**Miguel Villa**

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**Education**

Humboldt State University, Arcata, CA,

B.S. Cellular and Molecular Biology

May 2018

Oxnard College / Ventura College

Associates in Biology

August 2013- August 2016

US ARMY Medical Department Center and School (AMEDD)

68D Central Material Services Technician and Surgical Technologist

November 2009

Hueneme High School

High School Diploma

June 2008

**Skills**

**Wet Lab Skills**: Bacteria cell culture, mammalian cell culture (immortalized cell lines, HEK293t, human fibroblasts, progenitor smooth muscle cells, mouse embryonic stem cell culture, human induced pluripotent stem cells (hiPSCs), mRNA reprogramming, stem cell expansion, and differentiation.

PCR; RT-qPCR; SDS PAGE/Western Blot; Gel Electrophoresis, Immunocytochemistry, Flow cytometry, high throughput DNA extraction.

CRISPR/Cas9 gene editing and regulation (knockdown/overexpression), mRNA transfection.

DNA isolation/purification/analysis; RNA isolation/purification/analysis; molecular cloning, preparation of buffers/solutions/media; analytical instrumentation: Mass Spec, UV-Vis, Flame AAS, IR, NMR, Bomb Calorimetry, fluorescence/absorbance plate reader, fluorescence and light microscopy

**Dry Lab Skills:** BLAST, Chimera, Python, ImageJ, Photoshop, Microsoft Office, LIMS.

**General Skills:** Bilingual (English, Spanish), strong leadership skills, creative problem solving, strong organizational skills, self-motivated, responsible, strong team worker.

**Relevant Lab Courses:**

Stem Cell Biology, Cell Biology, Organic Chemistry, General Chemistry, Independent Research,

**Research Experience:**

**Associate Extraction Technologist- COVID-19 Lab California Department of Public Health (CDPH)- Perkin Elmer, Valencia.**

October 2020- Present. Supervisor Ashlee Clow -Clinical Lab Scientist (CLS)

Under the supervision of a CLS processed high throughput patient samples on the JANUS G3 Varispan automated workstation and Chemagic 360 automated DNA/ RNA extraction instrument.

Performed preventative maintenance for all equipment, troubleshot problems during Janus G3 sample transfer adhering to aseptic technique. Janus G3 protocol optimization minimizing contamination and decreasing repeat rate.

Instructed new employees in aseptic pipetting for the master mix formulation and JANUS G3 operation.

**Research Assistant- *Bertha Chen Lab*, Stanford University**

July 2019- June 2020 PI: Bertha Chen, M.D. Assistant Professor OB/GYN and Urology

Differentiated hiPSC into smooth muscle cells for an initial new drug (IND) to treat stress urinary incontinence.

Performed flow cytometry to analyze and improve progenitor smooth muscle cell differentiation efficiency.

Rodent anesthesia experience, contractility assessment, and quantification.

**CIRM Scholar- *Sebastiano Lab and Bertha Chen Lab*, Stanford University**

August 2018- July 2019 PI: Vittorio Sebastiano, Ph.D. Assistant Professor OB/GYN

Optimized and reprogrammed human fibroblast cells from 8 different patients to ~850 million hiPSC in a clinically relevant manner.

Performed high-throughput immunocytochemistry to analyze fibroblast cell purity.

Expanded and characterized hiPSC by FLOW, ICC, PCR, rt-qPCR.

Expanded hiPSC and performed sterility testing, mycoplasma, endotoxin, and viability testing before being cryogenically frozen.

**Undergraduate Independent Research- *Steele Lab***

January 2018- July 2018 PI: John Steele, Ph.D. Assistant Professor of Biology

Investigated genes associated with tauopathies

dCas9/ CRISPR plasmid optimization targeting *MASK, ADAM10* and *ADAM17* forknockdown/ activation.

Bacterial colony growth, isolation, and mRNA transfection to HEK293T cells

RT-qPCR, gel electrophoresis,

**Undergraduate Independent Research -*Sprowles Lab***

May 2018-July 2018 PI: Amy Sprowles, Ph.D. Assistant Professor of Biology

Investigated cJun (siRNA) knockdown in murine embryonic stem cells and their impact on downstream differentiation to cardiomyocytes.

mRNA transfection, Hanging drop differentiation, embryoid bodies.

Immunocytochemistry to confirm differentiation.

SDS PAGE, and BCA analysis.

**Graduate Level Stem Cell Course**

January 2018- May 2018

Maintenance and characterization of murine embryonic stem culture lines via alkaline phosphatase assay, immunocytochemistry, RT-qPCR, SDS page western blot analysis, fluorescence, and light microscopy.

Differentiation of dopaminergic neurons and cardiomyocyte cell differentiation via hanging drop method.

**Other Experience:**

Community Memorial Health System- Surgical Technologist

June 2014- February 2016

Performed surgical technologist duties in a labor and delivery ward including preventative checks and maintenance, room turn over, resupply, patient positioning, draping, post-surgical transport, decontamination and transporting instruments and specimens, ordering, and billing. Also, I trained recently hired nurses into operating room circulator nurses.

US Army– Surgical Technologist/ Central Material Technologist

October 2008- October 2018

Maintained sterile surgical instruments, bandages, linens, fluids, and equipment for surgery cases. Assisted doctors by retracting, electrocautery, cleaning blood, irrigating, cutting suture during surgery. Decontaminated the full range of reusable surgical supplies, utilized Bowie-Dick, chemical indicators, and Dart test routinely. Perform quality control checks for broken and dull surgical instruments.

Served as trainer lead and instructed new soldiers by performing mock surgical cases. Specific emphasis was placed on Trauma, Orthopedics, Cardiovascular, and Obstetrics cases. Updated Standard Operating Procedures (SOP) for the Operating Room, and Anesthesia.   
Conducted a yearly inventory to ensure accurate accounting of government property.

**Certifications and Awards**

Title: BLS for Healthcare Provider

Date Received: February 2014

Company Name: American Heart Association

Title: Military Outstanding Volunteer Service Medal

Date Received: June 15, 2013

Company Name: Joint Task Force Soto Cano, US ARMY

**Volunteer work: 01 January 2012 to 10 June 2013**

Served as liaison director of Soto Cano Air Base to the Scouts of Honduras. Developed a grassroots volunteer community outreach program with the military personnel on the military base.  
Primary mission: to serve as mentors to the Scouts of Honduras. We collectively worked to motivate interest, fundraise, gather volunteers, and allocated resources to broaden the Scouts of Honduras’s training program.

Fostered a positive work atmosphere that provided willingness, initiative, enthusiasm, and resourcefulness to the Honduran Scouts. Our unit planned and conducted multiple on-base events and training opportunities enabling military service members to mentor, teach, motivate, train and befriend over sixty-five scouts assigned to the local Comayagua chapter improving our public relations relationship within the local community.

**References:**

**Available upon request.**