

MUNSON, JENNIFER

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2017- Assistant Professor

Virginia Tech, Department of Biomedical Engineering and Mechanics, School of Engineering
Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences
School of Neuroscience, Virginia Tech
Wake-Forest Comprehensive Cancer Center, Wake-Forest Baptist Health
Institute for Critical Technology and Applied Science, Virginia Tech
Center for Engineered Health, Virginia Tech

2014-2017 Assistant Professor, University of Virginia, Department of Biomedical Engineering,
School of Medicine, School of Engineering and Applied Science, Charlottesville, VA

2011-2013 Postdoctoral Associate, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
Whitaker International Postdoctoral Fellowship, Whitaker Foundation
Advisor: Melody Swartz, PhD

2011 Ph.D. in Bioengineering

Georgia Institute of Technology, School of Chemical Engineering, Atlanta, GA
Advisor: Ravi Bellamkonda, PhD

2009-2010 Fulbright Fellow, Swiss Federal Institute of Technology, Lausanne, Switzerland
U.S. Department of State and the Swiss Confederation

2006-2007 Engineer, Genentech, Inc., South San Francisco, CA

2006 B.S. Chemical Engineering and Neuroscience, Magna cum laude with departmental honors
Tulane University, School of Engineering, New Orleans, LA

FELLOWSHIPS AND AWARDS

- 2019** Dean's Excellence Seminar Speaker, Cornell University
- 2019** Leader in Research, Department of Biomedical Engineering & Mechanics
- 2019** Dean's Award Outstanding New Assistant Professor, College of Engineering, Virginia Tech
- 2017** Young Innovator Award, Cellular and Molecular Bioengineering
- 2016** Rita Schaffer Young Investigator Award, Biomedical Engineering Society
- 2013** AICR Short Talk Award, Beatson International Cancer Conference, Glasgow, Scotland
- 2011-2013** Whitaker International Postdoctoral Fellowship, Whitaker Foundation
- 2007-2011** National Science Foundation Graduate Research Fellowship, NSF
- 2009-2010** Fulbright Fellowship, Department of State & Swiss Confederation
- 2007-2011** President's Fellowship, Georgia Institute of Technology
- 2006** Samuel L. Sullivan Award for Service and Scholarship, Tulane University
- 2006** American Chemical Society Outstanding Senior Award, Tulane University
- 2002-2006** Distinguished Scholars Award, Tulane University

RESEARCH

PUBLICATIONS (*CORRESPONDING)

1. KT Chatterjee, CM Esparza, JM Munson*, Measuring, manipulating and modeling fluid flow in the brain. *J Neuroscience Methods*. 333: 108541 (2020). <https://doi.org/10.1016/j.jneumeth.2019.108541>
2. S Galarza, H Kim, NJ Atay, SR Peyton*, JM Munson*, 2D or 3D? How in vitro cell motility is conserved across dimensions and predicts in vivo invasion. *Bioengineering & Translational Medicine*. E10148 (2019) DOI: 10.1101/627281.
3. CA Stine, **JM Munson**, Convection enhanced delivery: role of increased interstitial fluid flow. *Frontiers: Oncology*. 9: 966 (2019). DOI: 10.3389/fonc.2019.00966

