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, Ben and Maytee Fisch College of Pharmacy, University of Texas at Tyler	2017-
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	2014
Guest Researcher, Beck Laboratory, Structural and Computational Biology Unit, European Molecular Biology Laboratory EMBL-Heidelberg, Germany	2010
Adjunct Assistant Professor, Laboratory of Cell Biology, Howard Hughes Medical Institute, Rockefeller University, New York, NY	2007-2008
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 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
Named Coordinator of Teaching Assistant Training at Stevens	2011-2013
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 (Highlighting Milestone Papers)

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., 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.
- 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.***

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 (New Journal, less than required 5yrs for impact factor)

- 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. 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 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***

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.

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

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

Current Research Support

NIH 1R15GM119118-01 Glavy (PI) 08/15/2016-07/31/19

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 Glavy (PI) 06/01/2017-05/31/20

University of Texas Systems
University of Texas at Tyler
Department of Pharmaceutical Sciences
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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 is to gain insight into aging; we will examine connection of RECQ helicases and the nuclear pore complexes. Both complexes have been implicated in aging. We hypothesize that the NPC can serve as a specialized platform or center for DNA damage repair. We start by investigating the interdependence of RECQ with nucleoporins. Model of aging by impaired DNA damage through as we mature.

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