curriculum vitae

**Michael Stephen Werner**

University of Utah

School of Biological Sciences

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**Academic Appointments**

2020 – curr. **Assistant Professor**, School of Biological Sciences, University of Utah

*Phenotypic plasticity, new gene regulation, extremophile biology*

**Academic Training**

2016 - 2020 **Postdoctoral Fellow**, Max Planck Institute, Advisor: Dr. Ralf J. Sommer. *Epigenetics, developmental plasticity and new gene regulation.*

**Education**

2009 - 2016 **PhD**, University of Chicago, Advisor: Dr. Alex J. Ruthenburg. *Chromatin and non-coding RNA regulation of cellular differentiation.*

2005 - 2009 **B.Sc.**, Stetson University, Advisor: Dr. Alicia Slater. *Microsatellite identification and genotyping of freshwater invertebrates.*

**Awards**

2023-2026 Mario Capecchi endowed chair

2013-2016 Chicago Biomedical Consortium (CBC) Scholar

2011-2012 Teaching Assistant Award, University of Chicago

2012 Biological Sciences Division Travel Award, University of Chicago

1. 2012 Honorable Mention,Ford Foundation Pre-doctoral Fellowship
2. 2010 Honorable Mention, NSF Pre-doctoral Fellowship
3. 2009 Outstanding Research: Biology, Stetson University
4. 2009 Outstanding Student in Major: Molecular Biology, Stetson University
5. 2008 NSF Research Experience Undergraduate Fellowship, U. of Notre Dame

**Research Publications**

PREPRINT: Brown, A., Meiborg, A., Gordon, S., Rog, O., Franz-Wachtel, M., Macek, B., Weadick, C., **Werner, M.S.** Characterization of the Pristionchus pacificus “epigenetic toolkit” reveals the evolutionary loss of the histone methyltransferase complex PRC2. 2023. BioRxiv. doi: https://doi.org/10.1101/2023.12.05.570140

PREPRINT: Jung, J., Loschko, T., Reich, S., **Werner, M.S.** Halophilic nematodes live in America’s Dead Sea. 2023. BioRxiv. <https://www.biorxiv.org/content/10.1101/2023.04.12.536621v1>

**Werner, M.S.**, Loschko, T., King, T. et al. (2023) Histone 4 lysine 5/12 acetylation enables

developmental plasticity of Pristionchus mouth form. Nat Communications. 14, 2095.

Renahan, T.S., Lo, W.S., **Werner, M.S.,** Rochat, J., Herrmann, M., Sommer, R.J. (2021). Nematode biphasic “boom and bust” dynamics are dependent on host bacterial load while linking dauer and mouth-form polyphenisms. Environmental Microbiology *23*.

Theska T, Sieriebriennikov B, Wighard SS, **Werner MS\***, Sommer RJ\*. (2020). Geometric Morphometrics of Microscopic Animals as Exemplified by Model Nematodes. Nature Protocols. (\*co-corresponding author)

**Werner, M.S.\***, Claaßen, M.H.\*, Renahan, T.\*, Dardiry, M., and Sommer, R.J. (2018). Adult Influence on Juvenile Phenotypes by Stage-Specific Pheromone Production. iScience 10, 123–134. (\*co-first author)

**Werner, M.S.**, Sieriebriennikov, B., Prabh, N., Loschko, T., Lanz, C., and Sommer, R.J. (2018). Young genes have distinct gene structure, epigenetic profiles, and transcriptional regulation. Genome Res. 28, 1675–1687.

**Werner, M.S.**, Sieriebriennikov, B., Loschko, T., Namdeo, S., Lenuzzi, M., Dardiry, M., Renahan, T., Sharma, D.R., and Sommer, R.J. (2017). Environmental influence on Pristionchus pacificus mouth form through different culture methods. Sci. Rep. 7, 7207.

Gupta, A., Xu, J., Lee, S., Tsai, S.T., Zhou, B., Kurosawa, K., **Werner, M.S.**, Koide, A., Ruthenburg, A.J., Dou, Y., et al. (2018). Facile target validation in an animal model with intracellularly expressed monobodies. Nature Chemical Biology 14, 895–900.

**Werner, M.S.**, Sullivan, M.A., Shah, R.N., Nadadur, R.D., Grzybowski, A.T., Galat, V., Moskowitz, I.P., and Ruthenburg, A.J. (2017). Chromatin-enriched lncRNAs can act as cell-type specific activators of proximal gene transcription. Nat. Struct. Mol. Biol. 24, 596–603.

***\*Corresponding highlight in NSMB: Gayen & Kalantry, Chromatin-enriched lncRNAs: a novel class of enhancer RNAs***

Yang, X.H., Nadadur, R.D., Hilvering, C.R., Bianchi, V., **Werner, M.,** Mazurek, S.R., Gadek, M., Shen, K.M., Goldman, J.A., Tyan, L., et al. (2017). Transcription-factor-dependent enhancer transcription defines a gene regulatory network for cardiac rhythm. Elife 6.

