

# ALEJANDRO ABARCA BLANCO

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As an engineer, product manager and inventor, I bring over a decade of hands-on experience in conceptualizing, designing, and developing scientific instrumentation, medical hardware and devices that push technological boundaries. My consistent objective has been to bridge the gap between intricate challenges and tangible solutions that enhance quality of life. Fueled by a passion for multidisciplinary collaboration, I am seeking opportunities to join dynamic teams dedicated to shaping the future of healthcare.

## DIRECTOR OF ENGINEERING

**Noleus Technologies ([www.noleustechnologies.com](http://www.noleustechnologies.com)) | Houston, TX | 2023 - PRESENT**

Noleus Technologies develops innovative medical devices to treat post-operative ileus (POI) and improve patient recovery.

- *Regulatory Compliance:* Directed engineering efforts to align the Noleus core products with the FDA 510(k) pathway, ensuring design controls and documentation readiness for market submission.
- *Design for Manufacturing and Assembly (DFMA):* Led DFM initiatives and established the first ISO 13485-compliant assembly lines for Noleus core products, achieving high-quality and scalable production.
- *Process Validation:* Executed IQ, OQ, and PQ protocols to validate manufacturing processes, maintaining full regulatory compliance and reproducibility.
- *Design Control Leadership:* Oversaw cross-functional engineering teams through all design control phases, ensuring traceability across DHF, DMR, and risk management documentation per ISO 13485 and ISO 14971.
- *Verification & Validation (V&V):* Directed comprehensive product verification and validation testing to confirm design intent and ensure safety, efficacy, and reliability.
- *Supplier and Manufacturing Management:* Led technical relationships with authorized converters, component suppliers, and contract manufacturers, ensuring design transfer and production readiness.
- *Cross-Functional Collaboration:* Partnered closely with Quality, Regulatory, and Clinical Affairs teams to ensure alignment across product lifecycle and submission requirements.
- *Strategic Leadership:* Defined and executed engineering strategy, technical roadmaps, and budgets to meet company milestones and investor expectations.

## SENIOR HARDWARE ENGINEER

**Delee Corp ([www.delee.co](http://www.delee.co)) | Laredo, TX | 2017- 2023**

Delee Corp develops cutting-edge medical devices for cancer diagnostics and therapy monitoring using liquid biopsy technology.

- *Product Development:* Led a cross-functional team of 20 experts from product MVP, product requirements, hardware and software design, production and launch of two cutting-edge medical devices for cancer diagnostics and therapy monitoring using liquid biopsy technology. Technology has won more than 4 international awards.
- *Technical Development:* Designed optical, mechanical, pneumatic, electronic, housings, and software systems for automated microscopes and sample preparation devices. Mentored junior engineers, promoting continuous learning and innovation.
- *Innovation:* Established an R&D team, resulting in three patent applications and four articles published in top-tier scientific journals.
- *Regulatory Compliance:* Worked closely with regulatory affairs teams to ensure all products met stringent FDA and CE standards (ISO 13485:2016 & 21 CFR Part 820)

- *Funding:* Secured \$1.2M through government grants for R&D, \$1.5M through crowdfunding, and \$1.5M from institutional investors.

## **MICROFLUIDICS ENGINEER (SENIOR HARDWARE ENGINEER)**

**Zen Fluidics | Monterrey, MX | 2014-2016**

Zen Fluidics specializes in developing advanced microfluidic systems for precise fluid control.

- *Technical Development:* Designed microfluidic, pneumatic, embedded electronic systems, product housings, and cloud software for automated pressure-based pumping systems, flow sensors, and liquid valves. Maintained design documentation, ensuring consistency and adherence to company standards.
- *Team Collaboration:* Collaborated with sales, marketing, and finance departments for successful product commercialization. Mentored junior engineers, promoting continuous learning and innovation.
- *Microfluidics:* Fast Prototyping of PDMS, PMMA, COC and glass microfluidic chips with embedded electrodes in a clean room environment.
- *Multiphysics* simulation of microfluidic applications consisting of chemical and physical phenomena such as: fluid dynamics, thermal, electric, magnetic, particles, optics, diffusion of species, chemical reactions, etc.

## **EDUCATION**

- M.S. Engineering (Robotics and Advanced Manufacturing), Tec De Monterrey, Mx, 2014
- B.S. Physics Engineering (Micro Electro Mechanical Systems MEMS & Microfluidics), Tec De Monterrey, Mx, 2012

## **BUSINESS & ENTREPRENEURIAL EXPERIENCE**

- The Ganesha Lab (8th Gen), Santiago, Chile, 2023
- Start X Med, Palo Alto, Ca, 2020
- Leaders In Innovation Fellowship (Royal Academy of Engineering), London, UK, 2019
- Y Combinator (W17), Mountain View, Ca, 2017
- Global Solutions Program (Singularity University), Moffett Federal Airfield, Mountain View, Ca, 2012

## **TECHNICAL SKILLS**

- Microfluidics Prototyping: PDMS Soft lithography, PMMA machining, Glass Etching, Plasma and Anodic Bonding, Electrode Sputtering and Etching, Surface Functionalization, etc.
- Prototyping: 3D Printing, 3&5 Axis CNC Machining, Sheet Metal Laser Cutting, CNC sheet metal bending, Wire EDM, Plastic Injection, Reaction Injection Molding, Finishing & Coatings, etc.
- Simulation: COMSOL Multiphysics and ANSYS
- Quality Assurance Tools: Six Sigma, Lean Manufacturing, 5S, Kaizen
- Standards: ISO 9001, ISO 13485:2016 & 21 CFR Part 820
- Electronics: Altium Designer CAD, PCB design and prototyping, ARM Cortex & PIC microcontrollers, etc.
- Programming: C, C++, C#, Python (Functional and OOP)
- Frameworks: Flask, Fast API, Django
- CI&D Tools: Docker, Kubernetes, Git, etc.
- Data bases: PostgreSQL, MongoDB, Pinecone, etc.
- Data Science Tools: Langchain, PyTorch, Pandas, Seaborn, OpenCV for images, etc.
- Design Tools: SolidWorks, Fusion 360, GD&T blueprints and interpretation, etc.