4. **JM Munson**, Interstitial fluid flow under the microscope: is it a future drug target for high grade brain tumours such as glioblastoma? *Expert Opinion on Therapeutic Targets*. 23(9): 725-728 (2019). DOI: 10.1080/14728222.2019.1647167
5. EA Brooks, S Galarza, MF Gencoglu, RC Cornelison, **JM Munson**, SR Peyton, Applicability of drug response metrics for cancer studies using biomaterials. *Phil Transactions of the Royal Society B*. 374(1779), 20180226 (2019). DOI:10.1101/408583.
6. KM Tate, **JM Munson**, Assessing drug response in engineered neural microenvironments. *Brain Research Bulletin*. 150: 21-34 (2019). DOI: 10.1016/j.brainresbull.2019.04.027
7. S Shim, M Balanger, AR Harris, **JM Munson**, RR Pompano, Two-way communication between ex vivo tissues on a microfluidic chip: application to tumor-lymph node interaction. *Lab on a chip*. 19, 1013-1026 (2019). DOI: 10.1039/C8LC00957K .
8. RC Cornelison, CE Brennan, KM Kingsmore, **JM Munson** "Convective forces increase CXCR4-dependent glioblastoma cell invasion in GL261 murine model" *Scientific Reports*, 8 17057 (2018). DOI: 10.1101/451286
9. S Da Mesquita, A Louveau, A Vaccari, I Smirnov, RC Cornelison, KM Kingsmore, C Contarino, S Onengut-Gumuscu, E Farber, D Raper, KE Viar, W Baker, N Dabhi, G Oliver, S Rich, **JM Munson**, CC Overall, ST Acton, J Kipnis, Meningeal lymphatics affect brain perfusion and underlie age-dependent cognitive decline and Alzheimer's pathology. *Nature*. (2018). COVER.
10. RC Cornelison, **JM Munson**. Perspective on Translating Biomaterials Into Glioma Therapy: Lessons From in Vitro Models. *Frontiers in materials*. 2018 May; 5(27).
11. Kingsmore KM, Vaccari A, Abler D, Cui SX, Epstein FH, RC Rockne, ST Acton, **JM Munson** MRI analysis to map interstitial flow in the brain tumor microenvironment. *Applied physics letters: Bioengineering*. 2, 031905 (2018). Doi : 10.1063/1.5023503. COVER.
12. AR Harris, MJ Perez, **JM Munson**. Docetaxel facilitates lymphatic-tumor crosstalk to promote lymphangiogenesis and cancer progression. *BMC Cancer*. 2018 Jul 6;18(1):718. doi: 10.1186/s12885-018-4619-8. PubMed PMID: 29976154; PubMed Central PMCID: PMC6034223.
13. JX Yuan, AR Harris, **JM Munson** "Assessing multiparametric drug response in tissue engineered tumor microenvironment models" *Methods*, 134-135:20-31 (2017). doi: 10.1016/j.ymeth.2017.12.010.
14. JX Yuan, **JM Munson**, Quantitative immunohistochemistry of the cellular microenvironment in patient glioblastoma resections, *Journal of Visualized Experiments* 125 (2017). doi: 10.3791/56025.
15. DK Logsdon, GF Beeghly, **JM Munson**, Chemoprotection across the tumor border: cancer cell response to doxorubicin depends on stromal fibroblast ratios and interstitial therapeutic transport, *Cellular Molecular Bioengineering*, 1-19 (2017). doi: 10.1007/s12195-017-0498-3.
16. KM Kingsmore, DL Logsdon, BW Purow, **JM Munson**, Interstitial flow differentially increases patient-derived glioma stem cell invasion via CXCR4/CXCL12/CD44-mediated mechanisms, *Integrative Biology*. 8(12):1246-60 (2016) . DOI: 10.1039/c6ib00167j.
17. JX Yuan, FF Bafakih, JW Mandell, BJ Horton, **JM Munson**, Quantitative Analysis of the Cellular Microenvironment of Glioblastoma to Develop Predictive Statistical Models of Overall Survival, *Journal of Neuropathology and Experimental Neurology*. nlw090 (2016). doi:10.1093/jnen/nlw090.
18. BA Corliss, MS Azimi, **JM Munson**, SM Peirce, WL Murfee, Macrophages: An Inflammatory Link between Angiogenesis and Lymphangiogenesis, *Microcirculation*. 23(2): 95-121 (2016). doi: 10.1111/micc.12259.
19. **JM Munson**, AC Shieh, Interstitial fluid flow in cancer: implications for disease progression and treatment, *Cancer Management and Research*, 6, 317-328 (2014). doi: 10.2147/CMAR.S65444.
20. **JM Munson**, RV Bellamkonda & MA Swartz, Interstitial flow increases glioma invasion via CXCR4-dependent autologous chemotaxis in a 3D microenvironment. *Cancer Research* 73(5): 1536-1546 (2013) doi: 10.1158/0008-5472.CAN-12-2838.
21. **JM Munson**, MY Bonner, L Fried, JL Arbiser, RV Bellamkonda, Identifying new small molecule anti-invasive compounds for glioma treatment. *Cell Cycle* 12 (14):1-10 (2013). doi: 10.4161/cc.25334.

22. BR Roller, **JM Munson**, PA Santangelo, B Brahma, RV Bellamkonda, Evans blue nanocarriers visually demarcate margins of invasive gliomas, *Drug delivery and Translational Research* 5(2): 116-24 (2015). doi: 10.1007/s13346-013-0139-x.
23. **JM Munson**, L Fried, SA Rowson, MY Bonner, L Karumbaiah, B Diaz, SA Courtneidge, UG Knaus, DJ Brat, JL Arbiser, RV Bellamkonda, Anti-invasive adjuvant therapy with Imipramine Blue enhances chemotherapeutic efficacy against glioma. *Science Translational Medicine* 4, 127ra36 (2012). doi: 10.1126/scitranslmed.3003016.
24. IC Clements, **JM Munson** & RV Bellamkonda, "Biomaterials for Neural Engineering," Biomaterials Science. 3rd ed., Elsevier Press, ed. B Ratner, 2012.
25. **JM Munson** & WT Godbey. "Gene Therapy," Biomedical Engineering Handbook: Tissue Engineering and Artificial Organs, 4th ed., CRC Press, ed. J. Fisher and A. Mikos, 2006.

