

# Barclay Morrison III, Ph.D.

Professor of Biomedical Engineering

*Curriculum Vitae*

Prepared April 6, 2020

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### **Work Address**

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### **A. Field of Specialization**

#### **Traumatic Brain Injury Biomechanics, Prevention, and Treatment**

Traumatic brain injury results in approximately 50,000 deaths and 85,000 permanently disable persons per year in the United States with an estimated primary care cost of \$76 billion per year. The clinical situation is quite dire as there are no drug treatments which target the underlying pathobiology of TBI. This profound need for improvements in the prevention and treatment of TBI is the driving force behind my research. My long term goal is to understand the consequences of mechanical forces on the most complex system of the human body, the brain, and to develop strategies to mitigate and perhaps reverse these injurious effects. My research explores the specific cellular, molecular, and metabolic effects of injury on brain cells in response to precisely controlled biomechanical stimuli. My research program has three main focus areas:

- 1) Improvement of prevention strategies through development of critical biomechanical data for the living brain
- 2) Identification of novel treatment options by understanding the post-traumatic pathobiology in greater detail
- 3) Engineering new research tools to enhance studies in the first two areas

## **B. Academic Training**

### **B.1 Educational Background**

1988 -1992 Johns Hopkins University, Baltimore, MD  
B.S., Biomedical Engineering

1992-1994 University of Pennsylvania, Philadelphia, PA  
M.S.E., Bioengineering

1994-1999 University of Pennsylvania, Philadelphia, PA  
Ph.D., Bioengineering

**Dissertation:** “Differential Genomic Expression after Mechanical Injury of Organotypic Brain Slice Cultures: An *In Vitro* Model of Traumatic Brain Injury” (Published)

**Sponsor:** Tracy K. McIntosh, Ph.D.

### **B.2 Academic Honors and Fellowships**

1993-1997 Ashton Fellowship, University of Pennsylvania, Philadelphia, PA

1999 The S.R. Pollack Award for Excellence in Graduate Bioengineering Research, University of Pennsylvania, Philadelphia, PA

1999 Biomedical Engineering Society Graduate Student Research Award

1999 First Place, National Neurotrauma Society Student Competition

2006 The Kim Award for Student-Faculty Involvement, Fu Foundation School of Engineering and Applied Science, Columbia University, New York, NY

2019 Great Teacher Award, Society of Columbia Graduates, Columbia University, New York, NY

## **C. Teaching Experience**

### **C.1 Courses Taught**

#### **2003 Spring**

BMEN E6002 Advanced Quantitative Physiology II: Enrollment **33**

BMEN E3910 Biomedical Engineering Design  
Advisor Helmet Project, **4** students

#### **2003 Fall**

ENGI E1102 Gateway Lab (Advisor, **8** students)

BMEN E3810 BME Laboratory I: Enrollment **66**

BMEN E3998 Undergraduate Independent Research: Enrollment **1**

#### **2004 Spring**

ENGI E1102 Gateway Lab (Advisor, **13** students, 2 groups)

BMEN E3910 Biomedical Engineering Design

Advisor: Helmet Project, **5** students

Advisor: Neuron Electrode Array Project, **4** students

BMEN E4002 Quantitative Physiology II: Enrollment **77**  
BMEN E6002 Advanced Quantitative Physiology II: Enrollment **42**  
BMEN E9100 Masters Research: Enrollment **1**

### **2004 Summer**

Summer Undergraduate Research Fellowship Advisor (**2** students)  
Intel Science Talent Search Advisor (**1** student)

### **2004 Fall**

ENGI E1102 Gateway Lab (Advisor, **5** students)  
BMEN E3810 BME Laboratory I: Enrollment **70**  
Student Evaluation: 3.46 / 5.0  
BMEN E3998 Undergraduate Independent Research: Enrollment **9**

### **2005 Spring**

ENGI E1102 Gateway Lab (Advisor, **6** students)  
BMEN E3910 Biomedical Engineering Design  
Advisor: Helmet Project, **4** students  
Advisor: Protective Athletic Cup Project, **6** students  
Advisor: Automated Slide Locator, **4** students  
BMEN E4002 Quantitative Physiology II: Enrollment **88**  
Student Evaluation: 3.97 / 5.0  
BMEN E6002 Advanced Quantitative Physiology II: Enrollment **41**  
Student Evaluation: 3.51 / 5.0  
BMEN E9100 Masters Research: Enrollment **1**

### **2005 Summer**

Summer Undergraduate Research Fellowship Advisor (**1** student)  
Intel Science Talent Search Advisor (**1** student)

### **2005 Fall**

ENGI E1102 Gateway Lab (Advisor, **4** students)  
BMEN E3910 Biomedical Engineering Design  
Advisor: Helmet Project, **5** students  
BMEN E3998 Undergraduate Independent Research: Enrollment **1**  
BMEN E9100 Masters Research: Enrollment **2**  
BMEN E9500 Doctoral Research: Enrollment **1**

### **2006 Spring**

BMEN E3920 Biomedical Engineering Design  
Advisor: Helmet Project, **5** students  
BMEN E3998 Undergraduate Independent Research: Enrollment **2**  
BMEN E4002 Quantitative Physiology II: Enrollment **73**  
Student Evaluation: 4.09 / 5.0  
BMEN E6002 Advanced Quantitative Physiology II: Enrollment **28**

