

Curriculum Vitae

Name: Gabriel Gruionu
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Education

09/1990- 05/1994	BS	Mathematics and Computer Science	University of Craiova, Romania
08/1995- 07/1999	MS	Veterinary Biomedical Sciences (M. Harold Laughlin)	University of Missouri- Columbia
08/1999- 12/2004	PhD	Biomedical Engineering (Drs. Tim Secomb and James Hoying)	University of Arizona

Postdoctoral Training

01/2005- 08/2006	Postdoctoral research assistant	Vascular Tissue Engineering	Department of Biomedical Engineering, University of Arizona.
08/2009- 07/2011	Postdoctoral research associate	Vascular biology of aging	Department of Surgery, Indiana University School of Medicine.
08/2011- 04/2015	Postdoctoral fellow	Cancer biology	Edwin L. Steele Laboratories for Tumor Biology, Department of Radiation Oncology, Massachusetts General Hospital and Harvard Medical School.

Faculty Academic Appointments

05/2015- 12/2016	Instructor in Surgery	Surgery	Harvard Medical School and Massachusetts General Hospital, Boston, MA.
01/2017- 04/2019	Assistant Professor of Surgery	Surgery	Harvard Medical School and Massachusetts General Hospital, Boston, MA.
10/2020- present	Research Assistant Professor of Medicine		Indiana University School of Medicine, Division of Cardiology, Indianapolis, IN

Appointments at Hospitals/Affiliated Institutions

05/2015- 12/2016	Assistant in research	Department of Surgery (Division of Trauma, Emergency Surgery, and Surgical Critical Care)	Massachusetts General Hospital.
01/2017- 05/2019	Assistant Investigator	Department of Surgery (Division of Trauma, Emergency Surgery, and Surgical Critical Care)	Massachusetts General Hospital.

10/2020-present	Assistant Scientist in Medicine	Department of Medicine, Division of Cardiology	Indiana University School of Medicine.
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Other Professional Positions

06/1994 - 07/1995	Math Tutor		Craiova, Romania.
09/2006-05/2009	Product Specialist		Gore Medical Division, W. L. Gore & Associates, Inc. Flagstaff, AZ.
02/2017 - 12/2019	President, Chief Operating Officer		Felis Medical, Inc., Arlington, MA.
09/2017 - present	Consultant		Academic Innovation Management System, LLC, Arlington, MA.
05/2019- present	President, Chief Executive Officer		Restore Surgical LLC, Arlington, MA.
05/2020-present	Adjunct Assistant Professor of Medicine		Department of Medicine, Indiana University School of Medicine

Professional Societies

1995-	Microcirculatory Society	Member
1995-	1995-	
1999-	Biomedical Engineering Society	
2007-2008		Member of Industry Committee
2007-2008		Member of the Board of Directors
2012-		President of the Boston Industry Chapter

Grant Review Activities

2002-	Review committee	The Microcirculation Journal Reviewer
2005-	Review committee	Romanian National University Research Council Reviewer

Awards

2016 and 2018, Excellence in Innovation, Partners Healthcare Innovation Awards.
 2017 Harvard Medical School Leadership Development for Physicians and Scientists Course

Report of Funded and Unfunded Projects

Funding Information

Past

2000-2002	Biomathematical modeling of vascular changes during ischemic revascularization American Heart Association predoctoral fellowship. PI (\$18,000.00/yr).
2011-2016	Clinical and Biomathematical Modeling of Vascular Changes Following Chemotherapy and/or Anti-Angiogenic Therapy in Advanced Colorectal Carcinoma. National Research Council (CNCS), Romania, PN-II-ID-PCE-2011-3-0664. Co-PI (\$300,000). Major goal is to provide a mathematical model based on clinical vascular data from colorectal cancer. My role is to advise on mathematical modeling and coordinate the research and publication process.

