The Faculty of Medicine of Harvard University
Curriculum Vitae

Date Prepared: 02/10/2026
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Place of Birth: Castro Valley, CA
Academic Rank: Resident Physician, Integrated Vascular Surgery – Massachusetts General Hospital / Harvard Medical School

Education:

Year	Degree	Field of Study	Institution
2010-2014	BS with Honors, magna cum laude	Biology and Chemistry	Wake Forest University
2016-2020	MD, 1st quartile class rank	Medicine	Virginia Commonwealth University School of Medicine / The Medical College of Virginia
2015	Certificate	Lean Launchpad – Entrepreneurship and Device Commercialization	The National Science Foundation I-Corps, and University of California, San Francisco

Postdoctoral Training:

Month/Year	Title	Specialty	Institution
07/2020 - current	Resident	Vascular Surgery	Massachusetts General Hospital

Current Licensure and Board Certification:

Year	Type of license or certification
2020-present	Massachusetts State Medical License (active)

Report of Technological and Other Scientific Innovations:

Safety mechanism for the novel endoscopic anastomosis device Magnamosis, 2015, University of California, San Francisco	**Description of Innovation** Magnamosis is an endoscopically deployed medical device that creates a suture free bowel anastomosis using magnetic force to induce tissue remodeling. I was responsible for the design of multiple safety features for the device. I developed a mechanism that utilized piezoresistive force sensors to measure the compressive

	force between the magnetic components at multiple points along the device and converted this information into a map of the relative positions of the magnets to ensure correct alignment. I performed the prototyping for this project independently, including coding, computer aided design, 3D printing, and working with an international company to design custom piezoresistive sensors. I also redesigned the polycarbonate casing of Magnamosis to prevent uncoupling under lateral shear stress. Magnetic Compression Anastomosis (Magnamosis) for Functional Undiversion of Ileostomy in Pediatric Patients. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 27(12), pp.1314-1317. Toselli L, Martinez-Ferro M, Cervio G, Kwiat D, Imamura-Ching J, Graves C, Gaston B, and Harrison M, 2017

Endochondral tissue engineering for vascularized bone regeneration, 2016, University of California, San Francisco – Orthopedic Trauma Institute	I developed a novel bone graft utilizing decellularized hypertrophic cartilage to promote bone healing through the endochondral ossification (cartilage to bone) instead of intermembranous ossification (bone to bone). I designed and optimized our cartilage decellularization protocol as well as a novel manufacturing protocol that utilized the patient's own blood to encapsulate the devitalized cartilage in a fibrin mesh to create an implantable graft that mimics the hematoma and cartilage callous of early fracture healing. I designed this tissue processing protocol to meet guidelines for FDA section 361 which regulates "minimally manipulated tissues." 361 tissues have fewer regulatory hurdles, which was attractive to our industry partners. **US Patent Application # US201562139461P, filed 3/28/2016** **World Intellectual Property Organization # WO2016160717A1, Published 10/6/2016**

IsletStent – Insulin freedom without immunosuppression, Mass General Brigham, 2022	The IsletStent provides a minimally invasive, immunoisolated chamber for islet cell delivery within the portal vein, recreating physiologic insulin delivery without systemic immunosuppression. I am responsible for the design, prototyping, and testing of the IsletStent device. I am currently the principal investigator for the **2024 MGH Gene and Cell Therapy Institute Chemistry, Manufacturing, and Controls (CMC) award program, which provides $150,000** to support the manufacturing of the IsletStent for large animal testing. The funding for our provisional, and utility patent conversion, was graciously provided by MGB Innovations. The IsletStent is being developed under the company name Avinya Therapeutics. **US Patent Application # PCT/US23/71910, filed August 9, 2023**

Veritas One – Patient-controlled health data aggregation platform, Massachusetts General Hospital, 2024	Veritas One is a full-stack web application that I designed and built to address the fragmented state of health data in the United States. The platform automates the collection and aggregation of medical records from disparate healthcare systems via fax and digital integration, processes records using optical character recognition (OCR), and organizes them chronologically into a unified, patient-controlled portal with AI-powered health insights. I am the sole developer of the entire technology stack, which utilizes a HIPAA-compliant architecture. The platform is approved by MGH as an institutional spinout, and I serve as the Founder and Executive of Veritas One. The platform is currently in private beta.

