

**Harvard Medical School
Curriculum Vitae**

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Place of Birth: Boston, MA

Education

2012-2016	MD, PhD	Medicine and Cell and Developmental Biology (Ian Macara)	Vanderbilt University
2008-2012	No degree	Medicine and Microbiology (Ian Macara)	University of Virginia
2006-2008	No degree	Special Sciences Program	University of Pennsylvania
2002-2006	BA	Economics and Mathematics	Davidson College

Postdoctoral Training

6/2016-	Resident physician	General Surgery	Massachusetts General Hospital
7/2019-	Research fellow	Pediatric Surgical Research Laboratories	Massachusetts General Hospital

Professional Societies

2017- 2020-	American Pediatric Surgical Association	Resident member, Research Committee
2016-	Massachusetts Medical Society	
2016-	Association for Academic Surgery	
2015-	American College of Surgeons	

Honors and Prizes

2020	National Research Service Award (F32) Postdoctoral Fellowship	National Institutes of Health	Research of the transcriptional control of postnatal enteric neurogenesis
2019	Marshall K. Barlett Research Fellowship	Massachusetts General Hospital Department of Surgery	Research in Allan Goldstein's laboratory
2016	Medical Student Research Prize	Association for Academic Surgery/ Association for Academic Surgery Foundation	Research of breast cancer metastasis
2011	NIH T32 Cancer Research Training Grant	University of Virginia	Research of breast cancer metastasis
2007	Ruth and William Silen, MD Award	Harvard Medical School DICP	Best oral presentation
2005	Omicron Delta Epsilon Economics Honor Society	Davidson College Department of Economics	National undergraduate economics honor society
2004	Richard R. Bernard Society for Mathematics	Davidson College Department of Mathematics	Institutional undergraduate mathematics honor society

Report of Funded and Unfunded Projects

Current:

2020-2022 Transcription Factors Mediate Postnatal Neurogenesis from Enteric Glial Cells
 NIH F32 DK121440
 This project utilizes single cell RNA sequencing and conditional gene knockout models to identify transcriptional drivers of postnatal neurogenesis in the enteric nervous system

Report of Local Teaching and Training

Clinical Supervisory and Training Responsibilities:

2016-	Supervising Harvard Medical School Students/Massachusetts General Hospital	Daily supervision of HMS students on the Surgery rotation of the Principle Clinical Experience and on general surgery sub-internships
2017-	Supervising Tufts University Medical Students/Newton-Wellesley Hospital	Daily supervision of third-year Tufts medical students undertaking their surgical clerkship at Newton-Wellesley Hospital

Local Invited Presentations:

No presentations below were sponsored by outside entities

2020	Single cell transcriptomics of postnatal enteric glial cells reveals similarity with embryonic enteric neuronal progenitors / Weekly departmental research conference
2020	Pediatric Surgical Research Laboratories, Massachusetts General Hospital Using Single-Cell Transcriptomics to Understand and Treat Hirschsprung Disease / Pediatric Surgery/Pediatric Anesthesia Grand Rounds Departments of Pediatric Surgery and Anesthesia, Massachusetts General Hospital

- 2019 Reanalysis of published single cell RNA sequencing of enteric nervous system cells / monthly departmental research seminar
Department of Surgery, Massachusetts General Hospital
- 2018 Blunt Abdominal Trauma / Lecture to Tufts University medical students
Department of Surgery, Newton-Wellesley Hospital
- 2018 Compartment Syndromes / Lecture to Tufts University medical students
Department of Surgery, Newton-Wellesley Hospital

Report of Scholarship

Peer reviewed publications in print or other media

Research Investigations:

1. Nagy N, **Guyer RA**, Hotta R, Zhang D, Newgreen DF, Halasy V, Kovacs T, Goldstein AM, RET overactivation leads to concurrent Hirschsprung disease and intestinal ganglioneuromas. (2020) Development, 147:dev190900.
2. Bhawe S, Arciero E, Baker C, Ho WL, **Guyer RA**, Goldstein AM, Pan-enteric neuropathy and dysmotility are present in a mouse model of short-segment Hirschsprung disease and may contribute to post-pullthrough morbidity. (2020) J Pediatr Surg, 17:S0022-3468(20)30260-8.
3. Wandell G, Miller C, Rathor A, Thee Wei T, **Guyer R**, Turner J, Hwang P, Davis G, Humphreys I, A Multi-Institutional Review of Outcomes in Biopsy-Proven Acute Invasive Fungal Sinusitis. (2018) Int Forum of Allergy Rhinol, 8:1459-1468.
4. Dennis BM, Gondek SP, **Guyer RA**, Hamblin SE, Gunter OL, Guillaumondegui OD, Use of an evidence-based algorithm for patients with traumatic hemothorax reduces need for additional interventions. (2017) J Trauma Acute Care Surg, 82:728-32.
5. **Guyer RA**, Macara IG, Loss of the Polarity Protein PAR3 Activates STAT3 Signaling via an Atypical Protein Kinase C (aPKC)/NF-kB/Interleukin-6 (IL-6) Axis in Mouse Mammary Cells. (2015) The Journal of Biological Chemistry, 290:8457-8468.
6. LaPar DJ, Stukenborg GJ, **Guyer RA**, Stone ML, Bhamidipati CM, Lau CL, Kron IL, Ailawadi GA. Primary Payer Status is Associated with Mortality and Resource Utilization for Coronary Artery Bypass Grafting Operations. (2012). Circulation, 126:S132-9.
7. **Guyer RA**, Hellman M, Emami K, Kadlecsek SJ, Cadman RV, Law M, Ishii M, Vadhat V, Yu J, Rizi RR, A robust method for measuring regional pulmonary parameters in the presence of noise. (2007). Acad Radiol, 15:740-52.
8. Emami K, Cadman RV, Fischer MC, Zhu J, Woodburn JM, Kadlecsek SJ, **Guyer RA**, Law M, Vahdat V, Friscia ME, Ishii M, Yu J, Shrager JB, Rizi RR, Early changes of lung function and structure in an elastase model of emphysema--a hyperpolarized 3He MRI study. (2008). J of Appl Physiol, 104:773-86.
9. Yu J, Ishii M, Law M, Woodburn JM, Emami K, Kadlecsek S, Vahdat V, **Guyer RA**, Rizi RR, Optimization of scan parameters in pulmonary partial pressure oxygen measurement by hyperpolarized 3He MRI. (2008) Magn Reson Med, 59:124-31.

Non-peer reviewed scientific or medical publications/materials in print or other media

Proceedings of meetings or other non-peer reviewed scholarship:

1. **Guyer RA**, Radiology Paging a Good Mathematician: Why Math Can Contribute More to Medicine Than You Might Think. Math Horizons, April 2008.

Reviews, chapters, monographs and editorials:

1. Macara IG, **Guyer RA**, Richardson G, Huo Y, Ahmed M, Epithelial Homeostasis. (2014). Current Biology, 24:R815-25.

Case reports:

1. Mueller JL, **Guyer RA**, Adler JT, Mullen JT, Metastatic renal cell carcinoma to the small bowel: three cases of GI bleeding and a literature review. (2018) CEN Case Reports, 7:39-43.
2. **Guyer RA**, Turner JH, Delayed Presentation of Traumatic Cerebrospinal Fluid Rhinorrhea: Case Report and Literature Review. (2015). Allergy and Rhinology, 6:188-190.

Thesis

Tumor Suppressor Mechanisms of the Polarity Protein Par-3, Doctoral thesis submitted to the faculty of Vanderbilt University (2014)

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

1. **Guyer RA**, Bhav S, Stavely R, Hotta R, Li Z, Ngan E, Goldstein AM, Single-cell Analysis Shows Postnatal Enteric Glial Cells Closely Resemble Embryonic Neural Stem Cells. Accepted for virtual oral quickshot presentation at Academic Surgical Congress, virtual conference, 2/2021.
2. **Guyer RA**, Bhav S, Stavely S, Hotta R, Goldstein AM, Single cell RNA sequencing reveals enteric glial subpopulations with therapeutic potential in Hirschsprung disease. Virtual podium presentation at American College of Surgeons Clinical Congress, virtual conference, 10/2020.
3. **Guyer RA**, Dennis BM, Gunter OL, Guillaumondegui OD, Number of Rib Fractures Does Not Predict Outcomes In a Modern Population of Trauma Patients. Podium presentation at Academic Surgical Congress, Las Vegas, NV. 2/2017.
4. **Guyer RA**, Macara IG, Stat3 activation following loss of the polarity protein Par-3 in transformed mammary epithelium occurs via upregulation of gp130 coreceptors. Poster presentation at American Society for Cell Biology Annual Meeting, New Orleans, LA. 12/2013.
5. LaPar D, Bhamidipati C, Stone M, **Guyer RA**, Lau C, Kron I, Ailawadi G, Primary Payer Status Affects Mortality for Coronary Artery Bypass Grafting Operations. Podium presentation at American Heart Association Scientific Sessions, Orlando, FL. 11/2011.
6. Emaminia A, **Guyer RA**, Smith RS, Kensinger C, Lapar DJ, Cherry KJ, Kron IL, Kern JA, Endoscopic vein harvesting for femoral to popliteal bypass is safe and efficient compared to conventional surgical vein harvest. Poster presentation at Society for Clinical Vascular Surgery 39th Annual Symposium, Orlando, FL. 3/2011.
7. **Guyer RA**, Emami K, Kadlecsek S, Woodburn JM, Zhu J, Vahdat V, Yu J, Ishii M, Cadman S, Rajei S, Cox C, Law M, Stephen M, Shrager SJ, Rizi RR, A Novel Approach to Measure Regional Lung Ventilation Using Hyperpolarized ³He MRI – Potential in Clinical Studies. Podium presentation at New England Science Symposium, Boston, MA. 3/2017.