- 2014-2017 Navigation system for confocal laser endomicroscopy to improve optical biopsy of peripheral lesions in the lungs (NAVICAD).
EU EEA Financial Mechanism 2009-2014, project contract no. 3SEE/ 30.06.2014
External consultant (EURO1.1 mil).
Major goal is to build and commercialize a hybrid navigation system for bronchoscopy. My role as an external consultant is to advise on the commercialization process.
- 2015-2017 Innovative Medical System for Tumor Solid-Stress Monitoring to Improve Cancer Treatment
Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania PN-II-PT-PCCA-2013-4-1105.
Co-PI (\$500,000).
Major goal is to build and commercialize the prototype of the sensor to measure the solid stress in tumors at the time of biopsy collection. My role is to coordinate the research design and publication process. MGH owns the licensing rights for the technology, which will be tested at MGH and will constitute the subject of my future NIH grant applications.
- 2016-2017 Rapid Perfusion Catheter.
Boston-Biomedical Innovation Center pilot grant.
PI (\$84,000).
The major goal is to build and test feasibility for a peripheral IV catheter for rapid perfusion.
- 2017-2019 Innovative portable insufflation device to stop uncontrolled abdominal bleeding in military and civilian trauma (PAID).
Ministry of Research and Education from Romania
Co-PI (EUR 100,000).

Current

- 2016-2020 Improving the research and development capacity for imaging and advanced technology for minimal invasive medical procedures.
European Union, Competitiveness Operational Program 2014-2020.
PI (EUR 2.2 mil).
- 2020-2023 "Improving Cancer Diagnostics in Flexible Endoscopy using Artificial Intelligence and Medical Robotics", project number RO-NO-2019-0138, sponsored by the Norwegian and Romanian Science Foundations. Co-PI (EUR 1.25mil).

Current Unfunded Projects

- 2018 Quick Infusion Catheter (NIH STTR scored 39 to be resubmitted).
- 2018 Portable device to insufflate the abdominal cavity with CO₂ to control internal bleeding. (NIH STTR proposal scored 52 to be resubmitted).

Report of Local Teaching and Training

Teaching of Students in Courses

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| 2014-2016 | Introduction to Medical Devices | Biomedical Engineering Department, Boston University. Introduction to the medical product R&D process for engineers.
2 2hr sessions per semester. |
| | 1 st year students | |

2016-2017	Practicum Course Masters in Public Health Students	Harvard School of Public Health and Deloitte Consulting. Nine-month course in medical innovation. Surgery and Masters of Public Health students work with myself and Deloitte consultants to develop business plans for new surgical products. The results will be presented to class reports and Venture Capital investors. 2hrs/week lectures and one-on-one work with students.
2014-2019	Supervised over 200 Suffolk University MBA and Marketing students for business plan development for medical devices in collaboration with Harvard Medical School doctors.	Weekly 1-3 hrs online teaching for the entire semester and final presentation auditing and mentoring.

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

2011-	Medical innovation Clinicians and scientists	Departments of Surgery, Emergency Medicine and Radiation Oncology at MGH. One-on-one one-hour innovation mentoring of more than 25 doctors, scientists and residents.
2012-2014	Methods in Cancer Biology Postdoctoral fellows Graduate student	Steele Laboratories of Tumor Biology, MGH. One-hour lecture per year.
2016	The Lean Innovation Model for Academic Medical Discovery Resident and attending doctors, student and nurses	The MGH Trauma / Critical Care Didactic Conference and Journal Club in the Surgery Department. One-hour lecture on innovation
2016	Medical Innovation Lecture Medical Residents	EM Didactic Conference, Emergency Medicine Department, MGH. 1hour introductory lecture on innovation

Laboratory and Other Research Supervisory and Training Responsibilities

2012-2015	Supervised undergraduate research assistant	Daily 1hr mentorship for 3 years.
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Local Harvard Invited Presentations

- 2012 Structural Engineering of Normal and Tumor Microvascular Networks/ Department Seminar Series. Edwin L. Steele Laboratory for Tumor Biology, Massachusetts General Hospital and Harvard Medical School.
- 2013 Untangling the tumor vasculature/ Departmental seminar series. Edwin L. Steele Laboratory for Tumor Biology, Massachusetts General Hospital and Harvard Medical School, Boston MA.

Report of Regional, National and International Invited Teaching and Presentations

Those presentations below sponsored by outside entities are so noted and the sponsor is identified.

