

Pablo Enrique Guevara-Pantoja, Ph.D.

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Education

- 2014-2018 **Ph.D. Biomedical Engineering and Physics**
Centre for Research and Advanced Studies of the National Polytechnic Institute (Cinvestav-IPN), NL, México. Design, characterization, and optimization of a microfluidic magnetic trap for immunoassays applications.
- 2012-2014 **M.Sc. Biomedical Engineering and Physics**
Centre for Research and Advanced Studies of the National Polytechnic Institute (Cinvestav-IPN), NL, México. Effect of magnetic microparticles packing density in the efficiency of a microfluidic magnetic trap.
- 2002-2006 **B.Eng. Electronics**
Lerdo institute of technology (ITSL) Durango, México.
Instrumentation and control specialist.

Research experience

- 2023-present **ADAGIO MSCA COFUND Post-doctoral Fellow.** Microfluidics Cluster UPV/EHU, Spain. Single Cell Adhesion Dot Array for Accurate Assessment of Anti-cancer Therapy Using Cardiomyocytes Derived from Human-induced Pluripotent Stem Cells.
Advisors: Lourdes Basabe-Desmonts, Ph.D. and Fernando Benito-López, Ph.D
- 2022-2023 **PostDoc European Fellow.** Microfluidics Cluster UPV/EHU, Spain. Plasma separator from whole blood for platelets enrichment applications.
Advisors: Lourdes Basabe-Desmonts, Ph.D. and Fernando Benito-López, Ph.D.
- 2022-2022 **Scientific Consultant.** La Roche AG, Basel Switzerland. Four months.
Microfabrication Techniques on 48-Well Plate Perfusable Platform and Microfluidic Valves
- 2021-2022 **Scientific Consultant.** Cinvestav-IPN, México. Six months
Design and development of a fully integrated device for serology assays with blood samples.
- 2019-2021 **PostDoc Conacyt Fellow.** CIO (Optics Research Center) and Cinvestav-IPN collaboration.
Advisors: Daniel Alberto May-Arrijoja, Ph.D. and José Luis García-Cordero, Ph.D.
Design, fabrication, and instrumentation of microfluidic chips of PDMS or plastic (PMMA) to (1) Study of maturation of chloroplasts through DLD size separation. (2) COVID-19 serology assays via multiplexed sensors. (3) RT-qPCR using a bubble-free microfluidic chip.
- 2014-2018 **Ph.D. Fellow.** Cinvestav-IPN.
Advisor: Gabriel Arturo Caballero-Robledo, Ph.D.
Immunoassays with functionalized iron nanoparticles through a microfluidic magnetic trap. Design and fabrication of monolithic plastic (PMMA) microfluidic valves and pumps. Devices were fabricated with CNC micro milling.

2012-2014

M.Sc. Student. Cinvestav-IPN.

Advisor: Gabriel Arturo Caballero-Robledo, Ph.D.

System instrumentation for the control and measurements of the packing density of iron microparticles inside a microfluidic channel.

Publications

- [1] **Pablo E. Guevara-Pantoja**, Josue U. Amador-Hernandez, Diana F. Cedillo-Alcantar, Gabriel A Caballero-Robledo, Jose L. Garcia-Cordero. “Millifluidic valves and pumps made of acrylic and tape **Lab on a chip** 2023 ([Link](#))
- [2] **PE Guevara-Pantoja**, R Rodriguez-Moncayo, OG Chavez-Pineda, DF Cedillo-Alcantar, KB Reynoso-Hernandez, JA Ramirez-Pool & JL Garcia-Cordero. “*Hybrid Opto-Thermocycler for RT-qPCR Detects SARS-CoV-2.*” **Advanced Materials Technologies** 2022 ([Link](#))
- [3] OG Chavez-Pineda, R Rodriguez-Moncayo, DF. Cedillo-Alcantar, **PE Guevara-Pantoja**, J U Amador-Hernandez, JL Garcia-Cordero. “*Microfluidic bioanalysis of blood biomarkers*” **Electrophoresis** 2022 ([Link](#))
- [4] JA Hernández-Ortiz, **PE Guevara-Pantoja**, M Andrade-Medina, M Carrillo-Tripp, GA Caballero-Robledo “*Computer Numerical Control Micromilling of a Microfluidic Acrylic Device with a Staggered Restriction for Magnetic Nanoparticle-based Immunoassays*”. **J. Vis Exp.** 2022 ([link](#))
- [5] R Rodriguez-Moncayo, DF Cedillo-Alcantar, **PE Guevara-Pantoja**, OG Chavez-Pineda, JA Hernandez-Ortiz, JU Amador-Hernandez, G Rojas-Velasco, F Sanchez-Muñoz, D Manzur-Sandoval, LD Patino-Lopez, DA May-Arrijoja, R Posadas-Sanchez, G Vargas-Alarcon, and JL Garcia-Cordero. “*A high-throughput multiplexed microfluidic device for COVID-19 serology assays*”. **Lab on a chip** 2021 ([link](#))
- [6] KB Reynoso-Hernandez, **PE Guevara-Pantoja**, and GA Caballero-Robledo. “*Capture efficiency of magnetic nanoparticles through the compaction effect of a microparticles column*”. **Physical Review E** 2021 ([link](#))
- [7] **PE Guevara-Pantoja**, OG Chavez-Pineda, AM Solis-Serrano, JL Garcia-Cordero, GA Caballero-Robledo. “*An affordable 3D-printed positioner fixture improves the resolution of conventional milling for easy prototyping of acrylic microfluidic devices*”. **Lab on a chip** 2020 ([link](#))
- [8] **PE Guevara-Pantoja**, M Sánchez-Domínguez, GA Caballero-Robledo. “*Micro-nanoparticles magnetic trap: Toward high sensitivity and rapid microfluidic continuous flow enzyme immunoassay*”. **Biomicrofluidics** 2020 ([link](#))
- [9] **PE Guevara-Pantoja**, R Jiménez-Valdés, JL García-Cordero and GA Caballero-Robledo. “*Pressure-actuated monolithic acrylic microfluidic valves and pumps*”. **Lab on a chip** 2018 ([link](#))
- [10] P Vázquez-Vergara, AM Torres Rojas, **PE Guevara-Pantoja**, E Corvera-Poiré and GA Caballero-Robledo. “*Microfluidic flow spectrometer*”. **J. Micromech. Microeng** 2017 ([link](#))
- [11] **PE Guevara-Pantoja** and GA Caballero-Robledo. “*Tuning finely the packing density of heavy microparticles in a microfluidic channel*”. **RSC Adv.** 2015 ([link](#))