## **PUBLICATIONS & PATENTS**

My publications can be found on my LinkedIn, ResearchGate, Google Scholar or Personal Website: Co-authored 8 papers in top tier scientific journals and submitted 3 non-provisional US patent applications.

# ALEJANDRO ABARCA BLANCO

Senior Hardware Engineer  
Product & Project Manager



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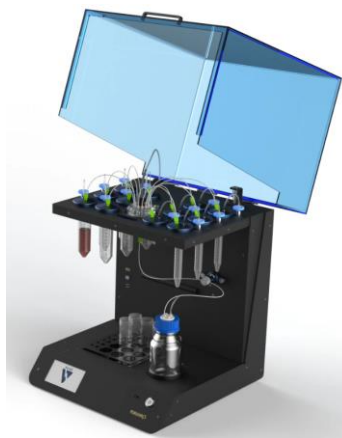
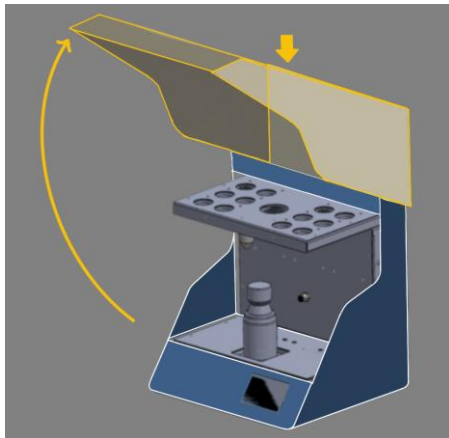
[www.linkedin.com/in/alejandrobabarca/](https://www.linkedin.com/in/alejandrobabarca/)



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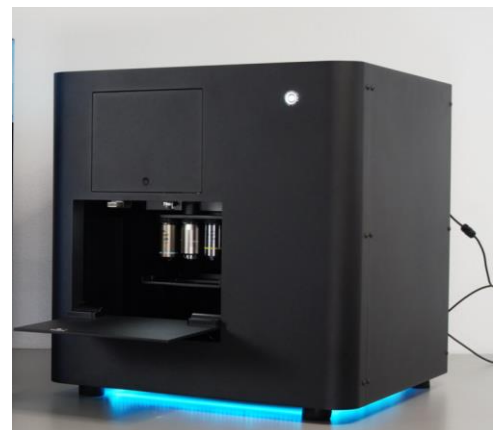
Visit my website portfolio for greater project details at: [www.abarcablanco.com](http://www.abarcablanco.com)

## Cytocatch Liquid Biopsy (Blood Sample Preparation Device)



At Delee Corp, I led the conceptualization, prototyping, and management of a multidisciplinary engineering team to develop an innovative medical device for detecting Circulating Tumor Cells (CTCs). These cells play a critical role in cancer metastasis, which accounts for 90% of cancer-related deaths. Our device achieved an impressive 96% capture efficiency, significantly exceeding the industry's 42% gold standard.

## Cytocatch Imaging System (Microscope with Artificial Intelligence)



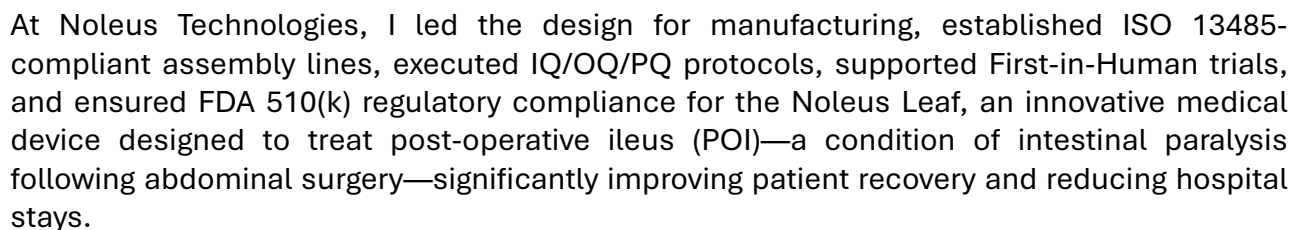
Building on previous projects, I developed the Cytocatch Imaging System, a specialized microscope designed to scan non-planar samples with precision. This advanced system integrates cutting-edge artificial intelligence and algorithms to automatically focus on immunostained samples, capture high-resolution images, and classify cells based on morphology and color. Fully automated, the Cytocatch Imaging System enhances the sensitivity and specificity of the company's cancer diagnostic tests, setting a new standard in imaging technology.

# Senior Hardware Engineer Product & Project Manager



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## Noleus Technologies (Devices to treat post-operative ileus POI)



At Zen Fluidics, I assembled and led a multidisciplinary engineering team to develop a new line of laboratory automation devices focused on microfluidics. Zen Fluidics empowers scientists to seamlessly design and prototype "lab-on-a-chip" devices, integrating multiple laboratory functions onto a single compact platform. These innovative solutions, driven by microfluidic technology, are pivotal for advancing point-of-care diagnostics and environmental monitoring.