Invited Presentations and Courses

Regional

- 2009 From structural adaptation to structural engineering of microvascular network Department Seminar Series.
Department of Cellular and Integrative Physiology and Indiana Center for Vascular Biology and Medicine Seminar Series, Indiana University Purdue University.
- 2009 Medical Product Industry R&D: Engineering for cardiovascular applications Department Seminar Series.
IUPUI BMES student chapter. Indiana University Purdue University.
- 2009 Vascular remodeling: From basic science and mathematical modeling to tissue engineering and translational/tech transfer research/ Department Seminar Series.
Biomedical Engineering Department. Indiana University Purdue University.
- 2013 Medical Product Industry R&D: Engineering for Cardiovascular Applications.
Department of Mechanical Engineering, Wentworth Institute of Technology, Boston, MA.
- 2013 The Medical Innovation Network: Who We Need to Get the Job Done/Oral presentation/Presenter
Biomedical Engineering Society Boston Industry Chapter and Boston University Biomedical Engineering Department, Boston University
- 2014 Academic medical innovation/lecture.
Biomedical Engineering Society Boston Industry Chapter.
- 2013-2015 Medical Product Industry R&D: Engineering for Cardiovascular Applications/Oral presentation/presenter.
Biomedical Engineering Department, Boston University.

National

- 2008 GORE Cardiac Surgical Products - Engineering for Cardiovascular Applications/conference presentation.
Biomedical Engineering Society Annual Meeting.
Sponsored by W.L. Gore & Associates, Inc.
- 2008 Life after academia/conference presentation.
Biomedical Engineering Society Annual Meeting.
- 2009 Show me the product/money: Sponsoring requests to industry/conference presentation.
Biomedical Engineering Society Annual Meeting.
- 2010 In Vivo Imaging of Microvascular Network Development in a Tissue Engineered Construct/Conference presentation.
Biomedical Engineering Society Annual Meeting.
- 2010 The Medical Innovation Network: Who We Need to Get the Job Done.
Biomedical Engineering Society Annual Meeting.
- 2012 Structural Adaptation of Tumor Vasculature Induced by Micro-laser Ablation/Conference presentation.
Biomedical Engineering Society Annual Meeting.
- 2012 Structural Adaptation of Tumor Vasculature Induced by Micro-laser Ablation/Oral presentation/Presenter.
Biomedical Engineering Society Annual Meeting.
- 2017 Medical Device Development for Biomedical Engineers- Engineering for Clinical Applications/Invited Departmental Oral Presentation.
Biomedical Engineering Department, Cornell University.
- 2017 M. Onita, Lenco, L. Gruionu, P. Huang, L. Munn. Implantable tissue isolation chambers for in vivo tumor dynamics analysis G. Gruionu, D. Bazou, N. Maimon. Biomedical Engineering Society Annual Meeting, Phoenix, AZ. 2017.
- 2017 Gruionu G. Trauma and Emergency Medicine Innovation Program. Biomedical Engineering Society Annual Meeting, Phoenix, AZ. 2017.
- 2018 Gruionu G, Baish J, Gruionu LG, Bazou D, Onita-Lenco M, McMahan S, Maimon N, Munn L. Vascular Redundancy and Damage Tolerance in Microvascular Networks. World Congress of Biomechanics, Dublin, Ireland 2018.

2018 Gruionu LG, Surlin V, Jacob A, Constantinescu C, Gruionu G. Innovative Portable Insufflation Device to Stop Uncontrolled Abdominal Bleeding. World Congress of Biomechanics, Dublin, Ireland 2018.

Report of Technological and Other Scientific Innovations

2011 Gruionu L, Saftoiu A, Gruionu G, Ioncica A, Burtea D.: “System for imaging and guiding in endoscopy procedures”, Romanian Patent A-01433/22-12-2011.
Great potential to improve cancer diagnostic and treatment

2018 Gruionu G, Gruionu L, Velmahos G. “Device for abdominal wall lifting and needle insertion” US 2016/0008075A1 awarded on 05/21/2018.
Potential to influence the laparoscopy procedures worldwide.

