

Oncology Service

School of Medicine & University Hospital — UANL, Monterrey, Mexico

Lead: Dr. Hugo Leonid Gallardo-Blanco

Focus: Targeted Nanomedicine & Oncogenic Protein Interference (HER2+ breast cancer; Myc/Max programs)

Credentials

- **SNI Level I** (appointments across 2016–2027) — SECIHTI/CONAHCYT
- **PRODEP Desirable Profile** (2019–2028)
- **Cuerpo Académico:** CA Oncología (UANL-CA-446) — Consolidated, PRODEP (2025–2030)
- **Scopus:** 30 documents, 291 citations, h-index 11
- **Patent:** PCT application in progress (targeted nanosystems)

Research Rationale

The Oncology Service develops targeted nanomedicine and molecular inhibition strategies to address key bottlenecks in cancer biology: intracellular access, mechanistic specificity, and translational interpretability. We integrate functional biomaterials, delivery engineering, and pathway-level readouts to design interventions that can be tested rigorously in cell models and aligned with clinically meaningful phenotypes.

Two Anchoring Programs

- **HER2+ breast cancer:** aptamer-guided AuNP and polymeric NP platforms for selective delivery of mRNAs, miRNAs, and anti-miRNAs. Cell models: HCC1954, ZR-75-30.
- **Myc/Max programs:** peptide-functionalized AuNPs (pMyc/pMax from bHLH-LZ domains) for competitive blockade of oncogenic transcriptional circuitry. Cell model: DU145.

Collaboration Formats (High-Impact)

- **Mechanism-first validation:** specialized assays/imaging/omics + construct co-design + testable mechanistic endpoints.
- **Targeted delivery + functional readouts:** uptake/trafficking linked to pathway response after intervention.
- **Translational framing:** connect molecular effects to tumor-relevant phenotypes or clinically anchored datasets.
- **Manuscripts & grant-ready modules:** workstreams that map cleanly onto Specific Aims.

What We Can Contribute Quickly

- Aim-structured study logic connecting construct design → mechanism → measurable outcomes.
- Mechanistic figure concepts and collaboration-ready drafts (rationale + endpoint strategy).
- Rigorous interpretation for cell-based evaluation of functional biomaterials/inhibitory constructs.
- Pathway-level prioritization to reduce experimental uncertainty.

Selected Publications

1. **Gallardo-Blanco HL** et al. (2026) Post-GWAS functional annotation of rs12950541 at the RPTOR locus. *bioRxiv* — DOI: [10.64898/2026.04.26.720864](https://doi.org/10.64898/2026.04.26.720864)
2. *Cancers* (2025) — DOI: [10.3390/cancers17060982](https://doi.org/10.3390/cancers17060982)
3. *Polymers* (2025) — DOI: [10.3390/polym17101335](https://doi.org/10.3390/polym17101335)
4. *Springer Proc. in Materials* (2025) — DOI: [10.1007/978-3-031-99987-1_25](https://doi.org/10.1007/978-3-031-99987-1_25)
5. *Springer Proc. in Materials* (2025) — DOI: [10.1007/978-3-031-99987-1_2](https://doi.org/10.1007/978-3-031-99987-1_2)
6. *Springer Proc. in Materials* (2025) — DOI: [10.1007/978-3-031-99987-1_1](https://doi.org/10.1007/978-3-031-99987-1_1)

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