

Joseph Stephen Glavy, *Ph.D.*

University of Texas at Tyler
Department of Pharmaceutical Sciences
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Education

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

Appointments

Associate Professor, Department of Pharmaceutical Sciences, Fisch College of Pharmacy, University of Texas at Tyler Tyler, TX.	June 2017- Present
Visiting Scientist, Max Planck Institute for Biophysics, Frankfurt, Germany	July-August 2019
Adjunct Assistant Professor, Department of Biology, University of Texas at Tyler, Tyler, TX	January 2019- Present
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 Heidelberg, Germany	June-2014
Guest Researcher, Beck Laboratory, Structural and Computational Biology Unit, European Molecular Biology Laboratory EMBL-Heidelberg, Germany	June-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

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

Honors and Awards (Continued)

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 <i>Ph.D.</i> Training Grant	1994-1999
New York State Graduate Student Scholarship	1991-1993

List of Publications (Highlighting Milestone Papers)

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* July (In Press) *Co-Authors **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. DOI: 10.1007/s10930-019-09858-z **Impact Factor 1.0**

Holzer₂ K., Ori₂ A., Cooke₂ A., Dauch₂ D., Drucker₂ E., Riemenschneider₂ P., Andres-Pons, A., DiGuilio₂ A₂L., , Mackmull, M.T., Babler, J., Roessler, S., Breuhahn, K., Zender₂ L., **Glavy, J.S.**, Dombrowski₂ F., Hurt₂ E., Schirmacher P, Beck M, Singer S. (2019) Nucleoporin Nup155 is part of the p53 network in liver cancer. *Nature Communication*. 2019 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**

**** Featured as new science in Physics Today's Back Scatter "Getting to the core of nuclear pores" May 2016, 69(5):72**

- 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.

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**

- Combining Visual Proteomics and X-ray Crystallography to reach the critical definitions of the Nuclear Pore
- Experts brought together to compare the similarities and differences of the Yeast and Human Nuclear Pores.

Von Appen, A., Kosinski, J., Sparks, L., Ori A., DiGuilio A.L., Vollmer, B., Mackmull, M.T., Banterle, N., Parca, L., Kastiris, 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.
- Most comprehensive and detailed architectural model of the NPC 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 1.9**

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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 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 Biophysica 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 uniquely label its substrates with a bio-orthogonal phosphate analog tag.
- Discovery of Cdk1-cyclin B substrates yielded identification of >70 substrates and phosphorylation sites including Nucleoporins and Nuclear Envelope proteins.

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**

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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 *mdr1b* 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 *mdr1b* 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 *mdr1b* 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.

Proceedings

Bao, Y., White, T.E., **Glavy, J.S.** and Compagnoni, A. (2010) The Application of SPiM to Process Modeling for Activation Cycle of G-proteins by G-protein-coupled Receptors. *Membrane Computing and Biologically Inspired Process Calculi - EPTCS Proceedings*, 2010, pp. 1-15.

Book Chapter

Veronin, M.A. & **Glavy, J.S.** (2019) The Nuclear Pore Complex. *The Liver: Biology and Pathobiology*. John Wiley & Sons Press. (In Press).

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

Society Membership and Service

American Society for Cell Biology Member since 2003

ASCB Ambassador

-Appointed as a full member on ASCB Public Information Committee

-Appointed to subcommittee for the 25th anniversary of GFP and elevator speech competition.

Biophysical Society Member since 2017

American Association for the Advancement of Science Member since 1999

American Society for Mass Spectrometry past member 2004-2016

Current Research Support

NIH 1R15GM119118-02

Glavy (PI)

08/15/2016-07/31/20

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)

06/01/2017-05/31/20

University of Texas Systems

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Completed Research Support

NIH/NIA R21AG047433-01 Glavy (PI) 08/15/2014-07/31/16

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 connection of RECQ helicases and the nuclear pore complexes. Both complexes have been implicated in aging.

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