2018 Gruionu G, Gruionu LG, Munn L, Jain RK. “System and method for measuring solid stress in tissues” US 2016/0089043 A1. Awarded August 2018.
Potential to revolutionize the cancer diagnostic and treatment.

2018 Gruionu G, Gruionu L., Lee J. “System, method, and apparatus for selectively accessing an interior lumen of a patient vessel”, WO 2017/079415 A1, filed on April, 2018 (US and Japan).

2019 Gruionu L, Gruionu G. “Systems and methods for automatic guidance of medical catheters and endoscopes”, 2018 62/687,746, US patent filed on June 15th, 2019.

Report of Scholarship

Publications

1. **Gruionu G**, Constantinescu GM, Laughlin MH. An anatomical study of the arteries feeding the triceps brachii muscle of swine *Anatomia Histologia Embryologia* 29 (1): 31-36 Mar 2000.
2. Shepherd BR, Chen HY, Smith CM, **Gruionu G**, Williams SK, Hoying JB. Rapid perfusion and network remodeling in a microvascular construct after implantation. *Arteriosclerosis Thrombosis and Vascular Biology*. 24(5):898-904, May 2004.
3. **Gruionu G**, Hoying JB, Pries AR and Secomb TW. Structural remodeling of mouse gracilis artery after chronic alteration in blood supply. *Am J Physiol Heart Circ Physiol* 288: H2047-H2054, 2005.
4. **Gruionu G**, Hoying JB, Gruionu LG, Laughlin MH and Secomb TW. Structural adaptation increases predicted perfusion capacity after vessel obstruction in arteriolar arcade network of pig skeletal muscle. *Am J Physiol Heart Circ Physiol* 288: H2778-H2784, 2005.
5. Gruionu LG, **Gruionu G**, Pastrama S, Iliescu N, Avramescu T. Contact studies between total knee replacement components developed using explicit finite elements analysis. *Med Image Comput Comput Assist Interv.*12(Pt 2):316-22, 2009.
6. **Gruionu G**, Stone AL, Schwartz MA, Hoying JB, and Williams SK. Encapsulation of ePTFE in prevascularized collagen leads to peri-implant vascularization with reduced inflammation. *J Biomed Mater Res A*. 95(3):811-8. 2010.
7. Kirkpatrick ND, Chung E, Cook DC, Han X, **Gruionu G**, Liao S, Munn LL, Padera TP, Fukumura D, Jain RK. Videorate resonant scanning multiphoton microscopy: An emerging technique for intravital imaging of the tumor microenvironment. *IntraVital*. 1(1): 60-68. 2012.