Epic Frailty Calculator – SMART on FHIR clinical decision support application, Massachusetts General Hospital, 2024	I designed and built a standalone clinical application that connects to the Epic electronic health record via the FHIR (Fast Healthcare Interoperability Resources) API. The application automatically pulls patient ICD-10 codes and SNOMED terminology to compute validated frailty scores (mFI-5 and VQI-11) in real-time, enabling frailty assessment to be completed before the physician enters the room. This tool is a key component of our funded quality improvement initiative to standardize frailty scoring in vascular surgery. An IRB protocol is in development for formal clinical integration at Massachusetts General Hospital.

CaseLogger – Automated ACGME surgical case log entry system, Massachusetts General Hospital, 2025. Technology acquired by PhysicianX (Buffalo, NY).	I designed and developed a browser automation application that automates the entry of surgical case logs into the ACGME Accreditation Data System (ADS). The ACGME requires surgical residents to manually log every operative case into a web-based system, a process that is universally recognized as time-consuming and error-prone. My solution uses Playwright-based browser automation with Python to read case data from structured spreadsheets and programmatically fill the ACGME web forms, including CPT code search, attending selection via fuzzy matching, and submission verification through real-time case counter validation. The system supports session persistence, batch processing, and detailed JSON logging of all submissions. It reduces what typically takes hours of manual data entry to minutes of automated processing. The technology was acquired by PhysicianX, an AI-powered career management platform for physicians.

Report of Clinical Innovations:

Virtual Reality for pre-operative patient education, 2018, VCU School of Medicine	Padragani V, **Gaston B,** Appelbaum N, Albuquerque F, Levy M, Larson R. The Application of Virtual Reality in Patient Education. *Ann Vasc Surg*, 2019 (59), pp. 184-189 I implemented the first protocol for the use of immersive 3D virtual reality images in pre-operative patient education. We utilized a

	virtual reality headset to display a 3D CT reconstruction of an infrarenal aortic aneurysm to patients at their preoperative visit for endovascular repair. Patients reported an increased understanding of their procedure after viewing virtual reality imaging when compared to 2D graphics or text. This was the first study to describe the use of virtual reality in pre-operative education.

Length of Stay (LOS) Huddle – Multidisciplinary weekly discharge optimization, Massachusetts General Hospital, 2023–2025	I designed and led a weekly multidisciplinary huddle reviewing all vascular surgery inpatients with a length of stay ≥ 4 days to identify and address barriers to discharge. Over the intervention period, 730 patients were reviewed and 297 targeted interventions were performed. Key barriers identified included surgical planning (18%), OR access (10%), and medical complexity (25%). The initiative reduced the average length of stay from 7.87 days to 6.77 days (p=0.003). This project was recognized with the **2025 Codman Gold Egg Award** from the MGH Department of Surgery.

Coordinated Patient Outreach for Reduction of Unplanned Postoperative 30-Day Readmission, Massachusetts General Hospital, 2023–2024	**Gaston BT,** Feldman ZM, Bellomo TR, Kaneko T, Menard MT, Eagleton MJ, Zacharias NP. Coordinated patient outreach for reduction of unplanned postoperative 30-day readmission. *JVS-Vascular Insights.* 2024;2:100075. I led a multi-modal quality improvement initiative using PDSA cycles to reduce 30-day readmission rates following vascular surgery. Interventions included post-discharge phone calls, mandatory 2-week follow-up visits, and “calling cards” with provider contact information. The initiative reduced the 30-day readmission rate from 14.1% to 8.2% (p=0.007), across 723 baseline and 426 intervention discharges.

