Omar Villa Robledo

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EDUCATION

Autonomous University of Baja California (UABC), School of Medicine and Nutrition — Mexicali, B.C., Mexico
Medical Degree (Médico; MD equivalent) — *2019 – 2025*

- Overall GPA: **88.03/100** (official academic transcript, Jul 2026). 605 credits completed (595 required).
- Courses graded 100/100: Surgical Education, Traumatology and Orthopedics, Integrated Clinical Medicine, Preventive Medicine and Research, Psychiatry, Geriatrics and Gerontology, Ophthalmology, Epidemiology, Occupational Medicine, Basic Immunology, Bioethics and Legal Responsibility.
- Relevant electives: Medical Skills and Procedures (98), Clinical Laboratory Interpretation (98), Comprehensive HIV/AIDS Care (90), and Emergency Medicine Management (87).

RESEARCH EXPERIENCE

National Institute of Neurology and Neurosurgery "Manuel Velasco Suárez" — Mexico City, Mexico
Social Service Research Physician, Laboratory of Neurophysiology — *Feb 2026 – Jan 2027*
Supervisor: Dr. Norma Serrano García

- **Project Reg. 169/24:** expression of c-Src, cyclin D, and c-Myc in the Wnt/β-catenin pathway in the limbic system of calorie-restricted rats with kindling-induced epileptic seizures.
- Stereotaxic surgery in Wistar rats and electrode implantation for the kindling model; perioperative and anesthetic dosing protocols.
- Western blotting of limbic tissue, from gel preparation to image acquisition, densitometry, and statistical analysis (ImageJ).
- In silico modeling of the axonal cable equation and inference of ionic conductances with physics-informed neural networks (PINNs), applied to Dravet syndrome.
- Literature review, scientific writing, and preparation of original figures published in BIOCELL and Neuroglia.
- Development of laboratory hardware and software: perioperative monitor for rodents (ESP32 + web app), ozone exposure system with PID control, telemetry for a Serinus 10 analyzer (RS-232/Modbus), and automated weight and feeding tracking (Google Sheets/Apps Script).

CLINICAL EXPERIENCE

Hospital General de Mexicali (Mexicali General Hospital) — Mexicali, B.C., Mexico
Rotating Medical Internship — *Completed Dec 2025*

- Internship average 97/100. Rotations in Internal Medicine, General and Laparoscopic Surgery, Obstetrics and Gynecology, Pediatrics, Emergency Medicine, and Outpatient Care, with an elective rotation in Traumatology and Orthopedics.
- Member of surgical teams as scrub, third assistant, and second assistant: laparoscopic cholecystectomies, open appendectomies, and exploratory laparotomies.
- Wound closure and skin suturing across anatomical regions, from scalp to extremities.
- Obstetric care: labor and vaginal delivery, episiotomy repair, and subdermal contraceptive implant placement.
- Comprehensive clinical assessment, history taking, and perioperative care.

PUBLICATIONS

Peer-reviewed journal articles

1. Meingüer-Cuevas MJ, Avila-García M, Espejel-Núñez A, Flores-Pliego A, Camacho-Arroyo I, Romo-Parra H, Mendoza-Hernández T, Cruz-Orozco O, Sánchez-Ramírez B, Silvestri-Tomassoni R, **Villa-Robledo O**, Mancilla-Ramírez J, Meza-Rodríguez MP. Emotional state and salivary inflammatory markers in endometriosis-associated pelvic pain: a pilot study comparing chronic and cyclic patterns. *Curr Issues Mol Biol*. 2026;48(8):817. doi:10.3390/cimb48080817
2. Pérez-Villavicencio J, **Villa-Robledo O**, Megchun-Vázquez X, Uriarte-Jiménez F, Rubio-Osornio M, Serrano-García N. Huntington's disease as a neuroglial systems disorder: mechanisms, network propagation, and therapeutic opportunities. *Neuroglia*. 2026;7(3):23. doi:10.3390/neuroglia7030023

