Joseph Stephen Glavy, *Ph.D.*

Joseph S. Glavy
University of Texas at Tyler
Department of Pharmaceutical Sciences
Fisch College of Pharmacy email: jglavy@uttyler.edu

Education

Ph.D. Molecular Pharmacology, Albert Einstein College of Medicine, Yeshiva University, Bronx, NY	1999
M.S. Natural Sciences, Roswell Park Cancer Institute, Buffalo, NY	1993
B.S. Biology, State University of New York at Buffalo	1989

Appointments

Professor, Department of Pharmaceutical Sciences, Fisch College of Pharmacy, University of Texas at Tyler Tyler, TX.	September 2023- Present
Adjunct Professor, Department of Biology, University of Texas at Tyler, Tyler, TX	September 2023- Present
Visiting Scientist, Max Planck Institute for Biophysics, Frankfurt, Germany	June-July 2019, 2022, 2023
Associate Professor, Department of Pharmaceutical Sciences, Fisch College of Pharmacy, University of Texas at Tyler Tyler, TX.	June 2017- August 2023
Adjunct Associate Professor, Department of Biology,	2019- 2023
Assistant Professor, Department of Chemistry, Chemical Biology and Biomedical Engineering, Stevens Institute of Technology, Hoboken, NJ	2007-2017
Visiting Scientist, Structural and Computational Biology Unit, European Molecular Biology Laboratory EMBL-Heidelberg, Germany	June-July 2014
Guest Researcher, Beck Laboratory, Structural and Computational Biology Unit, European Molecular Biology Laboratory EMBL-Heidelberg, Germany	June-July 2010
Adjunct Assistant Professor, Laboratory of Cell Biology, Howard Hughes Medical Institute, Rockefeller University, New York, NY	2007-2009
Research Associate, Laboratory of Cell Biology Howard Hughes Medical Institute, Rockefeller University, New York, NY	2004-2007
NIH Research Fellow, Under Günter Blobel, Laboratory of Cell Biology Howard Hughes Medical Institute, Rockefeller University, New York, NY	2000-2003
HHMI Research Associate, Under Günter Blobel, Laboratory of Cell Biology Howard Hughes Medical Institute, Rockefeller University, New York, NY	1999-2000
Senior Laboratory Technician, Research Institute on Addiction, Buffalo, NY	1989-1993

Honors and Awards

Guest Editor - Frontiers in Molecular Biosciences	2021
Recipient of UT Tyler Crystal Quill Award for Research	2018
Recipient of Jess H. Davis Memorial Award for Research Excellence	2014
Provisional Patent "Cyto-3D-Print for Cytospin Centrifugation" Serial #US 62/063,595	2014
Harvey N. Davis Teaching Award for Excellence in Teaching at the rank of Assistant Professor	2013
Distinguished Faculty Mentor Award from Steven's Student Government Association	2012
National Institutes of Health Individual National Research Service Award Fellowship	2000-2003
Appointment as Research Associate- Howard Hughes Medical Institute	1999-2000
National Institutes of Health *Ph.D.* Training Grant	1994-1999
New York State Graduate Student Scholarship	1991-1993

List of Publications (1,332 times cited, Highlighting Milestone Papers)

Glavy, J.S. (2024) The yin and yang of nuclear envelope breakdown through the activity of phosphatase holoenzyme PP2A-B55^{SUR-6}. Trends Cell Biol. 2024 Apr;34(4):272-273. ***Impact Factor 20.1***

Jordan, B.R., Zhai, Y., Li, Z., Zhao, H., Mackmull, M.-T., **Glavy, J.S.** (2023) Discovering the nuclear localization signal of Werner Helicase Interacting Protein 1, Biochimica et Biophysica Acta (BBA) - Molecular Cell Research, 1870, 119502. ***Impact Factor 1.2***

Lizarraga, A., Hart. L., Nolen, M., Williams, L.R., **Glavy, J.S.** (2023) Incidents of snake fungal disease caused by the fungal pathogen *Ophidiomyces ophidiicola* in Texas. Front. Fungal Biol., 4, https://doi.org/10.3389/ffunb.2023.1064939

Blethrow, J.D., DiGuilio, A.L. and **Glavy, J.S.** (2022) Purification of Cdk-CyclinB-Kinase-Targeted Phosphopeptides from Nuclear Envelope. Methods in Molecular Biology 2502:271-282. ***Impact Factor 1.2***

Lizarraga, A., Hart. L., Nolen, M., Williams, L.R., **Glavy, J.S.** (2022) Snake Fungal Disease Caused by the Fungal Pathogen *Ophidiomyces ophidiicola* in Texas. BioRxiv April 15th, **doi:** https://doi.org/10.1101/2022.04.14.488407. (Submitted to Frontiers in Fungal Biology- in second review)

