

Carola Maturana

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Professional Profile

Results-driven Research Scientist with 7+ years of experience in gene therapy, specializing in AAV vector development, genome editing, and preclinical assay validation. Expertise in molecular and cellular biology techniques to drive experimental design, assay development, and data analysis. Proficient in authoring SOPs, protocols, and technical reports to support technology transfer, regulatory filings, and key scientific milestones.

- Problem-Solving and Innovation
- Analytical Method Development
- Control Strategy Development
- Scientific Communications
- Mentorship and Supervision
- Collaboration and Teamwork

Experience

DIORASIS Therapeutics Inc RESEARCH SCIENTIST, R&D

Durham, NC
May 2024 – December 2024

- Developed and executed *in-vitro* assays supporting AAV gene therapy programs for glaucoma.
- Independently managed human primary cell and cell lines, DNA/RNA extraction, and cell transfection.
- Implemented PCR, RT-PCR, qPCR, and ELISA techniques to analyze data, contributing to project success.
- Drafted SOPs and testing protocols, ensuring consistent and high-quality data collection.
- Collaborated effectively with cross-functional teams to ensure project timelines were met and deliverables were achieved.

IVIEW Therapeutics Inc. RESEARCH SCIENTIST, R&D

Cranbury, NJ
January 2023 – May 2024

- Developed and executed *in-vitro* and *ex-vivo* translational assays for AAV gene therapy programs in glaucoma.
- Managed human primary cell, cell lines, and human eye tissue models, DNA/RNA/protein extraction, PCR, RT-PCR, qPCR, flow cytometry, ELISA, AAV titer and endotoxin assays, and IF.
- Optimized and validated biodistribution and AAV transduction efficacy assays using ELISA to accurately measure ROCK activity.
- Contributed to method validation plans and drafted testing protocols and SOPs, ensuring robust data integrity.
 - Poster presentation in ASCGT Annual Meeting (2024)
 - International Patent Application (2024)

Princeton University ASSOCIATE RESEARCH SCHOLAR

Princeton, NJ
October 2021 – December 2022

- Developed and validated AAV expression cassette elements to enhance transgene target specificity and expression.
- Cultured SCG neuron primary cells, N2A, and HEK293T cells, performing retro-orbital and intravitreal injections in mice.
- Utilized Histology (cryostat, vibratome), IF, IHC, RNA/DNA FISH to generate comprehensive data.
 - International Patent Application (2022)
 - Manuscript published in Gene Therapy (2023)

Princeton University POSTDOCTORAL RESEARCH ASSOCIATE

Princeton, NJ
October 2017 – September 2021

- Identified and validated neuronal promoters from the alphaherpesvirus genome
- Cultured primary neuron cells and cell lines, performing retro-orbital injections in mice/rats, intravitreal, intravenous, intramuscular, stereotactic injection, tereotactic injection, anesthesia, perfusion and mouse/rat dissection.
- Validated transgene expression and vector biodistribution in brain, spinal cord, and peripheral organs by Histology, qPCR, IHC, IF, FISH, AAV Titer measurements, Western blotting, FIJI and QuPath imaging software.

- Developed a single-cell AAV genome quantification assay with a mathematical model
- Characterized alphaherpesvirus reactivation mechanisms in PRV and HSV
 - International Patent Application (2020)
 - Poster presentation at ASCGT Annual Meeting (2022)
 - Manuscripts published in *Molecular Therapy-Methods & Clinical Development* (2020), *Gene Therapy* (2021, Editor's Choice for May 2023 cover), *Current Protocols* (2022), *Journal of Virological Methods* (2023), *Frontiers in Virology* (2024)

Education

PhD Physiological Sciences , *Pontificia Universidad Catolica de Chile*

Master Biological Sciences , *Pontificia Universidad Catolica de Chile*

Master Neuroscience , *Universidad de Valparaiso, Chile*

Bachelor Biochemistry , *Universidad Austral de Chile*

Selected Publications

- **Maturana, C. J.** & Engel E.A. (2024). Persistent transgene expression in peripheral tissues one year post intravenous and intramuscular administration of AAV vectors containing the alphaherpesvirus latency-associated promoter 2. [Frontiers in Virology](#)
- **Maturana, C. J.**, (2023). Engineered compact pan-neuronal promoter from Alphaherpesvirus LAP2 enhances target gene expression in the mouse brain and reduces tropism in the liver. [Gene Therapy](#)
- **Maturana, C. J.**, Chan, A., Verpeut, J. L., & Engel E. A. (2023). Local and systemic administration of AAV vectors with alphaherpesvirus latency-associated promoter 2 drives potent transgene expression in mouse liver, kidney, and skeletal muscle. [Journal of Virological Methods](#)
- Chan, A., **Maturana, C. J.**, & Engel, E. A. (2022). Optimized formulation buffer preserves Adeno-associated virus-9 infectivity after 4°C storage and freeze/thawing cycling. [Journal of Virology Methods](#)
- **Maturana, C. J.**, Verpeut, J. L., & Engel, E. A. (2022). Single-Cell Quantification of Triple-AAV Vectors Genome Coexpressed in Neurons. [Current Protocols](#)
- **Maturana, C. J.**, Verpeut, J. L., Kooshkbaghi, M., & Engel E. A. (2021). Novel tool to quantify with single-cell resolution the number of incoming AAV genomes co-expressing in the mouse nervous system. [Gene Therapy](#)
- Laval, K., **Maturana, C. J.**, & Enquist, L. W. (2020). Mouse Footpad Inoculation Model to Study Viral-Induced Neuroinflammatory Responses. [JoVE \(Journal of Visualized Experiments\)](#)
- **Maturana, C. J.**, Verpeut, J. L., Pisano, T. J., Dhanerawala, Z. M., Esteves, A., Enquist, L. W., & Engel, E. A. (2020). Small Alphaherpesvirus Latency-Associated Promoters Drive Efficient and Long-Term Transgene Expression in The Central Nervous System. *Molecular* [Therapy-Methods & Clinical Development](#)

Patents

- Borrás, T., Hong, G., Liang, B., Wu, L., & **Maturana, C. J.** (2024). Self-complementary AAV vectors carrying dominant negative RhoA and methods of use to treat ocular diseases. Patent Application No. [PCT/US2023/074351](#)
- **Maturana, C.J.** & Engel, E. A. (2022). Compositions and methods for cell-specific expression of target genes. Patent Application No. [PCT/US2022/080438](#)
- Engel, E. A., **Maturana, C.J.**, & Enquist, L.W. (2020). Adeno-associated viral vectors containing alphaherpesvirus promoter sequences. International Patent Application No. [PCT/US2020/016787](#)
- Sáez, J. C., Lagos, C., & **Maturana, C.J.** (2018). Selective connexin hemichannels blockers for the treatment of epilepsy. U.S. Patent Application No. [US15/556,205](#)