Student Evaluation: 3.59 / 5.0

BMEN E9100 Masters Research: Enrollment **1**

BMEN E9500 Doctoral Research: Enrollment **1**

**2006 Summer**

BMEN E9100 Masters Research: Enrollment **1**

**2006 Fall**

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Helmet Project, **6** students

BMEN E3998 Undergraduate Independent Research: Enrollment **1**

BMEN E9500 Doctoral Research: Enrollment **2**

**2007 Spring**

BMEN E3920 Biomedical Engineering Design

Faculty Advisor: Helmet Project, **6** students

BMEN E4002 Quantitative Physiology II: Enrollment **70**

Student Evaluation: 4.26 / 5.0

BMEN E9100 Masters Research: Enrollment **1**

BMEN E9500 Doctoral Research: Enrollment **2**

**2007 Fall**

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Gravity Neutral Orthotic, **4** students

BMEN E6002 Computational Modeling of Physiological Systems: Enrollment **26**

Student Evaluation: 3.60 / 5.0

BMEN E9100 Masters Research: Enrollment **1**

BMEN E9500 Doctoral Research: Enrollment **1**

**2008 Spring**

BMEN E3920 Biomedical Engineering Design

Faculty Advisor: Gravity Neutral Orthotic, **3** students

BMEN E3998 Undergraduate Independent Research: Enrollment **1**

BMEN E4002 Quantitative Physiology II: Enrollment **92**

Student Evaluation: 4.14 / 5.0

BMEN E9100 Masters Research: Enrollment **1**

BMEN E9500 Doctoral Research: Enrollment **1**

**2008 Fall**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **53**

Neurophysiology Module (New Module)

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Gravity Neutral Orthotic, **5** students

BMEN E3998 Undergraduate Independent Research: Enrollment **2**

BMEN E6003 Computational Modeling of Physiological Systems: Enrollment **16**

Student Evaluation: 4.13 / 5.0

BMEN E9100 Masters Research: Enrollment **1**

|                    |   |
|--------------------|---|
| BMEN E9500         | Doctoral Research: Enrollment <b>1</b>  |
| <b>2009 Spring</b> |   |
| BMEN E3920         | Biomedical Engineering Design<br>Faculty Advisor: Gravity Neutral Orthotic, <b>5</b> students           |
| BMEN E3998         | Undergraduate Independent Research: Enrollment <b>1</b>   |
| BMEN E4002         | Quantitative Physiology II: Enrollment <b>74</b><br>Student Evaluation: 4.07 / 5.0                      |
| BMEN E9100         | Masters Research: Enrollment <b>1</b>   |
| BMEN E9500         | Doctoral Research: Enrollment <b>2</b>  |
| <b>2009 Fall</b>   |   |
| BMEN E3820         | Biomedical Engineering Laboratory II: Enrollment <b>44</b><br>Neurophysiology Module                    |
| BMEN E3998         | Undergraduate Independent Research: Enrollment <b>3</b>   |
| BMEN E6003         | Computational Modeling of Physiological Systems: Enrollment <b>33</b><br>Student Evaluation: 3.38 / 5.0 |
| BMEN E9500         | Doctoral Research: Enrollment <b>2</b>  |
| <b>2010 Spring</b> |   |
| BMEN E3998         | Undergraduate Independent Research: Enrollment <b>1</b>   |
| BMEN E4002         | Quantitative Physiology II: Enrollment <b>62</b><br>Student Evaluation: 3.89 / 5.0                      |
| BMEN E9100         | Masters Research: Enrollment <b>1</b>   |
| BMEN E9500         | Doctoral Research: Enrollment <b>2</b>  |
| <b>2010 Summer</b> |   |
|                    | Summer Undergraduate Research Fellowship Advisor ( <b>1</b> student)                                    |
|                    | Amgen Undergraduate Research Fellowship Advisor ( <b>1</b> student)                                     |
| <b>2010 Fall</b>   |   |
| BMEN E1001         | Engineering in Medicine: Enrollment <b>72</b><br>Guest Lecturer   |
| BMEN E3820         | Biomedical Engineering Laboratory II: Enrollment <b>33</b><br>Neurophysiology Module                    |
| BMEN E3998         | Undergraduate Independent Research: Enrollment <b>3</b>   |
| BMEN E6003         | Computational Modeling of Physiological Systems: Enrollment <b>52</b><br>Student Evaluation: 4.09 / 5.0 |
| BMEN E9100         | Masters Research: Enrollment <b>3</b>   |
| BMEN E9500         | Doctoral Research: Enrollment <b>1</b>  |
| <b>2011 Spring</b> |   |
| BMEN E3820         | Biomedical Engineering Laboratory II: Enrollment <b>37</b><br>Neurophysiology Module                    |
| BMEN E3998         | Undergraduate Independent Research: Enrollment <b>1</b>   |
| BMEN E4002         | Quantitative Physiology II: Enrollment <b>65</b>  |