Standardizing Frailty Assessment in Vascular Surgery, Massachusetts General Hospital, 2024–current	**Gaston BT,** Bellomo TR, Salomon B, et al. Direct comparison of frailty scores and their association with postoperative outcomes in patients undergoing lower extremity revascularization. *Journal of Vascular Surgery.* Sept 19, 2025. I am leading a multi-phase initiative to standardize frailty assessment in vascular surgery. The retrospective validation phase compared four frailty indices (mFI-5, RAI, VQI-FI, VQI-PBI) in 182 patients undergoing lower extremity revascularization, finding that VQI-based scores demonstrated superior prognostic ability across multiple adverse outcomes. The prospective phase integrates the Epic Frailty Calculator (described above in Technological Innovations) to automate real-time scoring. This project is funded by three grants from NESVS, VSGNE, and SVS SAVC.

Research and Non-Clinical Employment:

Year	Position	Institution	Description
2013-2014	Research Fellow	Wake Forest Institute of Regenerative Medicine	I utilized whole-organ liver decellularization to create bio-scaffolds for a 3D in-vitro model of hepatic colon cancer metastasis. The organ's vascular network was kept intact during decellularization, which enabled the scaffold to be seeded via the portal vein and recreate the native path for hematologic metastasis from the colon to the liver. Tumor cells grown in these decellularized grafts more accurately modeled tumor growth patterns compared to 2D extracellular membrane scaffolds and 3D gel scaffolds.
2014-2015	Staff Engineer	University of California, San Francisco, Department of Surgery / Pediatric Device Consortium	I performed design work and prototyping for several pediatric medical devices, including a magnetic compression anastomosis device (Magnamosis), a compliance monitor for pediatric scoliosis bracing (SmartBrace), and electro-mechanical cartilage reshaping to treat pectus deformities.
2015-2016	Research Assistant	University of California, San Francisco, Orthopedic Trauma Institute	I studied the role of Leukemia Inhibitory Factor (LIF) in promoting trans-differentiation of hypertrophic chondrocytes into osteoblasts during endochondral ossification. I used a living murine model to assess if intra-callous injections of LIF would hasten fracture healing and upregulate stem cell markers in hypertrophic cartilage. I also performed in-vitro degradation and chemical release experiments on calcium-crosslinked alginate hydrogels to determine the suitability of the gels for long-term LIF release in our murine model.
2017	Research Fellow	University of California, San Francisco, Orthopedic Trauma Institute	I designed the tissue decellularization and reconstitution processes for an osteogenic bone graft that utilizes hypertrophic cartilage to induce endochondral ossification. (Details described in the section on technological innovations)
2018-2020	Research Fellow	Virginia Commonwealth University School of Medicine	I completed a retrospective chart review comparing outcomes between open and endovascular repair of traumatic femoral artery injuries. I also performed the clinical data collection for a study examining how immersive virtual reality (VR) can be used for pre-operative patient education.
2022-current	Principal Investigator	Massachusetts General Hospital	Was awarded $100,000 seed funding to develop a device that enables remote monitoring of blood flow through bypass or fistula grafts. The

			goal is to identify patients whose grafts are imminently threatened so that they can seek care before complete occlusion. This has a broad set of applications from treating peripheral artery disease to maintaining hemodialysis access.
2023-2025	Quality & Safety Fellow	Massachusetts General Hospital – Division of Vascular and Endovascular Surgery	I oversaw the implementation and operational management of multiple quality initiatives for our surgical division. I have organized and implemented QI initiatives to reduce our division's readmission rate, optimize length of stay, and standardize the use of patient frailty scores to improve clinical decision making. In my role, I manage a multidisciplinary team of physicians, advanced practice providers, and non-clinical administrators and I oversee the use of divisional funding for QI projects. I provide monthly progress reports to the division and I am responsible for data storage, statistical analysis, and publication of our findings.