8. Cârțână T, Săftoiu A, Gruionu LG, Gheonea DI, Pirici D, Georgescu CV, Ciocâlțeu A, **Gruionu G**. Confocal Laser Endomicroscopy for the Morphometric Evaluation of Microvessels in Human Colorectal Cancer Using Targeted Anti-CD31 Antibodies. *PLoS One*. 2012;7(12).
9. **Gruionu G**, Hoying JB, Pries AR, Secomb TW. Structural remodeling of the mouse gracilis artery: coordinated changes in diameter and medial area maintain circumferential stress. *Microcirculation*. 2012 Oct;19(7):610-8.
10. Ciocalteu AM, Saftoiu A, Cartana T, Gruionu LG, Pirici D, Georgescu CV, **Gruionu G**. Feasibility Study for the Evaluation of Morphopathological Pattern of Neoangiogenesis in Human Colorectal Cancer Using Confocal Laser Microscopy and Targeted Anti- Cd105 Antibodies. *Gastrointestinal Endoscopy*, 2013;77 (5):AB534, ISSN 0016-5107.
11. Ciocâlțeu A, Săftoiu A, Cârțână T, Gruionu LG, Pirici D, Georgescu CV, Gheonea DI, **Gruionu G**. Evaluation of New Morphometric Parameters of Neoangiogenesis in Human Colorectal Cancer Using Confocal Laser Endomicroscopy (CLE) and Targeted Panendothelial Markers *PLoS One*. 2014; 3(9), e91084.
12. Cartana T, Brink L, Streba CT, Pirici D, Gheonea DI, Cherciu IF, Karstensen JG, Saftoiu A, Vilmann P, **Gruionu G**. Low Mechanical Index Contrast-Enhanced Endoscopic Ultrasound for Quantitative Assessment of Tumour Perfusion in Colorectal Cancer Patients: Preliminary Study. *Gastrointestinal Endoscopy*, 2014; 79(5): AB405, ISSN 0016-5107.
13. Cârțână ET, Streată I, Nicoli E, Uscatu D, Ciocalteu AM, Cherciu IF, Gheonea DI, Georgescu CV, Ioana MI, **Gruionu G**, Saftoiu A. Evaluation of Tumour Angiogenesis in Colorectal Cancer Based on Quantitative Contrast-Enhanced Endoscopic Ultrasonography and Molecular Analysis. *Digestive Disease Week, Washington, DC. Gastrointest Endosc* 2015;81:AB175.
14. Ciocâlțeu A, Săftoiu A, Pirici D, Georgescu CV, Cârțână T, Gheonea DI, Gruionu LG, Cristea CG, **Gruionu G**. Tumor neoangiogenesis detection by confocal laser endomicroscopy and anti-CD105 antibody: Pilot study. *World J Gastrointest Oncol* 2015; 7(11): 361-368.
15. Cartana ET, Streată I, Nicoli ER, Uscatu D, Ciocalteu AM, Cherciu IF, Gheonea DI, Georgescu CV, Ioana MI, **Gruionu G**, Saftoiu A. Evaluation of Tumour Angiogenesis in Colorectal Cancer Based on Quantitative Contrast-Enhanced Endoscopic Ultrasonography and Molecular Analysis, *Gastrointestinal Endoscopy*. 2015; 81(5):AB175, ISSN 0016-5107.
16. Gruionu LG, Săftoiu A, **Gruionu G**. A novel fusion imaging system for endoscopic ultrasound. *Endoscopic Ultrasound*, 2016 5(1):35-42.
17. Gruionu LG, Săftoiu A, Popa T, Ciobârță C, Streba CT, Ionică AM, **Gruionu G**. Feasibility Study of a Novel Navigation System for Biopsy of Peripheral Lesions in the Lungs. *Current Health Sciences Journal*. 2016; 42(1): 76-81.
18. Ștefănescu, D, Streba S, Cârțână ET, Săftoiu A, Gruionu G, Gruionu LG. Computer Aided Diagnosis For Confocal Laser Endomicroscopy in Advanced Colorectal Adenocarcinoma. *PLoS One*. 2016 May 4;11(5):e0154863. doi: 10.1371/journal.pone. 0154863.
19. Ciobirca C, Popa T, **Gruionu G**, Lango T, Leira HO, Pastrama SD, Gruionu LG. Virtual bronchoscopy method based on marching cubes and an efficient collision detection and resolution algorithm, *Ciência & Tecnologia dos Materiais*, 2016; 28(2):162-166,ISSN 0870-8312.
20. **Gruionu G**, Bazou D, Maimon N, Onita-Lenco M, Gruionu LG, Huang P, Munn LL. Implantable tissue isolation chambers for deconvolving angiogenesis *in vivo*. *Lab Chip*, 2016 16, 1840–1851 DOI:10.1039/C6LC00237D.
21. Bazou D, Maimon N, **Gruionu G**, Munn LL. Self-assembly of vascularized tissue to support tumor explants *in vitro*. *Integrative Biology*, 2016, DOI: 10.1039/C6IB00108D.
22. Scarisoreanu ND, Craciun F, Ion V, Birjega R, Bercea A, Dinca V, Dinescu M, Sima LE, Icriverzi M, Roseanu A, Gruionu L, **Gruionu G**. Lead-Free Piezoelectric (Ba,Ca)(Zr,Ti)O₃ Thin Films for Biocompatible and Flexible Devices. *ACS Appl Mater Interfaces*. 2017 Jan 11;9(1):266-278. doi: 10.1021/acsami.6b14774.
23. Streba CT, Giltan AM, Gheonea IA, Demetrian A, Șoimu AV, Săftoiu A, **Gruionu G**, Gruionu LG. Utility of confocal laser endomicroscopy in pulmonology and lung cancer. *Rom J Morphol Embryol*. 2016;57(4):1221-1227. Review.