MANUSCRIPTS UNDER REVIEW

1. Roberts, LM, JM Munson* Modulating Microenvironments for treating glioblastoma, *Current Tumor Microenvironment Reports*, Submitted.
2. AR Harris, MS Azimi, R Cornelison, FN Azar, DC Llana, M Belanger, A Mathew, Svyatoslav Tkachenko, S Esparza, MJ Perez, CB Rosean, RR Bostic, RC Cornelison, KM Tate, SM Peirce-Cottler, C Paquette, A Mills, CN Landen, J Saucerman, PM Dillon, RR Pompano, MA Rutkowski, JM Munson*. Platinum Chemotherapy induces lymphangiogenesis to prime tissues for tumor metastasis, *Science Translational Medicine*. Under review. BioRxiv DOI: 10.1101/781443
3. CT Curley, BP Mead, N Kim, K Negron, GW Miller, W Garrison, KM Kingsmore, JM Munson, A Klibanov, J Soo, J Hanes, RJ Price**, Blood-brain tumor barrier opening with MR image-guided focused ultrasound augments interstitial flow and facilitates nanoparticle-mediated transfection. *Science Advances*. Under review.

PATENT

JM Munson, JA Arbiser, RV Bellamkonda, Nanocarrier therapy for treating invasive glioma. US Patent Number PCT/US2010/031914

CURRENT FUNDING

National Cancer Institute R37CA222563	\$2,600,146	12/15/2017-11/30/2022
PI: Interstitial fluid flow regulates glioma cell invasion		
Originally awarded as an R01 (2017-2022) and converted to an NCI MERIT Award so qualifies for 2 additional years of funding on top of the current funded amount (2022-2024).		
National Institute of Bioimaging and Bioengineering	\$2,906,527	9/17/2019-9/30/2024
Co-I (\$890,000 subaward): A spatially organized microphysiological model of a human lymph node		
National Institute of Aging R37CA222563S2	\$390,720	8/1/2019-11/30/2020
PI: Interstitial fluid flow in Alzheimer's Progression		
VT Provost Office New Faculty Mentoring Grant	\$1,500	2018-2020
PI: Attendance at Faculty Leadership Program, Boston, MA		
Center for Engineered Health, ICTAS, Virginia Tech	\$15,000	10/15/2019-10/1/2020
PI: Biophysical outcomes of radiation treatment in glioblastoma		

COMPLETED FUNDING

School of Medicine Research and Development	\$25,000	6/1/2016-5/31/2017
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PI: An in vitro model of the glioblastoma-neural interface

Cancer Center Transdisciplinary Project Award (University of Virginia) \$100,000 12/1/2014-11/30/2016

Co-PI (Janet Cross): An engineered model of the premetastatic niche for mechanistic and therapeutic studies

American Cancer Society- Institutional Research Grant (ACS/University of Virginia) \$25,000 12/2014-12/2015

PI: The Role of Interstitial Flow in Glioma Progression and Therapeutic Response

Coulter Foundation (University of Virginia) \$140,000 7/1/2014-6/30/2016

PI: Screening system and decision-making strategy for brain cancer therapeutic intervention

Cancer Center Transdisciplinary Project Award (University of Virginia) \$100,000 11/1/2014-10/31/2015

Co-I: Targeting radiation resistance in glioma

INVITED TALKS

- 2019:** City College New York Department of Biomedical Engineering, NY, NY
- 2019:** Cornell University Department of Biomedical Engineering, Ithaca, NY
- 2019:** Rensselaer Polytechnic Institute Department of Biomedical Engineering, Troy, NY
- 2019:** University of Arkansas Department of Biomedical Engineering, Fayetteville, AR
- 2019:** Society of Neuro-Oncology SCIDOT Annual Meeting, Phoenix, AZ
- 2019:** NAVBO Vascular Biology, Pacific Grove, CA
- 2019:** Society for Biological Engineering Bioengineering and Translational Medicine, Durham, NC
- 2019:** Cancer and Cognition Group, Wake Forest School of Medicine, Winston-Salem
- 2019:** Molecular Cellular Biology Program, University of Massachusetts-Amherst
- 2018:** Computational Tissue Engineering Graduate Program, Virginia Tech, Blacksburg, VA
- 2018:** Wake Forest Comprehensive Cancer Center, Winston-Salem, NC
- 2018:** Biomedical Engineering Society Annual Meeting, Imaging and Instrumentation, Atlanta, GA
- 2018:** 6th International Conference on Glial Biology in Medicine, Roanoke, VA
- 2018:** World Congress of Biomechanics, Brain Biotransport, Dublin, Ireland
- 2018:** Biotechnology Educators Conference, Biocomplexity Institute, Virginia Tech, Blacksburg, VA
- 2018:** City of Hope Cancer Center, Los Angeles, CA
- 2017:** Cellular and Molecular Bioengineering Young Innovators, BMES Annual Meeting, Phoenix, AZ
- 2017:** Virginia Tech Department of Biomedical Engineering & Mechanics, Blacksburg VA
- 2017:** Columbia University Department of Biomedical Engineering, New York, NY
- 2017:** University of Michigan, Department of Biomedical Engineering, Ann Arbor, MI
- 2016:** Biomedical Engineering Society Rita Schaffer Award Presentation, Minneapolis, MN
- 2016:** University of Virginia, Department of Pathology, Charlottesville, VA
- 2016:** University of Virginia, Department of Hematology/Oncology, Charlottesville, VA
- 2015:** University of California San Francisco Cancer Center, San Francisco, CA
- 2015:** Virginia Commonwealth University Department of Chemical Engineering, Richmond, VA
- 2014:** University of Virginia, Department of Neuroscience, Charlottesville, VA
- 2014:** University of Virginia Cancer Center, Charlottesville, VA
- 2014:** World Congress of Biomechanics, Boston, VA