Student Evaluation: 4.14 / 5.0

BMEN E9100

Masters Research: Enrollment **4**

**2011 Fall**

BMEN E1001

Engineering in Medicine: Enrollment **78**

Guest Lecturer

BMEN E6003

Computational Modeling of Physiological Systems: Enrollment **39**

Student Evaluation: 3.77 / 5.0

BMEN E9100

Masters Research: Enrollment **1**

BMEN E9500

Doctoral Research: Enrollment **2**

BMEN E3910

Biomedical Engineering Design

Faculty Advisor: Absorbable Suture, **4** students

**2012 Spring**

BMEN E3820

Biomedical Engineering Laboratory II: Enrollment **46**

Neurophysiology Module

BMEN E3998

Undergraduate Independent Research: Enrollment **1**

BMEN E4002

Quantitative Physiology II: Enrollment **66**

Student Evaluation: 4.19/5.0

BMEN E9100

Masters Research: Enrollment **1**

BMEN E9500

Doctoral Research: Enrollment **2**

**2012 Fall**

BMEN E6003

Computational Modeling of Physiological Systems: Enrollment **40**

Student Evaluation: 4.13/5.0

BMEN E9500

Doctoral Research: Enrollment **2**

BMEN E3910

Biomedical Engineering Design

Faculty Advisor: Cerebral Perfusion, **4** students

**2013 Spring**

BMEN E3820

Biomedical Engineering Laboratory II: Enrollment **44**

Neurophysiology Module

BMEN E4002

Quantitative Physiology II: Enrollment **72**

Student Evaluation: 4.33/5.0

BMEN E9500

Doctoral Research: Enrollment **2**

**Fall 2013:**

BMEN E6003

Computational Modeling of Physiological Systems: Enrollment **31**

Student Evaluation: 4.23/5.0

BMEN E9500

Doctoral Research: Enrollment **2**

BMEN E3910

Biomedical Engineering Design

Faculty Advisor: Mobility Device for Seniors, **4** students

Faculty Advisor: Concussion Detection, **4** students

**Spring 2014:**

BMEN E3820

Biomedical Engineering Laboratory II: Enrollment **41**

Neurophysiology Module

BMEN E3998 Projects in Biomedical Engineering: Enrollment **1**

BMEN E4002 Quantitative Physiology II: Enrollment **56**

Student Evaluation: 4.34/5.0

BMEN E9500 Doctoral Research: Enrollment **2**

**Fall 2014:**

BMEN E3998 Projects in Biomedical Engineering: Enrollment **1**

BMEN E6003 Computational Modeling of Physiological Systems: Enrollment **41**

Student Evaluation: 4.27/5.0

BMEN E9100 Masters Research: Enrollment **2**

BMEN E9500 Doctoral Research: Enrollment **1**

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Dehydration Sensor, **4** students

**Spring 2015:**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **41**

Neurophysiology Module

BMEN E3998 Projects in Biomedical Engineering: Enrollment **2**

BMEN E4002 Quantitative Physiology II: Enrollment **73**

Student Evaluation: 4.37/5.0

BMEN E9100 Masters Research: Enrollment **2**

**Fall 2015:**

BMEN E3998 Projects in Biomedical Engineering: Enrollment **1**

BMEN E6003 Computational Modeling of Physiological Systems: Enrollment **41**

Student Evaluation: 4.07/5.0

BMEN E9100 Masters Research: Enrollment **2**

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Resource Constrained Medical Devices, **4** students

**Spring 2016:**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **48**

Neurophysiology Module

BMEN E4002 Quantitative Physiology II: Enrollment **61**

Student Evaluation: 3.98/5.0

BMEN E6003 Computational Modeling of Physiological Systems: Enrollment **39**

Student Evaluation: 4.47/5.0

BMEN E9500 Doctoral Research: Enrollment **2**

BMEN E3920 Biomedical Engineering Design

Faculty Advisor: Resource Constrained Medical Devices, **4** students

**Fall 2016:**

BMEN E3910 Biomedical Engineering Design

Faculty Advisor: Tremor-Control Orthotic, **4** students

**Spring 2017:**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **43**  
Neurophysiology Module

BMEN E4002 Quantitative Physiology II: Enrollment **61**  
Student Evaluation: 4.29/5.0

BMEN E9500 Doctoral Research: Enrollment **2**

BMEN E3920 Biomedical Engineering Design  
Faculty Advisor: Tremor-Control Orthotic, **4** students

**Fall 2017:**

BMEN E9500 Doctoral Research: Enrollment **3**

BMEN E3910 Biomedical Engineering Design  
Faculty Advisor: Preventing lypohypertrophy from insulin injection, **4** students

**Spring 2018:**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **49**  
Neurophysiology Module

BMEN E4002 Quantitative Physiology II: Enrollment **71**  
Student Evaluation: 4.33/5.0

BMEN E3920 Biomedical Engineering Design  
Faculty Advisor: Preventing lypohypertrophy from insulin injection, **4** students

**Fall 2018:**

BMEN E3998 Projects in Biomedical Engineering: Enrollment **1**

BMEN E9100 Masters Research: Enrollment **2**

BMEN E3910 Biomedical Engineering Design  
Faculty Advisor: Device to facilitate intravenous needle insertion, **4** students

**Spring 2019:**

BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **51**  
Neurophysiology Module