24. Bazou D, Maimon N, **Gruionu G**, Grahovac J, Seano G, Liu H, Evans CL, Munn LL. Vascular beds maintain pancreatic tumour explants for ex vivo drug screening. *J Tissue Eng Regen Med*. 2017 Jun 1. doi: 10.1002/term.2481.
25. Cartana ET, Gheonea DI, Cherciu IF, Streața I, Uscatu CD, Nicoli ER, Ioana M, Pirici D, Georgescu CV, Alexandru DO, Șurlin V, **Gruionu G**, Săftoiu A. Assessing tumor angiogenesis in colorectal cancer by quantitative contrast-enhanced endoscopic ultrasound and molecular and immunohistochemical analysis. *Endosc Ultrasound*. 2017 Jul 6. doi: 10.4103/eus.eus_7_17.
26. C. Ciobîrcă, G. Gruionu, T. Langø, H. Olav Leira, L. **G. Gruionu**, T. Amundsen, E. Nuțu, Ș.D. Pastramă - An algorithm to obtain a theoretical model of the bronchial tree, *Materials Today: Proceedings*, 2017; 4(5-1):5761 – 5766.
27. C. Ciobîrcă, T. Langø, **G. Gruionu**, H.O. Leira, L.G. Gruionu, Ș.D. Pastramă - A new procedure for automatic path planning in bronchoscopy *Materials Today: Proceedings*, 2018; 5(13-2): 26513-26518.
28. Udristoiu A, Gruionu LG, **Gruionu G**, Iacob AV, Burtea DE, Ungureanu BS, Costache MI, Popescu CF, Săftoiu A. Real-time differential diagnosis of focal pancreatic masses based on convolutional neural networks and advanced endoscopic ultrasound imaging combining gray-scale, color doppler, contrast-enhancement and elastography. *Gastrointestinal Endoscopy*, 2019; 89(6):AB80. ISSN 0016-5107.
29. Gruionu LG, Constantinescu C, Șoimu-Iacob A, Ciobîrcă C, Udriștoiu A, Pastramă SD, **Gruionu G**. Semi-automatic guidance of a biopsy catheter to peripheral airways targets using a novel robotic and computer navigation system. *Materials Today: Proceedings*. 2019; 12(2):304–308.
30. **Gruionu G**, Gruionu LG, Duggan M, Surlin V, Patrascu S, Velmahos G. Feasibility of a Portable Abdominal Insufflation Device for Controlling Intraperitoneal Bleeding After Abdominal Blunt Trauma. *Surgical Innovation*. 2019 Aug 16:1553350619869057. doi: 10.1177/1553350619869057.
31. Cazacu IM, Udristoiu A, Gruionu LG, Iacob A, **Gruionu G**, Saftoiu A. Artificial intelligence in pancreatic cancer: Toward precision diagnosis. *Endosc Ultrasound*. 2019;8(6):357–359. doi:10.4103/eus.eus_76_19.

Book chapters

1. **Gruionu G**, Velmahos G. The lean innovation model for academic medical discovery. In *Advanced Technologies in Surgery, Trauma and Critical Care*. Editors: Latifi R, Gruessner RWG, Rhee PM. Springer-Verlag, 2015.
2. **Gruionu G**, Gruionu LG, Velmahos G. The Winning Team: Science, Knowledge, Industry and Information. In *The Modern Hospital: Patients Centered, Disease Based, Research Oriented, Technology Driven*. Editor: Latifi R. Springer Science and Business Media, 2018.

