

Thomas M. Tomasiak, PhD

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POSITIONS

University of Arizona - Tucson, AZ

Assistant Professor – Department of Chemistry and Biochemistry

2018 – Present

University of California, San Francisco – San Francisco, CA

Postdoctoral Scholar – (Advisor: Robert Stroud)

2010 – 2015

Research Specialist – (Advisor: Robert Stroud)

2015 – 2017

Vanderbilt University – Nashville, TN

Graduate Student – (Advisor: Tina Iverson)

2004 – 2010

Postdoctoral Scholar – (Advisor: Tina Iverson)

2010 – 2010

EDUCATION

Vanderbilt University – Nashville, TN

PhD, Pharmacology

2004 – 2010

Grand Valley State University – Allendale, MI

BS, Biomedical Sciences

2000 – 2004

PUBLICATIONS

Research Articles – University of Arizona

1. Khandelwal, N.K., Millan, C.R., Zangari, S., Avila, S., Williams, D., Thaker, T.M., **Tomasiak, T.M.**
The structural basis for regulation of the glutathione transporter Ycf1 by regulatory domain phosphorylation. *Nature Communications* (2022) 13:1278 (PMCID: PMC8917219)
2. Thaker T.M.*, Mishra, S.*, Wang, W., Faraldo-Gómez, J.D., Mchaourab H[#], **Tomasiak, T.M.**[#] Cryo-EM structure of an elusive pre-transport intermediate of the multidrug ABC transporter BmrCD reveals modes of asymmetric drug binding. *Nature Chemical Biology* (2022) 18:226-235 (PMID: 34931066) [#] Corresponding authors; * co-first authors
3. Millan, C.R., Francis, M., Khandelwal, N.K., Thompson, V.F. Thaker, T.M., **Tomasiak, T.M.** A conserved motif in intracellular loop 1 stabilizes the outward-facing conformation of TmrAB. *Journal of Molecular Biology* (2021) 433:166834 (PMCID: PMC8830738)
4. AbuMaziad, A.S.*, Thaker, T.M.*, **Tomasiak, T.M.**, Chong C.C., Galindo, M.K., Hoyme, H.E.B. (2021) The role of novel COQ8B mutations in glomerulopathy and related kidney defects. *American Journal of Medical Genetics Part A*. 185: 60-67. PMID: 33084234
[#] Corresponding authors

Research Articles – Postdoc and graduate school

1. Starbird, C.A.*, **Tomasiak, T.M.***, Singh, P.K., Yankovskaya, V., Maklashina, E., Eisenbach, M., Cecchini, G., Iverson, T.M. New crystal forms of the integral membrane *Escherichia coli* quinol:fumarate reductase suggest that ligands control domain movement. *Journal of Structural Biology* (2018) 202 100-104 (PMCID: PMC5835405)
* co-first authors
2. Qirrit, J.G., Lavrenov, S.N., Poindexter, K., Xu, J., Kyauk, C., Durkin, K.A., Aronchik, I., **Tomasiak, T.**, Solomatin, Y.A., Preobrazhenskaya, M.N., Firestone, G.L. Indole-3-carbinol (I3C) analogues are potent small molecule inhibitors of NEDD4-1 ubiquitin ligase activity that disrupt proliferation of human melanoma cells. *Biochemical Pharmacology*. (2017) 127:13-27 (PMID:27979631)

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3. Kim, J.* , Wu, S.* , **Tomasiak, T.M.***, Mergel, C., Winter, M.B., Stiller, S., Colmanares, Y., Tampé, R., Stroud, R.M., Craik, C.S., Cheng, Y. Subnanometer resolution cryo-EM structure of a nucleotide free heterodimeric ABC exporter. *Nature* (2015) 517: 396-400. (PMCID: PMC4372080)
* Equal first author contribution
4. **Tomasiak, T.M.**, Pedersen, B.P., Chaudhary, S., Rodriguez, A., Robles-Colmanares, Y., Roe-Zurz, Z., Thamminana, S., Tessema, M., Stroud, R.M. General qPCR and plate reader methods for rapid optimization of membrane protein purification and crystallization using thermostability assays. *Current Protocols In Protein Science* (2014) **77**: 29.11.1 – 29.11.14. (PMCID: PMC4672949)
5. Monk, B.C.* , **Tomasiak, T.M.***, Keniya, M.V., Huschmann, F.U., Tyndall, J.D.A., O’Connell III, J.D., Cannon, R.D., Finer-Moore, J., McDonald, J., Rodriguez, A., Stroud, R.M. Architecture of a single membrane spanning cytochrome P450 suggests constraints that orient the catalytic domain relative to a bilayer. *The Proceedings of the National Academy of Sciences* (2014) **111**: 3865-3870. (PMCID: PMC3956205)
* Equal first author contribution
6. Singh, P.K., Sarwar, M., Maklashina, E., Kotlyar, V., Rajagukguk, S., **Tomasiak, T.M.**, Cecchini, G., Iverson, T.M. Plasticity of the quinone-binding site of the complex II homolog quinol:fumarate reductase. *Journal of Biological Chemistry* (2013) **288**: 24293-24301. (PMCID: PMC3750132)
7. **Tomasiak, T.M.**, Archuleta, T.L., Davis, T., Ham, A.J., McDonald, H., Johnston, J., Cecchini, G., Iverson, T.M. Geometric restraint drives on- and off-pathway catalysis by the Escherichia coli menaquinol:fumarate reductase. *Journal of Biological Chemistry* (2011) **286**: 3047-3056. (PMCID: PMC3024798)
8. **Tomasiak, T.M.**, Maklashina, E., Cecchini, G., and Iverson, T.M. A threonine on the active site loop controls transition state formation in Escherichia coli respiratory complex II. *Journal of Biological Chemistry* (2008) **283**: 15460-15468. (PMCID: PMC2397489)