BMEN E4002 Quantitative Physiology II: Enrollment **78**  
Student Evaluation: 4.29/5.0

BMEN E3920 Biomedical Engineering Design  
Faculty Advisor: Device to facilitate intravenous needle insertion, **4** students

**Fall 2019:**

BMEN E3910 Biomedical Engineering Design  
Faculty Advisor: Device to quantify force of palpation to identify liver pathologies, **4** students

BMEN E9500 Doctoral Research: Enrollment **2**

**Spring 2020:**

- BMEN E3820 Biomedical Engineering Laboratory II: Enrollment **51**  
Neurophysiology Module
- BMEN E3920 Biomedical Engineering Design  
Faculty Advisor: Device to quantify force of palpation to identify liver pathologies, **4** students
- BMEN E3998 Projects in Biomedical Engineering: Enrollment **1**
- BMEN E4002 Quantitative Physiology II: Enrollment **52**  
Student Evaluation: pending/5.0
- BMEN E9500 Doctoral Research: Enrollment **2**

**C.1.c CourseWorks Evaluation**

*(Online student evaluation system was not implemented until the fall of 2004)*

| Year | Course     | Enrollment | Avg. Rating / 5.0 |
|------|------------|------------|-------------------|
| 2004 | BMEN E3810 | 70         | 3.46              |
| 2005 | BMEN E4002 | 87         | 3.97              |
|      | BMEN E6002 | 41         | 3.51              |
| 2006 | BMEN E4002 | 73         | 4.19              |
|      | BMEN E6002 | 27         | 3.29              |
| 2007 | BMEN E4002 | 69         | 4.26              |
|      | BMEN E6002 | 26         | 3.60              |
| 2008 | BMEN E4002 | 91         | 4.14              |
|      | BMEN E6003 | 16         | 4.10              |
| 2009 | BMEN E4002 | 75         | 4.07              |
|      | BMEN E6003 | 33         | 3.38              |
| 2010 | BMEN E4002 | 62         | 3.89              |
|      | BMEN E6003 | 52         | 4.09              |
| 2011 | BMEN E4002 | 65         | 4.14              |
|      | BMEN E6003 | 38         | 3.77              |
| 2012 | BMEN E4002 | 66         | 4.19              |
|      | BMEN E6003 | 40         | 4.13              |
| 2013 | BMEN E4002 | 72         | 4.33              |
|      | BMEN E6003 | 31         | 4.23              |
| 2014 | BMEN E4002 | 56         | 4.34              |
|      | BMEN E6003 | 41         | 4.27              |
| 2015 | BMEN E4002 | 73         | 4.37              |
|      | BMEN E6003 | 43         | 4.07              |

|      |            |    |         |
|------|------------|----|---------|
| 2016 | BMEN E4002 | 61 | 3.98    |
|      | BMEN E6003 | 41 | 4.47    |
| 2017 | BMEN E4002 | 61 | 4.29    |
| 2018 | BMEN E4002 | 71 | 4.33    |
| 2019 | BMEN E4002 | 77 | 4.29    |
| 2020 | BMEN E4002 | 52 | pending |

## C.2 Research Training and Mentoring

| <i>Summary</i>                    |              |                  |                    |
|-----------------------------------|--------------|------------------|--------------------|
|                                   | <i>Total</i> | <i>Completed</i> | <i>In Progress</i> |
| <b><i>Masters<sup>a</sup></i></b> | <i>10</i>    | <i>8</i>         | <i>2</i>           |
| <i>As Sponsor</i>                 | <i>2</i>     | <i>2</i>         | <i>0</i>           |
| <i>As Supervisor</i>              | <i>8</i>     | <i>6</i>         | <i>2</i>           |
| <b><i>Doctoral</i></b>            | <i>37</i>    | <i>31</i>        | <i>6</i>           |
| <i>As Sponsor</i>                 | <i>14</i>    | <i>9</i>         | <i>5</i>           |
| <i>As Reader</i>                  | <i>31</i>    | <i>26</i>        | <i>5</i>           |
| <b><i>Undergraduates</i></b>      | <i>77</i>    | <i>72</i>        | <i>5</i>           |
| <b><i>High School</i></b>         | <i>7</i>     | <i>7</i>         | <i>0</i>           |

(<sup>a</sup>Masters students are defined as those in the terminal M.S. program. Doctoral students are defined as those in the M.S. leading to Ph.D. program.)

### *Post-Doctoral Research Fellows Sponsored*

1. Cezar Goletiani, 2008 – 2010  
(Ph.D. from Georgian Academy of Sciences, Georgia. Subsequent position: Post-doc, New York Medical College)
2. John D. Finan, 2010 – 2012  
(Ph.D. from Duke University. Current position: Research Scientist, NorthShore Hospital System)
3. Patricia Washington, 2014 – 2017  
(Ph.D. from Georgetown University. Current position: New York Academy of Sciences, Program Manager)

### *Post-Doctoral Research Fellows Self-sponsored*

1. John D. Finan, 2012 – 2014  
(Charles H. Revson Senior Fellowship in the Biomedical Sciences, Ph.D. from Duke University, Current position: Research Scientist, NorthShore Hospital System)