Thesis

Gruionu G. Structural adaptation of arcade arterioles to changes in blood flow. University of Arizona, 2004.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

1. Ciocâlțeu A, Săftoiu A, Cârțână T, Cherciu I, Gruionu LG, Pirici D, Georgescu CV, **Gruionu G**. Feasibility Study for the Evaluation of Morphopatological Pattern of Neoangiogenesis in Human Colorectal Cancer using Confocal Laser Endomicroscopy and Targeted Anti- CD105 Antibodies. United European Gastroenterology Week (UEGW) conference, Vienna, Austria, October 2014.
2. Gruionu G, Popa T, Ciobîrcă C, Săftoiu A, Streba C, Ionică AM, Langø T, **Gruionu G**. A novel fusion imaging guiding system for bronchoscopy. Design of Medical Devices Conference, Delft, The Netherlands, October 2014.
3. Gruionu LG, Popa T, Ciobîrcă C, Saftoiu A, Streba C, Ionică Am, Langø T, **Gruionu G**, “A novel fusion imaging guiding system for bronchoscopy”, Design of Medical Devices - Europe Edition Oct. 22-24, 2014.
4. Ciocalteu A, Saftoiu A, Cartana T, Cherciu I, Gruionu LG, Pirici D, Georgescu C, **Gruionu G**. “Feasibility study for the evaluation of morphopatological pattern of neoangiogenesis in human colorectal cancer using confocal laser endomicroscopy and targeted anti-cd105 antibodies”, 22nd United European Gastroenterology Week Vienna, Austria, 2014.

5. Ciobîrcă C, Popa T, **Gruionu G**, Lango T, Leira HO, Pastrama SD, Gruionu LG. “Collision detection algorithm for improved electromagnetic tracking navigation in bronchoscopy”, Design of Medical Devices, Europe Edition Sept. 8-9, 2015, Vienne.
6. Ciobîrcă C, Popa T, **Gruionu G**, Lango T, Leira HO, Pastrama SD, Gruionu LG. “Virtual bronchoscopy method based on marching cubes algorithm” ICSAAM 2015, The 6th International Conference on Structural Analysis of Advanced Materials, September 2015, Porto, Portugal.
7. Ciobîrcă C, **Gruionu G**, Lango T, Olav Leira H, Pastrama SD, Popa T, Gruionu LG. Three dimensional data generation and graphical representation of theoretical tracheobronchial trees and lung models. CARS Conference. 2016.
8. Ciobîrcă C, **Gruionu G**, Gruionu LG. Virtual 3D Testing Model of a Pulmonary Tracheobronchial Tree for Bronchoscopy Navigation Software. Frontiers in Medical Devices Conference. Biomedical Engineering Society, 2016.
9. Scărisoreanu N, Gruionu LG, **Gruionu G**. Tumor Solid-Stress Sensor for Cancer Treatment Monitoring. Frontiers in Medical Devices Conference. Biomedical Engineering Society, 2016.
10. Scărisoreanu N, Gruionu LG, **Gruionu G**. Novel Biocompatible Piezoelectric Microsensor for Cancer and Soft Tissue Treatment Monitoring. Biomedical Engineering Society Annual Meeting, Phoenix, AZ. 2017.
11. Gruionu LG, Streba C, Săftoiu A, Lango T, **Gruionu G**, Evaluation of a novel navigation system for bronchoscopy using a deformable lung phantom. Computer Assisted Radiology and Surgery, Barcelona, 2017.
12. Ciobirca C, Udristoiu A, Lango T, Pastrama S, **Gruionu G**, Gruionu L. Virtual bronchoscopy and path planning without tracheobronchial tree segmentation. Computer Assisted Radiology and Surgery, Barcelona, 2017.
13. Ciobirca C, Udristoiu A, **Gruionu G**, Soimu A, Surlin V, Patrascu S, Tiu C, Gruionu LG. Planning and simulation software for laparoscopic surgery. European Association for Endoscopic Surgery and other Interventional Techniques - 26th Congress 2018, London, 2018.
14. Gruionu LG, Constantinescu C, Ciobirca C, Soimu A, Udristoiu AL, Săftoiu A, **Gruionu G**. "Robotic and Electromagnetic Navigation System for Automatic Guidance of Biopsy Catheters to Peripheral Pulmonary Airway Targets", Computer Assisted Radiology and Surgery, Berlin, 2018.
15. **Gruionu G**, Baish J, Gruionu LG, Onita-Lenco M, McMahon S, Maimon N, Munn L. Vascular Redundancy and Damage Tolerance in Microvascular Networks. World Congress of Biomechanics, Dublin, Ireland 2018.
16. Gruionu LG, Surlin V, Iacob A, Constantinescu C, **Gruionu G**. Innovative Portable Insufflation Device to Stop Uncontrolled Abdominal Bleeding. World Congress of Biomechanics, Dublin, Ireland 2018.