CONFERENCE PRESENTATIONS (PRESENTER; †UNDERGRADUATE AUTHOR)

1. CA Stine, **JM Munson**, Autologous CXCL12 gradient formation around single cells in the glioma microenvironment, Cancer Researchers UK-American Association for Cancer Researchers Joint Conference: Engineering and Physical Sciences in Oncology, London, England, October 2019.
2. AR Petrosky†, RC Cornelison, **JM Munson**, Effect of Interstitial Fluid Flow and Shear Stress on Glial Activation and S1P3 Expression, Biomedical Engineering Society Annual Meeting, Philadelphia, PA, October 2019.
3. CA Esparza, LM Roberts, RC Cornelison, **JM Munson** Changes in Blood Vasculature in response to over-expression of VEGFC in a murine model of glioma, NAVBO, Monterrey, CA, October 2019. (upcoming)

4. KM Tate, RC Cornelison, **JM Munson**, Investigating S1PR3-mediated glioblastoma invasion mechanisms using 3D hydrogel - tissue model, Society for Neuro-Oncology Annual Meeting, November 2019. (upcoming)
5. **JM Munson**, Interstitial fluid flow in glioma motility and the microenvironment, Gordon Research Conference Physics of Cancer, Galveston, TX, 2019. Poster
6. **JM Munson**, Interstitial fluid flow defines features of the glioma microenvironment, Society for Neuro-oncology Annual Meeting, New Orleans, LA, 2018. Poster
7. RC Cornelison, JX Yuan, KM Kingsmore, CE Brennan[†], **JM Munson**, Interstitial flow stimulates glial cells to promote glioma invasion: Implications for glioma therapy, BMES Annual Meeting, Atlanta, USA, 2018. Podium
8. **JM Munson**, SR Peyton, J Field 2D or not 2D: whether to culture MDAMB231 in the third dimension, BMES Annual Meeting, Atlanta, USA, 2018. Poster.
9. S Shim, AR Harris, **JM Munson**, RR Pompano, Microfluidic Device for Two-Way Tumor-Lymph Node Communication, BMES Annual Meeting, Atlanta, USA 2018.
10. CA Stine, KM Kingsmore, **JM Munson**, Design of an adapter for high-throughput interrogation of multiple interstitial flow velocities, BMES Annual Meeting, Atlanta USA 2018.
11. **JM Munson**, KM Kingsmore, Use of MRI to measure and map interstitial fluid flow in the glioma microenvironment: correlation to anatomical and histological features, BMES Annual Meeting, Atlanta, USA 2018.
12. KM Kingsmore, **JM Munson**, Quantifying interstitial fluid flow in glioblastoma using dynamic contrast enhanced MRI, Society for Neuro-oncology Annual Meeting, San Francisco, USA, 2017. Podium and poster.
13. RC Cornelison, JX Yuan, CE Brennan[†], **JM Munson**, Shear stress and interstitial fluid flow modulate glial cell-mediated chemotaxis of glioma, Society for Neuro-oncology Annual Meeting, San Francisco, USA, 2017. Poster.
14. **JM Munson**, CMBE Young Innovator Award: Chemoprotection Across the Tumor Border: Cancer Cell Response to Doxorubicin Depends on Stromal Fibroblast Ratios and Interstitial Therapeutic Transport, BMES, Phoenix, USA, 2017. Podium invited.
15. JX Yuan, RC Cornelison, BW Purow, BJ Horton, **JM Munson**, A patient-designed glioblastoma microenvironment model to examine therapeutic response., BMES Phoenix, USA, 2017. Podium.
16. LS Sequeira[†], JX Yuan, DK Logsdon, **JM Munson**, Agent-based modeling of the glioblastoma tumor microenvironment, BMES, Phoenix, USA, 2017. Poster, undergraduate.
17. GF Beeghly[†], C Thomast[†], JX Yuan, AR Harris, **JM Munson**, Engineering patient-driven models to examine breast cancer cell behavior after metastasis to the brain, BMES, Phoenix, USA, 2017. Poster, undergraduate.
18. **JM Munson**, Tissue engineered models for therapeutic testing, Virginia Nanosymposium, Charlottesville, USA, 2017. Oral Presentation.
19. RC Cornelison, JX Yuan, BJ Horton, **JM Munson**, Glial cell analysis in the brain tumor microenvironment elucidates contributions to glioblastoma patient progression, Summer Biomechanics, Bioengineering, and Biotransport Conference, Tucson, USA, 2017. Podium.
20. **JM Munson**, Rita Schaffer Award: Interstitial flow in the glioma microenvironment, BMES, Minneapolis, USA, 2016
21. RC Cornelison, KM Kingsmore, CE Brennan[†], **JM Munson**, Invasion of GL261 Cancer Cells In Vivo is Regulated by Interstitial Flow and Depends on CXCR4 Signaling, BMES, Minneapolis, USA, 2016. Poster
22. MJ Perez, JV Cross, **JM Munson**, Flow Response of Myeloid-Derived Suppressor Cells in the Breast Tumor Microenvironment, BMES, Minneapolis, USA, 2016.
23. JX Yuan, **JM Munson**, Recapitulating the glioblastoma tumor microenvironment in a physiologically-relevant in vitro model, EACR Goodbye Flat Biology, Berlin, Germany, 2016, Poster. *Top rated abstract.*