### *Doctoral Students Sponsored*

1. Zhe Yu, 2004 – 2009  
“Experimental Mild TBI Causes Functional Alterations of the Developing Hippocampus & Development of Electrophysiology Research Platforms”

(Current position: Associate Professor, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)

2. Ben S. Elkin, 2004 – 2010, with distinction  
“Biomechanics and Biological Consequences of Traumatic Brain Injury”  
(Current position: Biomechanist, MEA Forensic Engineers & Scientists)
3. Melissa J. Simon, 2005 – 2010  
“Delivery to Brain Cells using Cell-Penetrating Peptides: Evaluation of the TAT Peptide and Development of Techniques for Identifying Novel Peptides”  
(Current position: Director, Insight Strategy Advisors)
4. Charles R. Haggart, 2010 (Co-sponsored with Dr. Jeff Holmes)  
“Mechanical Regulation of Myocyte Growth and Remodeling in Cultured Rat Right Ventricular Papillary Muscles”  
(Current position: NRSA Postdoctoral Trainee, University of Virginia)
5. Michael R. Lamprecht, 2007 – 2014  
“A Potential Combination Therapy for Traumatic Brain Injury: 17 $\beta$ -Estradiol and Memantine”  
(Current position: Research Scientist, EpiBone)
6. Woo Hyeun Kang, 2008 – 2014  
“Reducing the Societal Costs of Traumatic Brain Injury: Astrocyte-Based Therapeutics and Functional Injury Tolerance of the Living Brain”  
(Current position: Consultant, ClearView Healthcare Partners)
7. Christopher D. Hue, 2010 – 2015  
“Blood-Brain Barrier Dysfunction and Repair after Blast-Induced Traumatic Brain Injury”  
(Current position: Medical School Student, University of Toronto)
8. Gwen Effgen, 2010 – 2016  
“Improving Outcomes after Repetitive Mild Traumatic Brain Injury from Shock Wave Exposure or Stretch Injury”  
(Current position: Director of Corporate Affiliates, Business Development, Industry Outreach, and Innovation, Scripps Institution of Oceanography)
9. Edward Vogel, 2011 – 2017  
“Pathobiological Mechanisms and Treatment of Electrophysiological Dysfunction Following Primary Blast-Induced Traumatic Brain Injury”  
(Current position: Senior Analyst, Insight Strategy Advisors)
10. Sowmya Sundaresh, 2014 –
11. Nevin Varghese, 2016 –
12. Andrew Basilio, 2017 –
13. Carolyn Kim, 2018 –
14. Mary Kate Ryan Dwyer, 2018 –

#### *Doctoral Student Thesis Committee Membership*

1. Kristi Hultman, 2007 (Applied Physics)
2. Johnathan Lai, 2007 (Biomedical Engineering)
3. Matt Neimark, 2007 (Biomedical Engineering)
4. Shan Gao, 2009 (Chemical Engineering)
5. James Choi, 2009 (Biomedical Engineering)

6. Wei Yuan, 2009 (Biomedical Engineering, *City College of NY*)
7. Michael Albro, 2009 (Biomedical Engineering)
8. Peng Shi, 2009 (Biomedical Engineering)
9. Guanglei Li, 2010 (Biomedical Engineering, *City College of NY*)
10. Gregory Fomovsky, 2010 (Biomedical Engineering)
11. Melinda Kutzing, 2011 (Biomedical Engineering, *Rutgers University*)
12. Stanley Huang, 2011 (Biomedical Engineering)
13. Parisa Saboori, 2011 (Biomedical Engineering, *City College of NY*)
14. Rudy Cloots, 2011 (Materials Technology, *Eindhoven University of Technology*, Netherlands)
15. Jean-Pierre Dolle, 2012 (Biomedical Engineering, *Rutgers University*)
16. Yao-Sheng Tung, 2012 (Biomedical Engineering)
17. Brenda Chen, 2012 (Biomedical Engineering)
18. Maged Elwassif, 2013 (Biomedical Engineering, *City College of NY*)
19. Gesthimani Samiotaki, 2014 (Biomedical Engineering)
20. Yue Yu, 2016 (Biomedical Engineering)
21. Kate M. O'Neill, 2017 (Biomedical Engineering, *Rutgers University*)
22. Nikolaos Karamolegkos, 2018 (Biomedical Engineering)
23. Charles Rodenkirch, 2019 (Biomedical Engineering)
24. Yi Wang, 2019 (Biomedical Engineering)
25. Marilena Karakatsani, 2020 (Biomedical Engineering)
26. Brian Schriver, 2020 (Biomedical Engineering)
27. John Molina, expected 2020 (Biological Sciences, *Columbia University*)
28. Samantha Schumm, expected 2020 (Bioengineering, *University of Pennsylvania*)
29. Rishi Agrawal, expected 2020 (Nutritional and Metabolic Biology, *Columbia University Irving Medical Center*)
30. Jiayao Yuan, expected 2020 (Biomedical Engineering)
31. Elika Falla, expected 2022 (Biomedical Engineering)