Administrative and Leadership Positions:

Year	Position	Description
2016-2017	President	Biodesign and Entrepreneurship Interest Group, VCU School of Medicine
2017	Director	HealthHacks Medical Hackathon
2019	Director of Programming	VCU Global Health Innovation Expo
2020	Vice President	Virginia Global Surgery Innovation Group
2021-2022	Clinical Advisor	Team 3D Organ Engineering, Nucleate accelerator program
2023-2024	QI Fellow	Quality Improvement Fellow for the MGH Division of Vascular Surgery
2024-current	Quality & Safety Chair	Division of Vascular and Endovascular Surgery, Massachusetts General Hospital
2024-2026	Executive Innovation Fellow	MESH (Medical Engineering and Science at Harvard)
2024-current	Founder & Executive	Veritas One – Patient-controlled health data aggregation platform (MGH-approved spinout)

Professional Societies and Committee Service:

Professional Societies Memberships

Years of Membership	Title of Society	Title of Role

2020 - present	Society of Vascular Surgery	Trainee Member

Committee Service:

Years of Membership	Title of Society	Title of Role
2023 – 2024	Massachusetts Medical Society	Member, Committee on Professional Liability
2021 - current	MGH Residency Program Evaluation Committee	Member
2023 - current	Division of Vascular Surgery Quality and Safety Committee	Member
2023 – current	Massachusetts General Hospital Institutional Review Board	Reviewing Member

Editorial Activities:

Year(s)	Role	Journal Name
2014	Ad-hoc reviewer	Impulse Journal of Neuroscience

Honors and Prizes:

Year	Name of Honor/Prize	Awarding Organization	Achievement for which awarded
2015	Page Acree Scholarship	Wake Forest University	Awarded for post-graduate studies in music history in Vienna, Austria
2017	Summer Research Award – Orthopedic Trauma Institute	University of California, San Francisco	Awarded for my work developing tissue engineered bone grafts that promote endochondral ossification
2024	NESVS Young Investigators Research Grant	New England Society for Vascular Surgery	Awarded for frailty scoring quality improvement research
2025	Codman Gold Egg Award	Massachusetts General Hospital, Department of Surgery	Awarded for the Length of Stay Huddle quality improvement initiative

Report of Funded Projects

Currently Funded:

Years	Name	Description
2022	MGH Wellman Center "Magic Wand" Seed Award	$100,000 seed funding to develop a device that enables remote monitoring of blood flow through bypass or fistula grafts. The goal is to identify patients whose grafts are imminently threatened so that they can seek care before complete

		occlusion. This has a broad set of applications from treating peripheral artery disease to maintaining hemodialysis access.
2024–current	Quality Improvement Project – Standardizing utilization of frailty scores in vascular surgery.	This project consists of a retrospective comparison of frailty scores, as well as a prospective QI initiative to improve frailty scoring at our institution. As PI, I led the development and integration of an automated frailty calculator within the Epic EHR (described in Technological Innovations) and published the results of the retrospective cohort study in the Journal of Vascular Surgery. This work is supported by: **Society for Vascular Surgery Section on Ambulatory Vascular Care (SAVC) Research Seed Grant ($10,000). PI: Gaston.** – Year 1 (2024) and Year 2 renewal (2025) **NESVS Young Investigators Research Grant ($10,000/year, up to 3 years). PI: Gaston.** **VSGNE 2024 Quality Improvement Initiative Award ($7,000). PI: Gaston.**
2022–current	IsletStent	A novel biohybrid endograft designed to improve outcomes after islet cell transplantation for the treatment of diabetes. The device utilizes semipermeable expanded PTFE membranes to immuno-isolate the donor islet cells from the host immune system. Using our proprietary endograft and delivery system the immunoisolating islet cell chamber can be delivered into the portal vein, thus recapitulating physiologic insulin delivery. **2022 MESH Incubator Seed Grant ($10,000)** – To support the prototyping and initial proof of concept testing. **2024 MGH Gene and Cell Therapy Institute Chemistry, Manufacturing, and Controls (CMC) Award ($150,000)** – To support the manufacturing of IsletStent devices that are suitable for immunoisolation testing and safe for use in large animals.