**Werner, M.S.**, and Ruthenburg, A.J. (2015). Nuclear Fractionation Reveals Thousands of Chromatin-Tethered Noncoding RNAs Adjacent to Active Genes. Cell Rep. 12, 1089–1098.

**\**Faculty 1000 recommendation***

**Reviews & Previews**

Sommer, R.J., Dardiry, M., Lenuzzi, M., Namdeo, S., Renahan, T., Sieriebriennikov, B., and **Werner, M.S.** (2017). The genetics of phenotypic plasticity in nematode feeding structures. Open Biol. 7.

**Werner, M.**, and Ruthenburg, A.J. (2011). The United States of Histone Ubiquitylation and Methylation. Molecular Cell *43*, 5–7.

**Grants:**

**Awarded:**

2023-24 Nuclear Control group (HCI), seed grant. 1 year, $30,000

2023-2028 NIH Maximizing Investigators’ Research Award (MIRA) for Early-Stage Investigators (R35). 5 years, $1,925,000.

**Pending (submitted dates):**

**Upcoming:**

NSF Division of Environmental Biology ($900,000). Submission of revised proposal from last year.

**Reviewed but not funded:**

2023 Packard Fellowship for Science and Engineering. 5 years, $875,000

2022 NSF Division of Environmental Biology ($630,000)

2022 HHMI Freeman Hrabowski Scholars Program (~$8,000,000)

2022 HCI Cancer grant (Internal; total cost: $30,000)

2022 Center on Aging Pilot Grant (Internal; $30,000)

2021 HCI Cancer grant (Internal; total cost: $30,000)

2021 NASA Exobiology C.5 (Total budget: $872,672.00)

2021 NSF-NRT, Sen. Pers. University of Utah, PI: Sarah Bush ($12,730 salary & fringe; $2,999,324 overall requested funds for 40 graduate students over five years)

2021Franklin Research Grant, American Philosophical Society ($6,000 direct costs)

**Laboratory Personnel Funding:**

2023-curr. NIH T32 Genetics Training Grant, Madelyn Purnell. 2 years, $54,288.

2023-curr. NSF Graduate Student Research Fellowship (GRFP), Audrey Brown. 3 years, $147,000.

2023 (Mini-ARTS) from the Society of Systematic Biologists, Julie Jung. $4,000.

2022 Global Change and Sustainability Center (GCSC) and the Wilkes Center for Climate Science & Policy, Madelyn Purnell. $3,000.

2021-23. NSF Postdoctoral Research Fellowship in Biology, Julie Jung. 2 years, $138,000.

2022-23 PITCH Chemical Biology Training Grant, Audrey Brown. Graduate student stipend for 1 year with option for renewal.

2022-23. Undergraduate Research Scholarship, Samantha Nestel: $5,000

2021-curr. Undergraduate Research Opportunity (UROP):

* + Hiraya Natividad (2x): $2,000
  + Hannah Lee: $1,000
  + Bryce Bosworth: $1,000
  + Collin Caldwell: $1,000
  + Sam Nestel: (2x): 2,000

**Instrumentation Grants**

2020 MiSeq: co-sponsor ($2,000 commitment), School of Biological Sciences & Cell Center, University of Utah

**Invited Seminars (2020-present)**

2023 **University of Chicago; Host: Alexander J. Ruthenburg**

Title: *“Molecular mechanisms of developmental plasticity*”

2022 **New York University (NYU) Department of Biology; Host: Sevinc Ercan**

Title: *“Epigenetic mechanisms of phenotypic plasticity”*

2021 **Modern Brines Conference, Lunar and Planetary Institute (virtual)**

Title: *“Living nematodes in America’s dead sea”*

2021 **International *Pristionchus* Meeting (virtual)**

Title: *“Histone acetylation licenses phenotypic plasticity and developmental speed”*

2020 **Mathematical Biology Seminar, University of Utah (virtual)**

*Title: “The epigenetic mechanisms of phenotypic plasticity”*

### Professional Societies

Genetics Society of America

Society of Nematologists

**Teaching (academic years)**

2023 Instructor, BIOL 5120 Gene Expression

2022 Instructor, BIOL 7961 Advanced Topics in Biochemistry and Molecular Biology

2022 Instructor, BIOL 5120 Gene Expression

2022Guest lecturer, Biol 7406 Critical Analysis (Instructors: Ayako Yamaguchi)

2022Expert Reviewer BIOL 7306 Scientific Writing and Communication (Instructors: Ofer Rog)

2021 Instructor, BIOL 7961 Advanced Topics in Biochemistry and Molecular Biology

2021Guest lecturer, Biol 7406 Critical Analysis (Instructors: John ‘Jack’ Longino)

2021Expert Reviewer BIOL 7306 Scientific Writing and Communication (Instructors: Ofer Rog)