*Masters Student Research Sponsored*

1. Shamik Chaudhuri, 2006 – 2008
2. Sonali Ahuja, 2014 – 2016

*Masters Student Research Supervised*

1. Patricia Park, 2003 – 2004
2. Mariel Kozberg, 2009
3. Bridget Matikainen, 2009 – 2010
4. Kai-Roy Wang, 2010-2011
5. Elise Gill, 2011
6. Ryan Van Echo, 2013

7. Chenhui Huang, 2017
8. Peng Xu, 2018

#### *Undergraduate Student Research Supervised*

1. Joshua Lennon, 2003 – 2004; 2. Shira Katseff, 2003 – 2004; 3. Christina Fan, 2003 – 2005; 4. Lawrence David, 2003 – 2005; 5. Weng Si Ho, 2004; 6. Eric Chang, 2004; 7. Rene Choi, 2004; 8. Barry Whol, 2004; 9. Tim Chou, 2004 – 2005 ; 10. Gidon Ofek, 2004 – 2005; 11. Zafeer Baber, 2004 – 2005 ; 12. Kristin Olsen, 2004 – 2007; 13. Hyun Choi, 2005 – 2006 ; 14. Pravin Chottera, 2005 – 2006; 15. Kartik Kesavabhotla, 2007 – 2008; 16. Nina Xu, 2007; 17. Steve Xu, 2007; 18. Ashok Ilankovan, 2007 – 2009; 19. Mohammed Shaik, 2008 – 2011; 20. Vikrum Thimmappa, 2008 – 2009; 21. Hsuan Lai, 2008; 22. Chris Nguyen, 2009 – 2010; 23. Chris Puleo, 2009 – 2010; 24. Gwen Effgen, 2009 – 2010; 25. Patrick Fox, 2009 – 2011 ; 26. Anthony Assad, 2010; 27. Jessica Chen, 2010 – 2011; 28. Erica Pearson, 2011; 29. Irene Kalbian, 2011; 30. Deryn Jakolev, 2011; 31. Kimberly Lynch, 2011 – 2013; 32. Josh Muniz, 2011 – 2012; 33. Victoria Silva, 2011 – 2012; 34. Kiet Vo, 2011 – 2012; 35. Mayra Velazquez, 2011 – 2012 ; 36. Christian Carter, 2011 – 2012; 37. Meredith Venerus, 2011; 38. Syed Haider, 2012; 39. Chris So, 2012-2013; 40. Daniel Campo, 2012; 41. Shruthi Nammalwar, 2012 – 2015; 42. Tiffany Ong, 2012-2015; 43. Siqi Cao, 2012 – 2014; 44. Elena Ripp, 2012; 45. Zafirah Baksh, 2012; 46. Akaljot Singh, 2013; 47. Ayelet Lobel, 2012 – 2014; 48. Thanh Nguyen, 2012 -2013; 49. Morgan Caglianone, 2013-2014; 50. Tighe Costa, 2013-2014; 51. Leonard Ash, 2013; 52. Frances Cho, 2013-2015; 53. Jessica Villacorta, 2013; 54. John Brady, 2013-2015; 55. Andrea Ortuno, 2013-2015; 56. Cosmas Sibindi, 2014; 57. Samuel Weinreb, 2014; 58. Steve Rwema, 2015-2016; 59. Thalia Matos 2015; 60. Jehelia Odidi, 2015; 61 Stephanie Yang, 2015-2016- ; 62. Nathalie Morales, 2015-2016; 63. Daniel Soltis, 2016; 64. Rachel Garcia, 2016; 65. Changhee Lee, 2016-2019; 66. Seth Shoap, 2016-2017; 67. Katherine Strong, 2017-2019; 68. Kevin Mao 2017-2018; 69. Jingwei Xiao, 2017; 70. Nicole Boyd, 2018; 71. Iliana Cantu, 2018; 72. Mallaika Tomar 2019- ; 73. Leanne Pichay, 2019- ; 74. Mikhaela Diaz, 2019; Katherine Hegermiller, 2019- ; Kalsoum Mbacke, 2020; Nicolas Amelines-Robles, 2020-

#### *High School Students Supervised*

1. Sarah Goldman, 2004 – 2005; 2. Stephanie David, 2006, 3. Aaron Huang, 2012 – 2013;
4. Charles Levin, 2012; 5. Lamia Ateshian, 2013; 6. Jessica Lang, 2013; 7. Zoe Ross, 2014

#### **D. Positions Held since Final Degree**

1999-1999 Post-doctoral Fellow, Department of Neurosurgery, University of Pennsylvania, Philadelphia, PA  
**Mentor:** Tracy K. McIntosh, Ph.D.

2000-2002 Post-doctoral Fellow, Clinical Neurosciences Department, Southampton University, UK  
**Mentor:** Lars E. Sundstrom, Ph.D.