Jordan, B.R., Dimas, R.P., Jiang, X.L., Martini, C., **Glavy, J.S.,** Patterson, D.P., Morcos, F., Chan, C.T.Y. (2019) Engineering DNA recognition and allosteric response properties of TetR family proteins by using a module-swapping strategy. Nucleic Acids Research. Sept 19;47(16):8913-8925. ***Impact Factor 11.6***

Glavy, J.S. The Quest for the Blueprint of the Nuclear Pore Complex. (2019) Protein Journal Special Issue: Günter Blobel Memorial Issue, Protein Targeting and Transport. Protein J. Aug;38(4):363-376. doi: 10.1007/s10930-019-09858-z. ***Impact Factor 1.6***

Holzer, K., Ori, A., Cooke, A., Dauch, D., Drucker, E., Riemenschneider, P., Andres-Pons, A., DiGuilio, A.L., , Mackmull, M.T., Babler, J., Roessler, S., Breuhahn, K., Zender, L., **Glavy, J.S.,** Dombrowski, F., Hurt, E., Schirmacher P, Beck M, Singer S. (2019) Nucleoporin Nup155 is part of the p53 network in liver cancer. Nature Communications. May 14;10(1):2147. ***Impact Factor 13.7***

Shah, M.B., Chang, W., Cattabiani, T.M., **Glavy, J.S.,** Yu, X. (2019) Novel Spiral Structured Nerve Guidance Conduits with Multi-channels and Inner Longitudinally Aligned Nanofibers for Peripheral Nerve Regeneration. Journal of Biomedical Materials Research. Jul;107(5):1410-1419. ***Impact Factor 3.4***

Kosinski, J., Mosalaganti. S., Von Appen, A., Teimer, R., DiGuilio A.L., Wan, W., Bui, K.H. , Andres-Pons, A., Hagen, W., Briggs, J.A.G., **Glavy, J.S.,** Hurt, E. , Beck, M. (2016) Molecular architecture of the inner ring scaffold of the human nuclear pore complex Science 352(6283):363-5. ***Selected for the cover of April 15th Science Issue 2016.*** PMID: 27081072 ***Impact Factor 35.3***

- Molecular modeling paired with XL-MS to generate a composite structure of the nuclear pore inner ring.
- Simple architectural principles are common to both the inner and outer rings, despite their different composition.

List of Publications (Continued)

Hoelz, A.*, **Glavy, J.S.*,** Beck, M.* (2016) Towards the Atomic Structure of the Nuclear Pore Complex: When Top Down Meets Rock Bottom Up. Perspective, Nature Structural & Molecular Biology, Jul:23(7):624-30. PMID: 27273515. ***Corresponding Authors Impact Factor 13.3***

Von Appen, A., Kosinski, J., Sparks, L., Ori A., DiGuilio A.L., Vollmer, B., Mackmull, M.T., Banterle, N., Parca, L., Kastritis, P., Buczak, K., MosalagantI, S., Hagen, W., Andres-Pons, A., Lemke, E.A., Bork, P., Antonin, W., **Glavy, J.S.,** Bui, K.H. , Beck, M. (2015) *In Situ* Structural Analysis of the Human Nuclear Pore Complex. Nature 2015 Oct 1;526(7571):140-3 PMID: 26416747. ***Impact Factor 41.5***

- Combined cryo-electron tomography with mass spectrometry, biochemical analysis, perturbation experiments, and structural modeling to investigate nuclear pore architecture *in situ*.
- Demonstrate that the transport channel connection to scaffold oligomerization.
- The NPC's most comprehensive and detailed architectural model to date at 23Ångstrom.

Castroagudin, M.R., Zhai, Y., Li, Z., Marnell, M.G., **Glavy, J.S.** (2015) Cyto-3D-Print to Attach Mitotic Cells. Cytotechnology DOI 10.1007/s10616-015-9917-2. PMID 26464272. ***Impact Factor 1.1***

Beck, M and **Glavy, J.S.** (2014) Toward Understanding the Structure of the Vertebrate Nuclear Pore Complex. Nucleus Apr 3;5(2) :119-23. PMID: 24699243 ***Impact Factor 3.0***

- Highlights the power of electron microscopy for bridging different resolution regimes.
- The importance of post-translational modifications for regulating nucleoporin interactions.

