

CURRICULUM VITÆ

Dr. Jesús E. SERRANO-NEGRÓN, PhD

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SUMMARY

- Mechanistic wet-lab scientist who takes a question from design to answer across proteins, cells, and microbes (cloning, expression, perturbation experiments, and quantitative readouts).
- Built and applied quantitative assay pipelines: enzyme kinetics, high-throughput screening, and protein biophysics (CD, intrinsic tryptophan fluorescence, stopped-flow) to distinguish true effects from artifacts.
- Delivered reproducible R&D workflows and decision-making data packages, bridging lab execution with cross-functional handoffs and scale-up planning.

EXPERIENCE

Research Associate & R&D Project Manager, Lite-1, Vancouver BC, Jun 2025 – Jan 2026

Early-stage biotech R&D organization focused on microbial pigment development and lab operations.

- Executed end-to-end microbial pigment R&D: construct design, cloning, expression, strain engineering/mutagenesis, screening, and assay development.
- Cultured microbes across small-scale conditions and iterated experiments to optimize growth and production performance.
- Built, validated, and troubleshooted biochemical and metabolite assays to quantify pathway and enzyme output, including controls and QC.
- Designed screening workflows and decision criteria, including hit triage, retesting, and prioritization for next-round optimization.
- Analyzed and summarized experimental results into clear readouts (tables, figures, brief writeups) for scientific and leadership audiences.
- Collaborated cross-functionally with chemistry, fermentation, and downstream processing to align success metrics and plan handoffs for scale-up testing.
- Supported process development by identifying bottlenecks, proposing workflow changes, and validating improvements through repeatable testing.
- Authored SOPs and standardized protocols/templates to improve reproducibility, throughput, and training consistency.
- Maintained rigorous experimental records and organized documentation to ensure continuity in a fast-moving R&D environment.
- Trained and onboarded new team members on methods, documentation standards, and safe, consistent lab practices.

Research Assistant, Simon Fraser University, Burnaby BC, Jan 2018 – Jan 2025

Academic research lab focused on protein biochemistry and biophysics and reproducible experimental workflows.

- Led protein glycosylation research across detection, enrichment, and biophysical characterization, connecting tool development to mechanistic questions.
- Engineered and validated an IgG-derived scFv for glycan detection, including construct design, cloning, expression optimization, purification troubleshooting, and immunoassay validation.
- Designed validation strategies using synthetic glycopeptide inputs and performed analytical verification (e.g., HPLC) to confirm intermediates and assay readiness.
- Developed a reversible chemoenzymatic enrichment workflow built on galactosyltransferase installation of a biotinylated galactose handle and enzymatic removal to restore the native glycan moiety for downstream analysis.
- Ran and interpreted enzyme activity and kinetic assays to evaluate candidate enzymes for capture and release efficiency, specificity, and practical workflow performance.
- Led high-throughput screening of metagenomic glycoside hydrolases to identify enzymes capable of cleaving the installed biotinylated galactose handle while preserving the native glycan site.
- Quantified glycan effects on protein stability and folding using CD spectroscopy and intrinsic tryptophan fluorescence during thermal denaturation and equilibrium chaotropic denaturation, plus aggregation readouts.
- Characterized folding and unfolding kinetics using stopped-flow fluorescence (and related kinetic experiments) to resolve how the glycan moiety alters folding pathways and stability under denaturing conditions.
- Integrated computational modelling (MD/structural analysis) with experimental biophysics to interpret glycan-dependent stabilization mechanisms and assess generality across additional candidate proteins.
- Coordinated cross-institutional experimental handoffs and specialized methods (e.g., LC-MS collaborations and structural/beamline exposure where applicable) and synthesized results into mechanistic conclusions.

Research Assistant, University of Puerto Rico (UPR), San Juan PR, Aug 2013 – Nov 2017

Biomedical research role supporting cell-based assays and lab operations.

- Led mammalian cell-based experiments across cancer and glycosylation-linked projects, executing defined perturbations and translating phenotypes into interpretable readouts.
- Quantified treatment responses using growth and viability measurements, combining manual cell counting with plate-based formats to capture both kinetics and endpoint effects.
- Built imaging-based phenotyping workflows using fluorescence microscopy, including lectin staining and immunostaining for stress-associated proteins, with permeabilization controls to resolve surface vs intracellular signal.
- Integrated biochemical validation with cell phenotypes by processing cell lysates and conditioned media and using Western blotting to test secretion vs intracellular localization.
- Designed and executed flow cytometry assays using propidium iodide (PI) nuclear staining to

quantify DNA content and infer cell-cycle distributions and cycle duration under baseline versus treatment conditions.