24. KM Kingsmore, **JM Munson**, Interstitial flow increases patient-derived glioma stem cell invasion via CXCR4, CXCL12, and CD44-mediated mechanisms in distinctive cell populations, AACR-Engineering and Physical Sciences in Oncology, Boston, 2016, Poster.
25. RC Cornelison, KM Kingsmore, JX Yuan, BW Purow, **JM Munson**, Interactions of interstitial flow with the glioma microenvironment, Central Virginia Society for Neuroscience Meeting, Charlottesville, USA, 2016
26. AR Harris, **JM Munson**, Lymphatics in triple-negative breast cancer: contribution to chemotherapeutic efficacy in vitro and in vivo, AACR-Tumor Microenvironment Meeting, San Diego, CA, 2016. Poster
27. JX Yuan, KM Kingsmore, AS Berr†, **JM Munson**, Use of a patient-derived 3D glioblastoma model to assess the effect of microenvironmental factors on cancer invasion and response to radiotherapy, Biomedical Engineering Society Annual Meeting, Tampa, USA, 2015. Poster
28. KM Kingsmore, SX Cui, FH Epstein, **JM Munson**, Role of Interstitial Flow in Glioma Microenvironment as Assessed by Dynamic Contrast Enhanced MRI, Biomedical Engineering Society Annual Meeting, Tampa, USA, 2015. Poster
29. JX Yuan, FF Bafakih, BW Purow, **JM Munson**, Rational design of a 3D brain cancer model, Biomedical Engineering Society Annual Meeting, Tampa, USA, 2015. Podium Presentation
30. KM Kingsmore, JX Yuan, **JM Munson**, Interstitial flow and invasion response of human glioma stem cells in a physiologically relevant microenvironment. Beatson International Cancer Conference, Glasgow, UK, 2015. Oral presentation and poster
31. **JM Munson**, MAS Broggi IM Van Mier, MA Swartz, Lymphatic induced stromal activation identified in a 3D in vitro co-culture breast cancer model translates to similar findings in vivo using mouse models, Biomedical Engineering Society Annual Meeting, Tampa, 2015. Podium Presentation
32. JX Yuan, FF Bafakih, JW Mandell, **JM Munson**, Features of the cellular and extracellular microenvironment correlate with glioblastoma patient survival, American Association of Neuro-pathologists Annual Meeting, Denver, USA, 2015. Poster
33. AS Berr†, OC Cossio†, **JM Munson** Glioma Stem Cells Respond Differentially to Treatment in Tissue Engineered Brain Tumor Microenvironments. Biomedical Engineering Society Annual Meeting, San Antonio, USA, 2014. Poster
34. **JM Munson** Lymphatics and interstitial flow involvement in stromal activation: implications for therapy, World Congress of Biomechanics, Boston, MA, USA, 2014. Podium Presentation