Bui, K.H., Von Appen, A., *DiGuilio, A.L.,* Ori, A., Sparks, L., Mackmull, M.T., Bock, T., Hagen, W., Andres-Pons, A., **Glavy, J.S.*,** Beck, M.* (2013) Integrated structural analysis of the human nuclear pore complex scaffold. Cell.155(6):1233-43. PMID: 24315095. ***Corresponding Authors **Cover of December 5th Cell Issue. Impact Factor 34.4***

- The human NPC is resolved up to 32 Ångstrom.
- 32 copies of the hNup107 subcomplex form two reticulated rings.
- Scaffold nucleoporin phospho-sites cluster into inter-subcomplex interfaces.

Li, Z., Zhu, Y., Zhai, Y., Castroagudin, M.R., Bao, Y., White, T.E. **Glavy, J.S**. (2013) Werner Complex Deficiency in Cells Disrupts the Nuclear Pore Complex and the Distribution of Lamin B1. Biochimica et. Biophyica Acta 1833 (12), 3338–3345. PMID: 24050918. ***Impact Factor 5.0***

- Discovered the association of NDC1 and Werner protein.
- Revealed interdependence between WRN, NPC, and lamin B1.
- Distribution of transport nucleoporins and RAN gradient affected.

DiGuilio, A.L. and **Glavy, J.S.** (2013) Depletion of nucleoporins from HeLa nuclear pore complexes to facilitate the production of ghost pores for *in vitro* reconstitution. Cytotechnology 65:469-79. PMID: 23053785. ***Impact Factor 1.9***

Kaur, S, White, T.E., DiGuilio, A. L., and **Glavy, J.S.** (2010) The Discovery of a Werner Helicase Interacting Protein (WHIP) Association with the Nuclear Pore Complex. Cell Cycle 9(15):3106-11. PMID: 20676042. ***Impact Factor 5.2***

Blethrow, J.D., **Glavy, J.S.**, Morgan D.O., and Shokat, K.M. (2008) Covalent Capture of Kinase-specific Phosphopeptides reveals Cdk1-cyclin B substrates. PNAS 105:1442-7 PMID: 18234856. ***Impact Factor 9.7***

- Rapid identification of protein kinase substrates.
- Cdk1 was engineered to accept an ATP analog that allows it to label its substrates with a bio-orthogonal phosphate analog tag uniquely.
- Discovery of Cdk1-cyclin B substrates yielded the identification of >70 substrates and phosphorylation sites including Nucleoporins and Nuclear Envelope proteins.

List of Publications (Continued)

Glavy, J. S., Krutchinsky, A., Cristea, I.M., Berke, I.C., Boehmer, T., Blobel, G. and Chait, B.T. (2007) Cell-Cycle Dependent Phosphorylation of the Nuclear Pore Nup107-160 Subcomplex. PNAS 104, 3811-3816. PMID: 17360435. ***Impact Factor 9.7***

- Examined the cell-cycle-dependent phosphorylation of the Nup107–160 subcomplex and precisely mapped the phosphorylation sites with a comprehensive multiple-stage MS approach.
- Nup107 subcomplex is stable throughout the cell cycle.

Helmer, J., Schmidt, T., **Glavy, J.S.**, Blobel, G. and Schwartz, T. (2003) The Beta-subunit of the Protein-conducting Channel of the Endoplasmic Reticulum Functions as the Guanine Nucleotide Exchange Factor (GEF) for the Beta-subunit of the Signal Recognition Particle Receptor. Journal of Biological Chemistry 275,1479-1484. PMID: 12750387. ***Impact Factor 4.7***

Glavy, J.S., Wu S.M., Wang P.J., Orr, G.A. And Wolkoff A.W. (2000) Down-Regulation by Extracellular ATP of Rat Hepatocyte Organic Anion Transport is Mediated by Serine Phosphorylation of Oatp1. Journal of Biological Chemistry 275,1479-1484. PMID: 10625701. ***Impact Factor 4.7***

York J.L., Hirsch J.A., Pendergast, D.R., and **Glavy, J.S**. (1999) Muscle Performance in Detoxified Alcoholics. Journal of Studies on Alcohol 60: 413-419. PMID: 10371271. ***Impact Factor 1.7***

Glavy, J.S., Nieves, E., Han, E.-K., Yang, C.-P. H., Wolfson, M., Horwitz, S.B., and Orr, G.A. (1998) Identification of the *In Vivo* Phosphorylation Sites For Basic-directed Kinases in Murine *mdr*1b P-glycoprotein by a Combination of Mass Spectrometry and Site-directed Mutagenesis. Methods in Enzymology, 292,342-358. PMID: 9711566. ***Impact Factor 2.2***

Glavy, J.S., Horwitz, S.B., and Orr, G.A. (1997) Identification of the *in vivo* Phosphorylation Sites for Acidic-directed Kinases in Murine *mdr*1b P-glycoprotein. Journal of Biological Chemistry 272,5909-5914. PMID: 9038209. ***Impact Factor 4.7***