- [12] OG Chavez-Pineda, R Rodriguez-Moncayo, AM Gonzalez-Suarez, **PE Guevara-Pantoja**, JL Garcia-Cordero. “*Handheld platform for leukocyte extraction from blood using sheath-free deterministic lateral displacement.*” (in preparation) **2023**

Patents

- [1] *Microfluidic structures with improved component joining.* JU Amador-Hernandez, **PE Guevara-Pantoja**, JL Garcia-Cordero. (Patent pending)
- [2] *Hybrid Opto-Thermocycler for RT-qPCR using a Bubble-free Microfluidic Device detects SARS-CoV-2.* **PE Guevara-Pantoja**, KB Reynoso-Hernandez, R Rodriguez-Moncayo, OG Chavez-Pineda, DF. Cedillo-Alcantar, JA Ramirez-Pool, LA Nuñez-Muñoz, B Xoconostle-Cazares, JL Garcia-Cordero. (Patent pending).
- [3] *A high-throughput multiplexed microfluidic device for COVID-19 serology assays.* R Rodriguez-Moncayo, DF. Cedillo-Alcantar, **PE Guevara-Pantoja**, OG Chavez-Pineda, JA Hernandez-Ortiz, JU Amador-Hernandez, G Rojas-Velasco, F Sanchez-Muñoz, D Manzur-Sandoval, LD Patino-Lopez, DA May-Arriola, R Posadas-Sanchez, G Vargas-Alarcon, and JL Garcia-Cordero. (Patent pending)

Conference proceedings

- **Pablo E. Guevara-Pantoja, F Benito-Lopez, L Basabe-Desmonts.** “*Numerical simulations of polydimethylsiloxane (pdms) pumps for microfluidics applications*” The 27th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS), Chemical and Biological Microsystems Society. Katowice Poland 2023.
- **Pablo E. Guevara-Pantoja**, KB Reynoso-Hernandez, R Rodriguez-Moncayo, OG Chavez-Pineda, DF. Cedillo-Alcantar, JA Ramirez-Pool, LA Nuñez-Muñoz, B Xoconostle-Cazares, JL Garcia-Cordero. “*Hybrid opto-thermocycler for RT-qPCR using a bubble-free microfluidic device detects SARS-CoV-2*” The 25th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS), Chemical and Biological Microsystems Society. **California USA 2021 (Travel Grant).**
- **Pablo E. Guevara-Pantoja**, Gabriel A. Caballero-Robledo. “*Microfluidic magnetic trap for nanoparticle-based continuous flow immunoassay*”. Second edition of Fundamentals and Applications of micro- and nanofluidics conference. **FLOW 2017 Paris France**
- **Pablo E. Guevara-Pantoja**, Gabriel A. Caballero-Robledo. “*Effect of magnetic microparticles packing density in the efficiency of a microfluidic magnetic trap*”. V Escuela NanoAndes San José, Costa Rica. **NanoAndes 2015 Costa Rica,**
- **Pablo E. Guevara-Pantoja**, Gabriel A. Caballero-Robledo. “*Control of microparticles packing density in a microfluidic channel for bead-based immunoassays applications*”. **APS Meeting 2014 USA,**

Skills and techniques

Microfabrication:

Single/doble layer soft photolithography
Multilayer devices by micro milling.

3D printing

Laser cutting

Biology techniques:

Fluorescence and confocal microscopy
qPCR and LAMP
Bioassays

Chemistry techniques

Silane surface modifications

Nanoparticle synthesis

Sol-gel coatings

Engineering skills

PIC microcontrollers

Arduino microcontrollers

Power electronics

PCB design and fabrication

Computer skills

LabView, AutoCAD, SolidWorks

Illustrator, COMSOL, GraphPad, Image Processing

Languages

Spanish Native

English C1