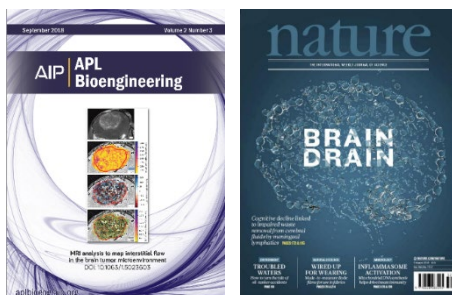
Pre-2014

35. **JM Munson**, MA Swartz, Cancer lymphangiogenesis contributes to fibroblast activation via TGF β production by lymphatics, Beatson International Cancer Conference, Glasgow, Scotland, 2013. Podium presentation
36. **JM Munson**, MA Swartz, Lymphatic endothelial cell-induced stromal stiffening caused by activation of fibroblasts in the tumor microenvironment, Cold Spring Harbor Asia/International Cancer Microenvironment Society Joint Conference on Tumor Microenvironment, Suzhou, China, 2012. Poster
37. **JM Munson**, VC Weaver, MA Swartz, Immunomodulation by biomechanical factors of the tumor stroma, Biomedical Engineering Society Annual Meeting, Atlanta, GA, 2012. Poster
38. T MacDonald, J Liu, **JM Munson**, J Park, K Wang, B Fei, R Bellamkonda, J Arbiser, The application of nanoparticle liposome-imipramine blue in the treatment of medulloblastoma in the SmoA1 transgenic mice, Society for Neuro-oncology Annual Meeting, Toronto, ON 2012. (Published in *Neuro-oncology* **14(s1)**:i82-i105). Poster
39. **JM Munson**, RK Khan, JL Arbiser, RV Bellamkonda, Imipramine Blue-Doxorubicin Co-Loaded Nanoparticles Increase Survival In Glioblastoma Over Doxorubicin Alone In a Single Treatment, American Institute of Chemical Engineers National Meeting, Minneapolis, MN 2011.

40. **JM Munson**, RV Bellamkonda, MA Swartz, Interstitial flow increases glioma cell migration via CXCR4/CXCL12 mediated autologous chemotaxis, American Institute of Chemical Engineers National Meeting, Minneapolis, MN, 2011.
41. **JM Munson**, RK Khan, SA Alkindi, RV Bellamkonda, Treatment of glioblastoma with co-loaded nanocarriers yields increased survival, Biomedical Engineering Society Annual Meeting, Hartford, CT, 2011.
42. **JM Munson**, R Machaidze, M Kaluzova, R Bellamkonda, CG Hadjipanayis, Use of doxorubicin and doxorubicin/imipramine blue coloaded nanoparticles yields survival in aggressive human glioblastoma in mice, Society for Neuro-oncology Annual Meeting, Anaheim, CA 2011. (Published in *Neuro-oncology* **13**:S3, CB-45)
43. BT Roller, **JM Munson**, B Brahma, RV Bellamkonda, Nanocarrier encapsulated visible dye for intraoperative brain tumor border delineation in an invasive glioblastoma model, Pediatric Technology & Surgery Research Forum Atlanta, GA, 2011
44. **JM Munson**, L Fried, JL Arbiser, RV Bellamkonda, Novel nano-encapsulated compound, Imipramine Blue, halts brain tumor invasion in vitro and in vivo, Georgia Life Science Summit, Atlanta, GA 2010.
45. **JM Munson**, U Haessler, RV Bellamkonda, MA Swartz, Interstitial fluid flow increases glioma invasion via a CXCR4-dependent mechanism, Society for Neuroscience Annual Meeting, San Diego, CA 2010.
46. **JM Munson**, JA Arbiser, RV Bellamkonda Liposome-encapsulated Imipramine Blue halts glioma invasion *in vivo*, Biomedical Engineering Society Annual Meeting, Austin, TX 2010.
47. **JM Munson**, L Fried, JA Arbiser, RV Bellamkonda Novel nanoparticle-delivered compound, Imipramine Blue, halts glioma invasion by affecting actin dynamics, American Assoc. for Cancer Researchers Annual Meeting, Washington, DC 2010.
48. **JM Munson**, E De Hitta, RK Khan, L Fried, JA Arbiser, RV Bellamkonda Nanocarriers for treatment of invasive glioma, Society for Biomaterials Annual Meeting, San Antonio, TX 2009.
49. **JM Munson**, W Hsu, Characterization of TubeSpin system for CHO culture, American Institute of Chemical Engineers National Meeting, San Francisco, CA 2006.

MEDIA COVERAGE

- “Collaborative grant takes on brain cancer cell invasion” [VTNews](#) 1/2018
 - NPR Affiliate Roanoke: [link](#)
- “Study identifies possible treatment target for Alzheimer’s, age-related cognitive decline” [VTNews](#), 7/2018.
- “A First Look at Interstitial Fluid Flow in the Brain” [American Institute of Physics](#), 7/2018.
- “Potential new treatment for deadliest brain diseases” NPR Affiliate Roanoke: [link](#)
- Covers :



TEACHING AND MENTORSHIP

COURSES

- **Instructor:** Graduate Seminar, Virginia Tech, Fall 2018-Spring 2020
- **Instructor:** Advanced Biological Transport, Virginia Tech, Fall 2018
- **Instructor:** Biotransport, University of Virginia, Spring 2017