Juvvadi, S.R., **Glavy, J.S.,** Horwitz, S.B., and Orr, G.A. (1997) Domain Organization of Murine *mdr*1b P-glycoprotein: The Cytoplasmic Linker Region Is a Potential Dimerization Domain. Biochemical and Biophysical Research Communications 230, 442-447. PMID: 9016799. ***Impact Factor 2.5***

El-akawi, Z., Abu-hadid, M., Perez, R., **Glavy, J.**, Zdanowicz, J., Creaven, P.J., and Pendyala, L. (1996) Altered glutathione metabolism in oxaliplatin resistant ovarian carcinoma. Cancer Letters 105, 5-14. PMID: 8689632. ***Impact Factor 4.5***

Application Note Thermo Scientific

Blethrow, J.D., Viner, R., Zabrouskov, V. and **Glavy, J.** (2009) Analysis of Mitotic Phosphorylation Sites in the Nuclear Pore Complex Using a MALDI LTQ Orbitrap Mass Spectrometer. ThermoScientific Application Notes:450, 1-6.

Book Chapter

Veronin, M.A. **& Glavy, J.S**. (2020) The Nuclear Pore Complex. The Liver: Biology and Pathobiology. John Wiley & Sons Press. 6th Edition ISBN: 9781119436843, Chapter 9, 94-107.

Glavy, J.S. (2009) The Nuclear Pore Complex: Structure and Transport. The Liver: Biology and Pathobiology. John Wiley & Sons Press. 5th Edition ISBN: 9781119964223, Chapter 10, 147-156.

Educational Publication

Oshair, O., Veronin, M., Smith, W., Abdelaziz, M. and **Glavy, J.S**. (2023) Pharmacy students' perceptions and attitudes toward face-to-face vs. virtual team-based learning (TBL) in the didactic curriculum: A mixed-methods study. *Medical Education Online* (ZMEO) ZMEO 2226851. ***Impact Factor 6.1***

Webinars

American Society for Cell Biology: Intersection of Art and Science. October 20th, 2021.
"Early History of Microscopes"
Webinar: Invited Speaker World Microscope Day, April 13th, 2023.
"The Art and Design of Early History of Microscopes"

Society Membership and Service

American Society for Cell Biology Member since 2003
- -ASCB Ambassador
- -Appointed as a full member of ASCB Public Information Committee
- -Appointed to subcommittee for the 25th anniversary of GFP and elevator speech competition.
- -Appointed to subcommittee leader review of ASCB toolkits and PIC abstract review.
- -Appointed 2024, Co-Chair of ASCB's SCOPE Committee.

Biophysical Society Member 2017-2020
International Society for Applied Phycology since 2019
Phycological Society of America since 2019
American Society for Mass Spectrometry past member 2004-2016

Completed Research Support

NSF 1914538 Glavy (PI) 07/01/2019-6/30/2024
Title: Developing modular repressors as in vivo biosensors in various organisms
The goals of this project are to establish principles for creating modular biosensors by using a module-swapping strategy on transcriptional repressors

NIH 1R15GM119118-02 Glavy (PI) 08/15/2016-07/31/2021
Title: Regulation of Pore Membrane Proteins during NPC Release and Dispersal in Open Mitosis
Our objectives in this project are to determine the kinase-specific phosphorylation sites and their signaling of release and dispersal of the NPC in higher eukaryotic cells.

Rising STARS Funding T171053F Glavy (PI) 06/01/2017-05/31/2020
University of Texas Systems
University of Texas at Tyler
Fisch College of Pharmacy
Department of Pharmaceutical Sciences Tyler, TX. 75799

NIH/NIA R21AG047433-01 Glavy (PI) 08/15/2014-07/31/2016
Title: RecQ DNA Helicase Impact on the Nuclear Pore Complex in Aging Cells
The goal of this grant was to gain insight into aging; we will examine the connection of RECQ helicases and the nuclear pore complexes. Both complexes have been implicated in aging.

NIH P41RR000862-36 Chait (PI)/Glavy (Project Leader) 01/01/2008-12/31/2012

Title: National Resource for Mass Spectrometry of Biological Macromolecules
Subtitle: Half-Lives of Nuclear Pore Complex Proteins in Human Cells
Subtitle: Cell-Cycle-Dependent Phosphorylation of the Nuclear Pore Nup107/160 Subcomplex
National Center for Advancing Translational Sciences (Rockville)

NIH F2GM20520A Glavy (PI) 04/01/2000-3/31/2003
National Institutes of Health Individual National Research Service Award
Title: CHARACTERIZATION OF THE GTPASE, SRBETA