2003-2008 Assistant Professor of Biomedical Engineering, Columbia University, NY

2004- Director, Neurotrauma and Repair Laboratory, Columbia University, NY

2008-2012 Associate Professor (untenured), Biomedical Engineering, Columbia University, NY

- 2012-2016 Associate Professor, Biomedical Engineering, Columbia University, NY  
2012-2014 Vice Chair, Biomedical Engineering, Columbia University, NY  
2014- Vice Dean of Undergraduate Programs, Fu Foundation School of Engineering and Applied Science, Columbia University, NY  
2016- Professor, Biomedical Engineering, Columbia University, NY

## **E. Publications**

(\* indicates Morrison as corresponding author; underline indicates Morrison's mentees; **bold number** indicates published while at Columbia; in Morrison's field, the senior author is either first or last; T publication derived from thesis; R undergone stringent editorial review by peers; I invited and carries special prestige and recognition; S published with a student; P published with a post-doc; C published with faculty colleagues; as of April 6, 2020, ISI citation metrics: total citations 4114, h index 31; Google Scholar citation metrics: total citations 6454, h index 38)

### **E.1 Doctoral Thesis**

"Differential Genomic Expression after Mechanical Injury of Organotypic Brain Slice Cultures: An *In Vitro* Model of Traumatic Brain Injury", (1999), *University of Pennsylvania*

### **E.2 Full-length, Peer Reviewed Publications**

1. (TR) **Morrison III, B.**, Meaney, D.F., and McIntosh, T.K., *Mechanical characterization of an in vitro device to quantitatively injure living brain tissue*. *Ann.Biomed.Eng.*, 1998. **26**: p. 381-90.
2. (TR) **Morrison III, B.**, Saatman, K.E., Meaney, D.F., and McIntosh, T.K., *In vitro central nervous system models of mechanically induced trauma: A review*. *J.Neurotrauma*, 1998. **15**: p. 911-28.
3. (TR) O'Dell, D.M., Raghupathi, R., Crino, P.B., **Morrison III, B.**, Eberwine, J.H., and McIntosh, T.K., *Amplification of mRNAs from single, fixed, TUNEL-positive cells*. *BioTechniques*, 1998. **25**: p. 566-8.
4. (TR) **Morrison III, B.**, Eberwine, J.H., Meaney, D.F., and McIntosh, T.K., *Traumatic injury induces differential expression of cell death genes in organotypic brain slice cultures determined by complementary DNA array hybridization*. *Neurosci.*, 2000. **96**: p. 131-9.
5. (TR) **Morrison III, B.**, Meaney, D.F., Margulies, S.S., and McIntosh, T.K., *Dynamic mechanical stretch of organotypic brain slice cultures induces differential genomic expression: Relationship to mechanical parameters*. *J.Biomech.Eng.*, 2000. **122**: p. 224-30. (*Best Paper Award in the journal for that year*)
6. (R) **Morrison III, B.**, Pringle, A.K., McManus, T., Ellard, J., Bradley, M., Signorelli, F., Iannotti, F., and Sundstrom, L.E., *L-arginyl-3,4-spermidine is neuroprotective in several in vitro models of neurodegeneration and in vivo ischaemia without suppressing synaptic transmission*. *Brit.J.Pharm.*, 2002. **137**: p. 1255-68.
7. (R) Cater, H.L., Chandratheva, A., Benham, C.D., **Morrison III, B.**, and Sundstrom, L.E., *Lactate and glucose as energy substrates during, and after, oxygen deprivation in rat hippocampal acute and cultured slices*. *J.Neurochem.*, 2003. **87**: p. 1381-90.