[Current list of publications](#)

RESEARCH SUPPORT

Current

R01 (NIAID) **Tomasiak, TM (PI)** **07/01/2021 – 06/30/2026**
R01AI156270
“ATP Binding Cassette (ABC) Transporters in fungal drug tolerance”
Role: Principal Investigator

Industry contract **Tomasiak, TM (PI)** **07/15-21 – 07/15/2022**
Asher Biotherapeutics
Co-Crystallization of CD8ab with Targeting Antibodies
\$15,468.00
Role: Principal Investigator

Completed Research Support

K99 (NIGMS) **Tomasiak, TM (PI)** **8/31/15 – 8/31/17**
“Structural mechanism for ABC multidrug transporter selectivity and transport”
Role: Principal Investigator

R00 (NIGMS) **Tomasiak, TM (PI)** **1/1/18 – 12/31/21**
R00GM11424
“Structural mechanism for ABC multidrug transporter selectivity and transport”
Role: Principal Investigator

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SEMINARS

Invited Seminars

1. Joint seminar: Tsukuba Purification Forum and SBRC International Cryo-EM Seminar, Structural Biology Research Center, KEK/High Energy Accelerator Research Organization, Ibaraki, Japan. Apr. 2022
2. Chemistry and Biochemistry Department Seminars, San Diego State University, San Diego, CA. March 2022
3. ACBS Seminar Series – University of Arizona, Tucson, AZ. March 2022
4. Biochemistry Seminar Series – University of Nebraska, Lincoln, NE. Nov. 2021
5. Departmental Seminar – Department of Plant Sciences Seminar Series University of Arizona, Tucson, AZ, February 2019
6. Biological Physics Seminar Series – Center for Biological Physics - Arizona State University, Tempe, AZ, Apr. 2018
7. Joint Biology Retreat – University of Arizona, Tucson, AZ, Sept. 2018

Invited Conference Presentations

1. *Phosphoregulation and inhibition of a C-family ABC transporter by an intrinsically disordered domain*. Platform – COMPPÅ Symposium on Membrane Protein Production and Analysis. Columbia University, New York City, NY, June 2022
2. *Capturing Hidden Allosteric States in ABCC Family Transporters by Cryo-EM*. Platform – Canadian Society for Molecular Biology Meeting, Banff, Canada, Apr 2022
3. *Vacuolar transporter mechanisms in the fungal stress response*. Platform – Arizona Imaging and Microanalysis Society Meeting, University of Arizona, Tucson, AZ March 2019
4. *The ABCs of invasive fungal infections*. Platform – Annual Biophest conference – University of Arizona, Tucson, AZ – May 2018

TEACHING

2022	Bioc 462b – Biochemistry II (Spring Semester)
2021	Bioc 595b – BCP Seminar Series
2018 – present	Bioc 565 – Proteins and Enzymes (Fall Semester)

Service

Scientific Appointments

2022 – present	Member – <i>Journal of Biological Chemistry (JBC)</i> Editorial Board Member
2021 – present	<i>Ad hoc</i> reviewer –NIH BBM study section (3x), P01 application (1x), NSF (2x)
2019	President of Arizona Microscopy Imaging and Microanalysis Society
2019 – present	Reviewer panel for the NIH Pacific Northwest Cryo-EM Center (PNCC) – Portland, OR

Other

Manuscript peer review – *Nature*, *Proceedings of the National Academies of Science (PNAS)*, *Journal of Biological Chemistry (JBC)*, *Journal of Visual Experimentation (JOVE)*, *Biophysical Journal*, *Science Advances*, *Journal of Protein Expression and Purification*

Instructor – Cryo-EM Winter School – Arizona State University Dec. 11 - 14, 2018

Organizer - electron microscopy mini-symposium – New Research Approaches for Electron Microscopy – University of Arizona Oct. 23, 2018

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List of References

Prof. Robert M. Stroud – Postdoctoral advisor

Professor, Department of Biochemistry and Biophysics, Department of Pharmaceutical Chemistry
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Prof. Tina M. Iverson – PhD advisor

Professor, Department of Pharmacology, Department of Biochemistry
Vanderbilt University
460A Robinson Research Building
2200 Pierce Ave
Nashville, Tennessee
37232
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Prof. Hassane S. Mchaourab - Collaborator

Professor, Louis B. McGavock Chair, Molecular Physiology and Biophysics
Vanderbilt University
741 Light Hall
Nashville, TN
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