Report of Local Teaching and Training

Formal Teaching of Students:

Years	Topic	Title of Role
2019	Trained 3rd year medical students on using the Cerner electronic medical record	Instructor
2023	Developed an operative training curriculum for the Division of Vascular and Endovascular Surgery at Massachusetts General Hospital	Project Lead

Mentored Trainees

Years	Name	Mentee Current Title
2019	Donjin Suh, MD	Integrated Vascular Surgery Resident – The University of Iowa

Report of Regional and National Presentations

No presentations below were sponsored by outside entities

Regional Presentations:

Year	Title of presentation or name of course / Type of presentation/role(s)
2015	**Alternative methods for costal cartilage remodeling in the treatment of Pectus Excavatum** *UCSF - Cal Tech Medical Bioengineering Symposium, Pasadena, CA*
2019	**Outcomes after Open and Endovascular Repair of Traumatic Femoral Artery Injuries** *Virginia Vascular Society Annual Meeting, Williamsburg, VA*
2024	**Update on VSGNE 2024 Quality Improvement Initiative** *VQI Vascular Study Group of New England, Boston, MA*

National Presentations:

Year	Title of presentation or name of course / Type of presentation/role(s)
2018	**The Application of Virtual Reality in Patient Education** *American College of Surgeons, Clinical Congress. Boston, MA*
2019	**Comparing Management Strategies of Traumatic Femoral Artery Injuries: 5-year Experience at a Single Level 1 Trauma Center** *American College of Surgeons Clinical Congress. San Francisco, CA.*
2019	**LIF Enhances Callus Formation During Fracture Healing** *Orthopedic Research Society Annual Meeting. Austin, TX.*
2024	**Development of a Bio-hybrid Endovascular Stent-Graft for Minimally Invasive and Immunosuppression Free Islet Cell Transplantation** *Vascular Research Initiatives Conference (VRIC) 2024. Chicago, IL.*
2024	**Development and Implementation of a predictive frailty scoring system based on quantitative frailty scores to optimize care, improve length of stay, and reduce readmissions** *VQI session at the Vascular Annual Meeting, 2024. Chicago, IL.*
2025	**Bringing Ideas to Life: Innovation and QI as a Surgery Resident** *MGH Department of Surgery Grand Rounds. Boston, MA.*
2025	**LOS Huddle: A Multidisciplinary Approach to Reducing Length of Stay in Vascular Surgery** *American College of Surgeons Quality and Safety Conference. San Diego, CA.*
2025	**Development of a Bio-hybrid Endovascular Stent-Graft for Minimally Invasive and Immunosuppression Free Islet Cell Transplantation (Poster Presentations)** *World Transplant Congress. San Francisco, CA.*

2025	**Standardizing Frailty Assessment in Vascular Surgery: Research Update** *SVS Section on Ambulatory Vascular Care (SAVC) session at the Vascular Annual Meeting, 2025. New Orleans, LA.*

Report of Scholarship

Peer reviewed scholarship in print or other media:

1. Toselli L, Martinez-Ferro M, Cervio G, Kwiat D, Imamura-Ching J, Graves C, **Gaston B,** and Harrison M, 2017. Magnetic Compression Anastomosis (Magnamosis) for Functional Undiversion of Ileostomy in Pediatric Patients. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 27(12), pp.1314-1317.
2. Vyas D, Baptista PM, Brovold M, Moran E, **Gaston B,** Booth C, Samuel M, Atala A, Soker S. Self-assembled Liver Organoids to Recapitulate Hepato-biliary Organogenesis In-vitro. 2018. *Hepatology*, 67(2), pp.750-761.
3. Padragani V, **Gaston B,** Appelbaum N, Albuquerque F, Levy M, Larson R. The Application of Virtual Reality in Patient Education. *Ann Vasc Surg*, 2019, 59, pp. 184-189.
4. Mclaren A, Busel G, Parikh H, Only A, Patterson J, **Gaston B,** Mclemore R, Cunningham B. Corridor-diameter-dependent angular tolerance for safe transiliosacral screw placement: an anatomic study of 433 pelves. *Eur J Orthop Surg Traumatol*, 2021. Oct;31(7), pp. 1485-1492.
5. Png CYM, DeCarlo CS, **Gaston BT,** Morrow KL, Bellomo TR, Katz N, Zacharias N, Srivastava SD, & Dua A. (2023). Routine completion angiography for infrainguinal bypasses using prosthetic conduit: No effect on postoperative patency. *Annals of Vascular Surgery*, 93, 137–141.
6. Bellomo TR, Goudot G, **Gaston B,** Lella S, Jessula S, Sumetsky N, Beardsley J, Patel S, Fischetti C, Zacharias N, & Dua A. (2023). Popliteal artery aneurysm ultrasound criteria for reporting characteristics. *Vascular Medicine*.
7. **Gaston BT,** Feldman ZM, Bellomo TR, Kaneko T, Menard MT, Eagleton MJ, Zacharias NP. Coordinated patient outreach for reduction of unplanned postoperative 30-day readmission. *JVS-Vascular Insights*. 2024;2:100075.
8. **Gaston BT,** Eagleton MJ. Nonsystematic review of early, mid-term, and long-term outcomes for fenestrated and branched endovascular repair of thoracoabdominal aneurysms. *JVS-Vascular Insights*. 2024;2:100110.
9. Bellomo TR, Jessula S, Sumetsky N, **Gaston BT,** et al. Pilot Study to Improve Resident Experience on Vascular Surgery by Standardizing Dissemination of Operative Steps. *Journal of Surgical Education*. 2024.
10. Bellomo TR, Goudot G, **Gaston BT,** et al. Percent Thrombus Predicts Popliteal Artery Aneurysm Related Limb Threatening Events. *Annals of Surgery*. 2024.
11. Bellomo TR, Jessula S, **Gaston BT,** et al. Resident Perspectives on a Vascular Surgery Operative Steps Resource. *JVS-Vascular Insights*. 2025.
12. **Gaston BT,** Bellomo TR, Salomon B, et al. Direct comparison of frailty scores and their association with postoperative outcomes in patients undergoing lower extremity revascularization. *Journal of Vascular Surgery*. Sept 19, 2025.

Books/textbooks for the medical or scientific community

1. **Gaston B** and Lavingia K. Chapter 3 in *Comprehensive Guide to Lower Extremity Amputations: Indications, Procedures, Risks and Rehabilitation.* Edited by Anahita Dua. 2020. Nova Publishing.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

1. Poscablo M, **Gaston B,** Hu D, Kidambi N, Kazakia G, Hansen K, Miclau T, Marcucio R, Bahney C. Considering the Cartilage Candidates: Improving Skeletal Repair by Characterizing Endochondral Potential of Different Cartilages. *Tissue Engineering and Regenerative Medicine (TERMIS) Americas Conference 2016. San Diego, CA.* December 13-16, 2016.
2. Pandrangi V, **Gaston B,** Appelbaum N, Albuquerque F, Levy M, Larson, MD, RVT, FACS. The Application of Virtual Reality in Patient Education. *American College of Surgeons, Clinical Congress 2018. Boston, MA.* October 21-25, 2018.
3. J Chiun Chang, D Hu, T Shao, **Gaston B,** T Miclau, R Marcucio, C Bahney. LIF Enhances Callus Formation During Fracture Healing. *Orthopedic Research Society 2019 Annual Meeting. Austin, TX.* February 2-5, 2019.
4. Ricard M, **Gaston B,** Rodas E, Leichtle S, Albuquerque F, Bennett J, Larson R, Aboutanos M, and Levy M. Outcomes after Open and Endovascular Repair of Traumatic Femoral Artery Injuries. *Virginia Vascular Society Annual Meeting, Williamsburg, VA.* September 13-15, 2019.
5. **Gaston B,** Rodas E, Leichtle S, Albuquerque F, Bennett J, Larson R, Aboutanos M, and Levy M. Comparing Management Strategies of Traumatic Femoral Artery Injuries: 5-year Experience at a Single Level 1 Trauma Center. *American College of Surgeons Clinical Congress 2019. San Francisco, CA.* October 27 – November 1, 2019.

Honors Thesis:

Gaston B. A Novel Bioengineered 3D Tumor Model for the Study of Colon Cancer Metastasis in the Liver. Honors thesis. Wake Forest University, Department of Biology. Defended 5/15/2016.