3. Rubio C, Serrano-García N, Lee Á, Pérez-Villavicencio J, **Villa-Robledo O**, Mercado Pimentel R, Romo-Parra H, Rubio-Osornio M. The intersection of impaired ion channels and depleted mitochondria in epileptic seizures: a narrative review. *BIOCELL*. 2026 (published Jul 3). doi:10.32604/biocell.2026.081478

Book chapters (in editorial process)

1. **Villa-Robledo O**, Pérez-Rubio Flores R, Valenzuela J, Ocaranza-Villalpando DS, Ramos-Ramírez IA, Ortega-Gaona YA, Aguilar-Robles R, Arizaga-López KV, Romo-Parra H, Pérez-Villavicencio J. Statistical models applied to the classification and clinical characterization of epilepsy: a translational framework. Nova Science Publishers. *(First author.)*
2. Pérez-Villavicencio J, **Villa-Robledo O**, Pérez-Rubio Flores R, Villa-Robledo R, Avendaño-Martínez M, Megchun-Vázquez X, Huerta-Martínez A, Serrano-García N. Mechanisms of neuroinflammation in epilepsy: from epiphenomenon to causal driver of epileptogenesis. Nova Science Publishers.
3. Rubio-Osornio M, **Villa-Robledo O**, Uriarte-Jiménez F, Rubio C. Shared cellular mechanisms linking epilepsy and sleep disturbances.
4. Pérez-Villavicencio J, Pérez-Rubio Flores R, **Villa-Robledo O**, Villa-Robledo R, Guzmán-Cisneros KD, Jiménez-Hernández R, Ramírez-Becerril JM, Rubio C. Epilepsy pharmacoresistance: mechanisms, biomarkers and therapeutic targets. Nova Science Publishers.

CONFERENCE PRESENTATIONS

Neuroscience 2026, Society for Neuroscience
Washington, D.C., USA *Nov 2026*

- **Villa-Robledo O**, Pérez-Villavicencio J, Pérez-Rubio Flores R, Serrano-García N, Rubio-Osornio M, Rubio-Osornio C. “c-Src expression in the limbic system and the Wnt/β-catenin pathway in a kindling model of epilepsy in calorie-restricted rats.” Poster, first author.

48th Annual Meeting of the Mexican Chapter of the International League Against Epilepsy (CAMELICE)
Aguascalientes, Mexico *Aug 5–8, 2026*

- **Villa-Robledo O**, Pérez-Rubio R, Pérez-Villavicencio J, Serrano-García N, Rubio C, Rubio-Osornio M. “Expresión de c-Src, ciclina D y c-Myc en la vía Wnt/β-catenina en el sistema límbico de ratas sometidas a restricción calórica con crisis epilépticas inducidas por el modelo kindling.” [Expression of c-Src, cyclin D, and c-Myc in the Wnt/β-catenin pathway in the limbic system of calorie-restricted rats with kindling-induced seizures.] Free paper competition, first author.
- Pérez-Villavicencio J, **Villa-Robledo O**, Pérez-Rubio R, Rubio C, Serrano-García N, Rubio-Osornio M. “Inferencia de conductancias iónicas mediante redes neuronales informadas por la física como herramienta para el estudio de canalopatías epilépticas: aplicación al síndrome de Dravet.” [Inference of ionic conductances with physics-informed neural networks as a tool to study epileptic channelopathies: application to Dravet syndrome.] Free paper competition.

4th Annual Research Meeting, National Institute of Neurology and Neurosurgery
Mexico City, Mexico *Jul 1–3, 2026*

- **Villa-Robledo O**, Pérez-Rubio R, Pérez-Villavicencio J, Jiménez-Hernández R, Villa-Robledo R, Romo-Parra H, Serrano-García N, Rubio C, Rubio-Osornio M. “Expresión de c-Src, ciclina D y c-Myc en la vía Wnt/β-catenina en el sistema límbico de ratas sometidas a restricción calórica con crisis epilépticas inducidas por el modelo kindling.” [Expression of c-Src, cyclin D, and c-Myc in the Wnt/β-catenin pathway in the limbic system of calorie-restricted rats with kindling-induced seizures.] First author.
- Pérez-Villavicencio J, **Villa-Robledo O**, Pérez-Rubio R, Jiménez-Hernández R, Rubio-Osornio M, Serrano-García N, Rubio C, Romo-Parra H. “Redes neuronales informadas por la física para la ecuación del cable axónico e inferencia de conductancias: una prueba de concepto in silico.” [Physics-informed neural networks for the axonal cable equation and conductance inference: an in silico proof of concept.]