- Performed confocal microscopy in epithelial models to assess early vascular-like morphology and quantify how DPMS perturbation altered morphogenesis relative to matched controls.
- Maintained experimental rigour through troubleshooting and control strategy design (signal specificity, staining controls, condition matching) to separate true biology from assay artifacts.
- Supported regulated lab operations and compliance requirements, including project-specific training (radioactive materials handling and rodent procedures) as required by study protocols.

Research Ethics Board (REB) Officer, UPR, San Juan PR, Aug 2016 – May 2019

Medical sciences campus supporting human-subject research oversight and regulatory compliance.

- Reviewed research protocols for ethical/regulatory compliance and strengthened informed consent materials to protect participants.
- Worked with multidisciplinary stakeholders to move sensitive projects forward while maintaining professionalism and confidentiality.

EDUCATION

- **PhD in Molecular Biology**, Simon Fraser University, 2025

Advisor: Dr. David Vocadlo, PhD

Thesis: Tools and methods for biochemical and biophysical analysis of O-GlcNAc-modified proteins.

- **MSc in Biology**, University of Puerto Rico, 2017

Advisor: Dr. Dipak Banerjee, PhD

Thesis: Evaluation of dolichyl-phosphate β-D-mannosyltransferase expression and enzymatic activity in cultured breast cancer tissues.

- **BSc in Biology**, University of Puerto Rico, 2015

Advisor: Dr. Dipak Banerjee, PhD

Thesis: Inquiry into the localization of binding immunoglobulin protein (BiP/GRP78) to the cytosolic face of the cellular membrane in breast cancer cell cultures.

- **Diploma in Nursing**, Antonio Lucchetti School, 2009

TRAINING & CERTIFICATIONS

- **Project Management Training**, IBM, 2025

- **Project Management Training**, MITACS, 2020

- **Mx Data Collection School**, Canadian Light Source, 2019

LANGUAGES

- **English** (Professional)

- **Spanish** (Native)

PUBLICATIONS

1. Banerjee DK, Zhang Z, Baksi K, **Serrano-Negrón JE**. “Dolichol Phosphate Mannose Synthase: a Glycosyltransferase with Unity in Molecular Diversities.” *Glycoconj J*, vol. 34, no. 4, Aug. 2017, pp. 467–479. <https://doi.org/10.1007/s10719-017-9777-4>.
2. Zhang Z, **Serrano-Negrón JE**, Martínez JA, Baksi K, Banerjee DK. “Dynamic Function of DPMS Is Essential for Angiogenesis and Cancer Progression.” *Adv Exp Med Biol*, vol. 1112, 2018, pp. 223–244. https://doi.org/10.1007/978-981-13-3065-0_16.
3. **Serrano-Negrón JE**, Zhang Z, Rivera-Ruiz AP, Banerjee A, Romero-Nutz EC, Sánchez-Torres N, Baksi K, Banerjee DK. “Tunicamycin-Induced ER Stress in Breast Cancer Cells Neither Expresses GRP78 on the Surface nor Secretes It into the Media.” *Glycobiology*, vol. 29, no. 7, July 2019, p. 599. <https://doi.org/10.1093/glycob/cwz030>.
4. Escobar EE, King DT, **Serrano-Negrón JE**, Alteen MG, Vocadlo DJ, Brodbelt JS. “Precision Mapping of O-Linked N-Acetylglucosamine Sites in Proteins Using Ultraviolet Photodissociation Mass Spectrometry.” *J Am Chem Soc*, vol. 142, no. 26, 1 July 2020, pp. 11569–11577. <https://doi.org/10.1021/jacs.0c04710>.
5. King DT, **Serrano-Negrón JE**, Zhu Y, Moore CL, Shoulders MD, Foster LJ, Vocadlo DJ. “Thermal Proteome Profiling Reveals the O-GlcNAc-Dependent Meltome.” *J Am Chem Soc*, vol. 144, no. 9, 9 Mar. 2022, pp. 3833–3842. <https://doi.org/10.1021/jacs.1c10621>.
6. King DT, Zhu S, Hardie DB, **Serrano-Negrón JE**, Madden Z, Kolappan S, Vocadlo DJ. “Chemoproteomic Identification of CO₂-Dependent Lysine Carboxylation in Proteins.” *Nat Chem Biol*, vol. 18, no. 7, July 2022, pp. 782–791. <https://doi.org/10.1038/s41589-022-01043-1>.
7. Escobar EE, Seeley EH, **Serrano-Negrón JE**, Vocadlo DJ, Brodbelt JS. “In Situ Imaging of O-Linked β-N-Acetylglucosamine Using On-Tissue Hydrolysis and MALDI Mass Spectrometry.” *Cancers (Basel)*, vol. 15, no. 4, 15 Feb. 2023, article 1224. <https://doi.org/10.3390/cancers15041224>.

REFERENCES

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