- **Co-Instructor:** Integrative Design and Experimental Analysis Lab, University of Virginia, Spring 2015, 2016
- **Instructor:** Tissue Engineering, University of Virginia, Spring 2014, 2015, Fall 2016
- **Instructor:** Current Topics in Cancer Bioengineering, EPFL, School of life sciences, Spring 2013
- **Co-Instructor:** Intro to Chemical Processes, Georgia Tech, School of Chemical & Biomolecular Engineering, Spring 2011

PEDAGOGY

- **Attendee:** Course Design Institute, Teaching Resource Center, University of Virginia, June 2014
- **Tech to Teaching Certificate,** Center for enhancement of teaching and learning, Georgia Tech, 2011
- **Attendee:** Graduate Research Groups NSF-Sponsored Workshop, Arlington, VA, 2011
- **JM Munson, LJ Taite, C Sievers,** Technical writing as a tool to promote conceptual understanding, American Institute of Chemical Engineers National Meeting, Minneapolis, MN 2011.

UNDERGRADUATE STUDENT RESEARCHERS MENTORED

VIRGINIA TECH

- **c/o 2018:** Steven Tom
- **c/o 2020:** Alexis Petrosky
- **c/o 2021:** Saloni Bhargava, Conner Brocke
- **c/o 2022:** Lauren Pitz, Zehra Demir, Kate Herrema, Kaylie Maglicmot
- **Visiting:** Richard Kline (Bridges to Baccalaureate), Gabryel Conley-Natividad, Beulah Dadala (Biotransport)

UNIVERSITY OF VIRGINIA

- **Mentor:** Capstone Senior Design, University of Virginia, 2014-2016 (12 students-5 projects)
- **c/o 2016:** Alexandra Berr (*Harrison Undergraduate Award*), Ossman Cossio, Melissa Skoff
- **c/o 2017:** Samantha Schwager, Nicholas Asby, Maya Singh, Candace Thomas, Garrett Beeghly (*Harrison Undergraduate Award*), Jillian Kirby
- **c/o 2018:** Caroline Brennan, Raju Arabandi
- **c/o 2019:** Nikhith Kalkunte, Elise Hoover, Sebastian Gutierrez, Lynette Sequeira

GRADUATE STUDENT RESEARCHERS MENTORED

VIRGINIA TECH

- **Caleb Stine:** Biomedical Engineering PhD Program
- **Kinsley Tate:** Biomedical Engineering PhD Program
- **Savieay Esparza:** Biomedical Engineering PhD Program, New Horizons Scholar
- **Naciye Atay:** Biomedical Engineering PhD Program
- **Cora Esparza:** Biomedical Engineering PhD Program, New Horizons Scholar, NSF Graduate Research Fellow

UNIVERSITY OF VIRGINIA

- **Jessica Yuan (2014-2018):** Biomedical Engineering PhD Program, NIH Cancer Center Training Grant
- **Kathryn Kingsmore (2014-2018):** Biomedical Engineering PhD Program, NSF Graduate Research Fellowship
- **Matthew Perez, M.S.:** Biomedical Engineering PhD Program, NIH Cancer Center Training Grant
- **Alexandra Harris, M.S (2014-2018):** Pathology PhD Program, NIH Biotechnology Training Program
- **Daniel Logsdon (2015-2017):** Biomedical Engineering Master's Program

POSTDOCTORAL RESEARCH ASSOCIATES MENTORED

- **R. Chase Cornelison, Ph.D.** (PhD, UT Austin) Current: Assistant Professor UMass-Amherst
- **Krishnashis Chatterjee, Ph.D.** (PhD, Virginia Tech)
- **LaDeidra Monet Roberts, Ph.D.** (PhD, Cornell University)

[See where lab alumni are now](#)

SERVICE

FIELD

- **2023 (upcoming):** Co-chair elect, Gordon Research Conference on Physical Sciences in Cancer
- **2021 (upcoming):** Vice chair, Gordon Research Conference on Physical Sciences in Cancer
- **2020 (ongoing):** Guest editor, Annals of Biomedical Engineering Special Issue: Bioengineering in Women's Health
- **2019:** Co-chair special session on Bioengineering in Women's Health, Biomedical Engineering Society Annual Meeting, Philadelphia, PA
- **2019-2021:** Junior Editor, Cells Organs and Tissues
- **2018:** Co-organizer, Mid-Atlantic Biomanufacturing Symposium, Charlottesville, VA
- **2016-2017:** National Science Foundation Graduate Research Fellowship Reviewer
- **2016-2017:** Integrated Molecular Analysis Technologies Study Section, National Cancer Institute
- **2016:** Session chair, Cellular motility, Biomedical Engineering Society
- **2015-2017:** Session chair, Cancer Technologies, Biomedical Engineering Society
- **2015-2017:** Session chair, Tissue engineering, Biomedical Engineering Society
- **2014-2016:** Review abstracts Biomedical Engineering Society Annual Meeting
- **2014-2015:** National Science Foundation Graduate Research Fellowship Reviewer
- **Reviewer for:** Cancer Research, Journal of Controlled Release, Integrative Biology, Molecular Cancer Therapeutics, Applied Physiology, Biochemical Engineering Journal, Biotechnology and Bioengineering, PLoS ONE, Journal of Biomechanics, Trends in Biotechnology, Breast Cancer Research, Neuroscience, Breast Cancer Research