Narrative Report

Dr. Gruionu is a biomedical scientist and medical device entrepreneur with 24 years of experience in academic research and industry R&D. His main academic accomplishments are 31 peer reviewed publications, 16 recent professional conference presentations, 2 awarded medical device patents, 3 pending patents, 16 local and national invited oral presentations, 2 book chapters, one medical product innovation grant from NIH NCAI, and 4 startup companies.

In the **medical device industry**, Dr. Gruionu’s experience covers product management and startup company administration. At Gore Medical, he was the product technical and business manager responsible for the fitness-for-use of two new cardiovascular products and the business support of a \$20million portfolio of six commercialized cardiovascular products. As entrepreneur in the last five years, he started 2 new medical device (Restore Surgical LLC and Felis Medical) and one medical innovation management (Academic Innovation Management System) companies. His responsibilities were chief executive and scientific officer, president of the Board of Directors, and treasurer. His daily activities were intellectual property management, management of engineering and product development, innovation portfolio management, BOD management, financial operations, fund raising and investor relations.

As an assistant professor, Dr. Gruionu’s **main area of excellence** is **research/investigation**, and includes basic,

translational and clinical research for development of innovative medical devices and/or novel applications of existing methods and technologies. His **current research** includes surgical devices such as a rapid IV perfusion catheter and a portable abdominal insufflation device, a tumor solid stress sensor, tumor-on-a-chip models and magnetic/optical surgical navigation and robotics. He also managed a research portfolio of medical IT, infection control, blood and hemorrhage control, surgical training tools, wireless cardiovascular devices, etc. In his basic scientific research, he studied microcirculation biology, cancer biology and tissue engineering. Recently, he discovered new ways of optimizing the tumor vascularization and cancer treatment process with a microfluidic device *in vivo* and a cell culture tumor model. He published the results and has a patent pending on the technology.

His **supportive/administrative** duty was to start and manage a new Healthcare Innovation Program at MGH. Routine activities included setting up the program infrastructure, interviewing doctors to discover new innovative ideas, working with engineers to develop new prototypes, fund raising, directing pre-clinical research, and interacting with external partners and vendors. He developed a program that offers continuous innovation support to 60 attending clinicians in 40 medical innovation projects, while they maintain the strategic mission (research/teaching/patient care) of the Harvard Medical School. Six projects have resulted in patented technology and are advanced to commercialization.

Dr. Gruionu's **teaching philosophy** is that, in addition to the traditional curriculum, the most formative experience for students comes from experiential learning in an interdisciplinary environment of academic research, industry R&D, and clinical practice. His own interdisciplinary background allowed him to teach students how to be researchers, business developers and managers of innovation. He delivered many BME lectures and taught over 250 students how to develop novel technical solutions and write business plans for medical products generated in collaboration with MGH doctors. For five consecutive semesters in 2018-2019, he taught the Suffolk University students to develop business plans for the medical robot, the surgical navigation system, AIMS platform, a liver cancer biomarker, a quick infusion catheter and the solid stress tumor sensor. He also taught BME engineers how to understand clinical need and communicate with doctors. He will use the same experiential learning approach to guide the BU BME students in their classes and senior design projects. In the future, he wants to be involved in teaching traditional BME classes and also new classes focused on developing highly desired industry skills such as human factor engineering, FDA regulatory submissions, intellectual property protection, global BME, and the overall process of medical device development and commercialization.

Overall, Dr. Gruionu had a significant contribution to accelerating biomedical research and innovation at MGH at the research, administration and teaching levels by performing advanced biomedical research and engineering in the laboratory, managing the academic innovation process as director of innovation, and teaching advance experiential learning innovation classes. As such, he held the first ever innovation faculty position at the Harvard Medical School, a faculty position which combined traditional research and teaching responsibilities with medical innovation research and administration. He is currently continuing his medical innovation career as an independent scientific consultant and entrepreneur.