5th Symposium of the Department of Reproductive Biology
Mexico City, Mexico *2026*

- **Villa-Robledo O**, Rubio-Osornio C, Serrano-García N, Pérez-Villavicencio J, Pérez-Rubio R, Rubio-Osornio M. “Expresión de c-Src en el sistema límbico y en la vía Wnt/β-catenina en un modelo kindling de epilepsia en ratas con restricción calórica.” [c-Src expression in the limbic system and the Wnt/β-catenin pathway in a kindling model of epilepsy in calorie-restricted rats.] Poster, first author.

HONORS AND AWARDS

First Place (team), Neurobowlito *Mar 26–27, 2026*
CUAYOLOTL Congress. Neuroscience knowledge competition among physicians in training.

MANUSCRIPTS AND ONGOING PROJECTS

- Glial dynamics in the glioblastoma microenvironment: functional reprogramming and cellular crosstalk — review, co-author (*Neuroglia*, MDPI).
- Systematic review and meta-analysis of surgical outcomes in drug-resistant epilepsy.
- Bibliometric analysis of non-pharmacological treatments for epilepsy.

ADDITIONAL TRAINING AND OUTREACH

EpiLEAD Mx 2026 Mexico City, Mexico
ABC Medical Center (Centro Médico ABC) *2026*
Epilepsy leadership school held during the ABC Epilepsy Week. Attendee.

Brain Awareness Week 2026 (Semana del Cerebro) Mexico City, Mexico
Mexican Ministry of Health and National Institute of Neurology and Neurosurgery *Mar 23–27, 2026*
Author of the outreach video "Brain changes during pregnancy" (4 hours of participation).

CERTIFICATIONS

- **Basic Life Support (BLS) Provider** — American Heart Association, UABC Training Center. Issued May 2026; valid through May 2028.
- **EGEL–General Medicine (CENEVAL national exit examination)** — Certificate of Satisfactory Performance (Dec 2025); Language and Communication: Outstanding (1208).
- **Foreign Language Proficiency Accreditation (English)** — School of Languages, UABC (Jan 2023).

SKILLS AND INTERESTS

Laboratory: stereotaxic surgery in Wistar rats, electrode implantation, and kindling; anesthetic and perioperative management in rodents; end-to-end Western blotting with ImageJ densitometry; caloric restriction protocols and biosafety.

Evidence synthesis and analysis: systematic reviews and meta-analysis (GRADE, R/metafor); bibliometrics (Scopus, VOSviewer); SPSS (basic).

Computational neuroscience: physics-informed neural networks (PINNs) for the axonal cable equation.

Computing: Python, R, Google Apps Script, ESP32/MicroPython; advanced Excel, Word, PowerPoint; networking and hardware troubleshooting; scientific illustration (BioRender).

Languages: Spanish (native); English (B2, certified, including scientific reading and writing); French (A1).

Interests: general surgery, trauma, and perioperative care; experimental epileptology, molecular signaling, and computational neuroscience; music, photography, graphic design, and electronics.

REFERENCES

Dr. María del Carmen Rubio Osornio — National System of Researchers (SNI) Level 2; Academic Lead, Laboratory of Neurophysiology, National Institute of Neurology and Neurosurgery.

Dr. Norma Serrano García — Medical Sciences Researcher "C", Laboratory of Neurophysiology, INNNMVS (social service supervisor).

Dr. Rosalva Mathieu Betancourt — Faculty, School of Medicine and Nutrition, UABC (letter of recommendation, Jan 2026).

Contact details available upon request.