginal discs. *Development*. 126:1591.

## EDITORIAL DUTIES

### Editor

*Developmental Biology*

### Editorial Board Member

*Current Biology*

*Cell Reports*

### Ad hoc Reviewer

*Cell Development*

*Developmental Cell*

*PLoS Biology*

*Current Biology*

*Developmental Biology*

*Nature Cell Biology*

## TEACHING

2015 – Present	Marine Biological Laboratory, Woods Hole, MA	Embryology
2014 – Present	Graduate School of the Stowers Institute	Evolution and Model Organisms
2012	University of Kansas	Advanced Topics in Dev. Bio.

## ADVISING AND SERVICE

### Graduate School Committees

Curriculum Committee Member

Admissions Committee Member

Graduate School Advisory Committee Member

2015 – present  
2013-2015 and 2017 – present  
2012 – 2013

### Dissertations Supervised

Ruhan Zhong	Ph.D. in progress	The Graduate School of the Stowers Institute
Ahmet Karabulut	Ph.D. in progress	The Graduate School of the Stowers Institute
Cheng-Yi Chen	Ph.D. in progress	The Graduate School of the Stowers Institute
Shuonan He	Ph.D. in progress	The Graduate School of the Stowers Institute
Elizabeth Bauerly	Ph.D. 2020	The Graduate School of the Stowers Institute
Zachary Lee	Ph.D. in progress	The Graduate School of the Stowers Institute
Ashleigh Fritz	Ph.D. 2014	Anatomy & Cell Biology, University of Kansas
Liang Liang	Ph.D. 2014	Open University
Kiriaki Kanakousaki	Ph.D. 2012	Open University

### Thesis Committees

Shaolei Xiong	Ph.D. in progress	Open University
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Amanda Bonner	Ph.D.	The Graduate School of the Stowers Institute
Viraj Doddihal	Ph.D. in progress	The Graduate School of the Stowers Institute
Raquel Barajas Azpeleta	Ph.D.	The Graduate School of the Stowers Institute
Joaquin Navajas Acedo	Ph.D.	The Graduate School of the Stowers Institute
Anastasiia Aleksandrova	Ph.D.	Anatomy & Cell Biology, University of Kansas
Nehemiah Alvarez	Ph.D.	Pathology & Laboratory Medicine, University of Kansas
Liyang Li	Ph.D.	Molecular & Integrative Physiology, University of Kansas
Sarah Smith	Ph.D.	Molecular & Integrative Physiology, University of Kansas