2020Guest lecturer, BIOL 7961 Advanced Topics in Biochemistry and Molecular Biology (Instructor: James Gagnon)

2020Expert Reviewer BIOL 7306 Scientific Writing and Communication (Instructors: Dean Castillo, Ofer Rog)

**Postdoctoral Training Total: 1**

***Current (1)***

2021-curr. Julie Jung, PhD

**Graduate Student Training, Thesis Advisor Total:4**

***Current (4)***

2020-curr. Shelley Reich, MCEB graduate student

2021-curr. Thomas King, MCEB graduate student

2022-curr. Audrey Brown, MCEB graduate student

2022-curr. Madelyn Purnell, EEOB graduate student

**Undergraduate Training**

***Current (7)***

Samantha (Sam) Nestel (4th year)

Hiraya Natividad (5th year)

Constance Suave (2nd year)

Ethan Light (2nd year)

Alexis Enright (2nd year)

Maxim Rassoul-Agha (1st year)

Thomas Murrary (2nd year)

***Past (6)***

2023 Marissa Gourd (NARI summer student)

2023 Nkechinyere Nwosu (GSRM summer student)

2021-23 Hannah Lee; graduated, will attend Pharmacy School (University of Utah)

2023 Lexy Looslie; graduated, applying to Medical School

2021-23 Hephzibah Kaleem, ACCESS student (Biochemistry)

2022-23 Collin Caldwell

**Visiting Scientist Total:1**

2020-2021 Tobias E. Loschko, visiting technician from the Sommer lab, Max Planck Institute

**Post-baccalaureate Training Total:1**

2021 Emilia A. Tugolukova, post-bac internship, mentor.

*Current:* Master’s student at Purdue University in Bioinformatics

**Other Training (rotations) Total:3**

2022 Hyrum Diesen (MCEB program)

2021 Audrey Brown (MCEB program)

2021 Miranda Dietz (MB program)

2023 Danielle Yama (MCEB program)

**Dissertation Committees (not including Werner Lab)**

1. Jilian Ulibarri, Caron Lab, Biology
2. Hyrum Diesen, Adler Lab, Biology
3. Alexis Schmid, Gagnon Lab, Biology
4. Victor Chau, Baldomero Lab, Biology
5. Vincent Mays, Horvath Lab, Biology (Chair)
6. Andrew Butts, Caron Lab, Biology (Chair)
7. Ameris Pizzaro, Caron Lab, Biology (Chair)
8. Sam Linde, Caron Lab, Biology
9. Abraham Aharonoff, Ercan Lab, (NYU) Biology
10. Shengzhou Wang, Gagnon Lab, Biology (Chair)
11. Catalina Anthony, Hollien Lab, Biology
12. Sam West, Jorgensen Lab, Biology

***Past***

2021-22 Elaine Tan, Longino Lab, Biology

2020-22 Sarah Gross, Clark Lab, Biology

**Academic Service**

**Co-leader, Evolutionary Genetics & Genomics (EGG) Interest Group**

**Editor:**

2022-23Frontiers in Physiology, topic editor

**Grant Reviewer**

2023 National Science Foundation, Division of Environmental Biology Panel

2023 National Science Foundation, Biological Infrastructure Panel

2022 Ad Hoc Reviewer for National Science Foundation, Developmental Systems Cluster

2021 National Science Centre Poland

**Journal Reviewer**

2023 *Genome Biology and Evolution (GBE)*

2021 *Nature Communications*

2022 *Journal of Nematology*

### Outreach

2023 Salt Lake County Library Lecture Series: ‘The Science (Fiction) of Dune’

2023 Genomics Summer Research Institute for Minorities (GSRM), laboratory host

2023 Native American Research Internship (NARI), laboratory host

2023-curr. Research Stream Initiative (SRI), stream leader

2022 Reviewer, Global Change and Sustainability Center (GCSC) student proposals

2022 Reviewer, Evaluated Research Undergraduate Opportunities (UROP) Applications

2021 *Salt Lake Tribune* Article: The Science of the Sandworms of Dune. <https://www.sltrib.com/opinion/commentary/2021/10/29/michael-s-werner-science/>

2021-22 Stetson University Alumni Mentor, Biology

2021 Diversity Fellows Program, University of Utah. Workshop leader on ‘Writing a Personal Statement’.

2021 Poster Judge, University of Utah Undergraduate Research Symposium

2021 Reviewer, Genetics Student Training Grant (GTG) Applications

2021 Reviewer, Evaluated Research Undergraduate Opportunities (UROP) Applications

2021 SACNAS National Diversity in STEM (NDiSTEM) Digital Conference

**Departmental and University Committees (Academic years)**

2023-2024 MCEB Rotation Program Advisor

2022-2023 Faculty Search Committee in SBS (Chair, Markus Babst)

2020-2021 Graduate Student Admissions

2021-2022 Graduate Student Admissions