UNIVERSITY/DEPARTMENTAL

VIRGINIA TECH

- **2019-2021:** Chair, Inclusion and Diversity Committee
- **2019-2021:** Member, College of Engineering Inclusion and Diversity Committee
- **2019-2021:** Group Leader, Cancer Bioengineering, Center for Engineered Health, ICTAS
- **2018:** Invited speaker seminar series organizer
- **2018:** CIMER Training for Graduate Mentorship (www.cimerproject.org)
- **2018:** Diversity Ally Certificate, Virginia Tech Human Resources and Professional Development
- **2018:** Women's welcome weekend attendee for recruitment
- **2018:** Student Transition Engineering Program Faculty Attendee (new student lunches)
- **2018:** Biomechanics and Biotransport summer research experience for undergraduates faculty mentor
- **2018:** Co-organizer, Center for Engineered Health Virginia Nanosymposium
- **2017:** Graduate Brown Bag Lunch Seminar, Biomedical Engineering
- **2017:** NSF Graduate Research Program Tips and Tricks, School of Engineering Seminar
- **2017-Present:** Cancer Journal Club, Biomedical Engineering & Mechanics

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- **2016-2017:** Undergraduate curriculum committee
- **2015-2016:** Biotechnology Training Grant Faculty Coordinator Student Seminar Series
- **2015/16:** Faculty Search Committee, Cross-departmental Biomaterials
- **2014/15:** Faculty Search Committee, Biomedical Engineering
- **2013/14:** Graduate Admissions Committee, Biomedical Engineering
- **2014:** Strategic hiring initiative committee, Biomedical Engineering
- **2014-2017:** Judge Biomedical Sciences Poster Symposium, Huskey Graduate Symposium, Undergraduate Research Network Poster Session

COMMUNITY

- **KidsTech University**, Virginia Tech, January 2019
- **High School Outreach**, December 2018

- **Virginia Tech Science Festival**, Virginia Tech, October 2018
- **Roanoke STEAM Day**, City of Roanoke , September 2018
- **Biotechnology Educators Conference** Speaker (2018), Virginia Tech
- **TECHGirls** participant (2014-2017), University of Virginia
- **Society for Women Engineers** high school day speaker (2015-2017), University of Virginia

THESIS COMMITTEES

VIRGINIA TECH-WAKE FOREST

- **Zerin Khan** (Advisor: Scott Verbridge) Biomedical Engineering PhD Program
- **Joelle Martin** (Advisor: Harry Sontheimer) TBMH Graduate Program
- **Nastaran Alinezhadbalalami** (Advisor: Scott Verbridge) TBMH PhD Program
- **Nora Hlavac** (Advisor: Pam Vandevord) Biomedical Engineering PhD Program, Completed 2018
- **Shiny Rajan** (Advisor: Adam Hall/Alex Skardal) Biomedical Engineering PhD Program

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- **Sameer Bajikar** (Advisor: Kevin Janes) Biomedical Engineering PhD Program, Completed 2016
- **Angela Zeigler** (Advisor: Jeff Saucerman) Biomedical Engineering MD/PhD, Completed 2017
- **Molly Kelly-Goss** (Advisor: Shayn Peirce-Cottler) Biomedical Engineering PhD Program, Completed 2018
- **Howard Clifton Ray** (Advisor: Paul Yates) Biomedical Engineering PhD Program, Completed 2018
- **Colleen Curley** (Advisor: Richard Price) Biomedical Engineering PhD Program
- **Bruce Corliss** (Advisor: Shayn Peirce-Cottler) Biomedical Engineering PhD Program
- **Natasha Sheybani** (Advisor: Rich Price) Biomedical Engineering PhD Program
- **Jennifer Ortiz** (Advisor: Rebecca Pompano) Chemistry PhD Program

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

SOCIETY MEMBERSHIPS

Society for Neuro-Oncology
 American Association of Cancer Researchers
 Biomedical Engineering Society
 Tau Beta Pi
 Omega Chi Epsilon

OTHER TRAININGS

Introductory Course in Laboratory Animal Science, Lausanne Switzerland, EPFL, 2012 (80 hours)
 Diversity Ally Certificate, Virginia Tech, January 2019 (30 hours)