8. (RC) \***Morrison III, B.**, Cater, H.L., Wang, C.B., Thomas, F.C., Hung, C.T., Ateshian, G.A., and Sundstrom, L.E., *A tissue level tolerance criteria for living brain developed with an in vitro model of traumatic mechanical loading*. Stapp Car Crash J., 2003. **47**: p. 93-105. (Best paper award in the journal for that year)
9. (R) Pringle, A.K., **Morrison III, B.**, Bradley, M., Iannotti, F., and Sundstrom, L.E., *Characterisation of a novel class of polyamine-based neuroprotective compounds* Naunyn-Schmiedeberg's Arch.Pharm., 2003. **368**: p. 216-24.
10. (R) Sundstrom, L., **Morrison III, B.**, Bradley, M., and Pringle, A., *Organotypic cultures as tools for functional screening in the CNS*. Drug Discov.Today, 2005. **10**: p. 993-1000.
11. (R) \*Cater, H.L., Sundstrom, L.E., and **Morrison III, B.**, *Temporal development of hippocampal cell death is dependent on tissue strain but not strain rate*. J.Biomech., 2006. **39**: p. 2810-8.
12. (R) \***Morrison III, B.**, Cater, H.L., Benham, C.D., and Sundstrom, L.E., *An in vitro model of traumatic brain injury utilising two-dimensional stretch of organotypic hippocampal slice cultures*. J.Neurosci.Meth., 2006. **150**: p. 192-201.
13. (RC) Cater, H.L., Gitterman, D.P., Davis, S.M., Benham, C.D., **Morrison III, B.**, and Sundstrom, L.E., *Stretch-induced injury in organotypic hippocampal slice cultures reproduces in vivo post-traumatic neurodegeneration: Role of glutamate receptors and voltage-dependent calcium channels*. J.Neurochem., 2007. **101**: p. 434-47.
14. (RSC) \*Elkin, B.S., Azeloglu, E.U., Costa, K.D., and **Morrison III, B.**, *Mechanical heterogeneity of the rat hippocampus measured by AFM indentation*. J.Neurotrauma, 2007. **24**: p. 812-22.
15. (RS) \*Elkin, B.S. and **Morrison III, B.**, *Region-specific tolerance criteria for the living brain*. Stapp Car Crash J., 2007. **51**: p. 127-38.
16. (RS) \*Yu, Z., McKnight, T.E., Ericson, M.N., Melechko, A.V., Simpson, M.L., and **Morrison III, B.**, *Vertically aligned carbon nanofiber arrays record electrophysiological signals from hippocampal slices*. Nano Lett., 2007. **7**: p. 2188-95.
17. (RC) Ateshian, G.A., Costa, K.D., Azeloglu, E.U., **Morrison III, B.**, and Hung, C.T., *Continuum modeling of biological tissue growth by cell division, and alteration of intracellular osmolytes and extracellular fixed charge density*. J.Biomech.Eng., 2009. **131**: p. 101001.
18. (RSC) Gao, S., Simon, M.J., **Morrison III, B.**, and Banta, S., *Bifunctional chimeric fusion proteins engineered for DNA delivery: Optimization of the protein to DNA ratio*. Biochim.Biophys.Acta, 2009. **1790**: p. 198-207.
19. (RSC) Graudejus, O., Yu, Z., Jones, J., **Morrison III, B.**, and Wagner, S., *Characterization and application of an elastically stretchable microelectrode array to neural field potential recordings*. J.Electrochem.Soc., 2009. **156**: p. P85-P94.
20. (R) Margulies, S.S., Hicks, R.R., Ansel, B., Bullock, R., Clifford, D., Clifton, G., Conwit, R., Dash, P., Diaz-Arrastia, R., Dietrich, W.D., et al., *Combination therapies for traumatic brain injury - prospective considerations*. J.Neurotrauma, 2009. **26**: p. 925-39.
21. (RSC) \*Simon, M.J., Gao, S., Banta, S., and **Morrison III, B.**, *TAT-mediated intracellular protein delivery to primary brain cells is dependent on glycosaminoglycan expression*. Biotechnology and Bioengineering, 2009. **104**: p. 10-9.
22. (RSC) \*Yu, Z., Graudejus, O., Tsay, C., Lacour, S.P., Wagner, S., and **Morrison III, B.**, *Monitoring electrical activity from hippocampal tissue during large electrode deformation*. J.Neurotrauma, 2009. **26**: p. 1135-45.

23. (RC) Ateshian, G.A., **Morrison III, B.**, and Hung, C.T., *Modeling of active transmembrane transport in a mixture theory framework*. Ann.Biomed.Eng., 2010. **38**: p. 1801-14.
24. (RC) Choi, J.J., Wang, S., Tung, Y.S., **Morrison III, B.**, and Konofagou, E.E., *Molecules of various pharmacologically-relevant sizes can cross the ultrasound-induced blood-brain barrier opening in vivo*. Ultrasound Med.Biol., 2010. **36**: p. 58-67.
25. (RS) \*Elkin, B.S., Ilankovan, A., and **Morrison III, B.**, *Age-dependent regional mechanical properties of the rat hippocampus and cortex*. J.Biomech.Eng., 2010. **132**.
26. (RS) \*Elkin, B.S., Shaik, M.A., and **Morrison III, B.**, *Fixed negative charge and the Donnan effect: A description of the driving forces associated with brain tissue swelling and edema*. Phil.Trans.Royal Soc.London A, 2010. **368**: p. 585-603.
27. (RSC) Gao, S., Simon, M.J., **Morrison III, B.**, and Banta, S., *A plasmid display platform for the selection of peptides exhibiting a functional cell penetrating phenotype*. Biotech.Prog., 2010. **26**: p. 1796-1800.
28. (RSC) Lacour, S.P., Benmerah, S., Tarte, E., FitzGerald, J., Serra, J., McMahon, S., Fawcett, J.W., Graudejus, O., Yu, Z., and **Morrison III, B.**, *Flexible and stretchable micro-electrodes for in vitro and in vivo neural interfaces*. Med.Biol.Eng.Comp., 2010. **48**: p. 945-954.
29. (RSC) Li, G., Simon, M.J., Cancel, L., Shi, Z., Ji, X., Tarbell, J.M., **Morrison III, B.**, and Fu, B.M., *Permeability of endothelial and astrocyte cocultures: In vitro blood-brain barrier models for drug delivery studies*. Ann.Biomed.Eng., 2010. **38**: p. 2499-511.
30. (RSC) \*Simon, M.J., Kang, W.H., Gao, S., Banta, S., and **Morrison III, B.**, *Increased delivery of TAT across an endothelial monolayer following ischemic injury*. Neurosci.Lett., 2010, **486**: 1-4.
31. (RS) \*Yu, Z. and **Morrison III, B.**, *Experimental mild traumatic brain injury induces functional alteration of the developing hippocampus*. J.Neurophysiol, 2010. **103**: p. 499-510.
32. (RSC) \*Simon, M.J., Kang, W.H., Gao, S., Banta, S., and **Morrison III, B.**, *TAT is not capable of transcellular delivery across an intact endothelial monolayer in vitro*. Ann.Biomed.Eng., 2011 **39**: p.394-401.
33. (RS) \*Elkin, B.S., Ilankovan, A., and **Morrison III, B.**, *A detailed viscoelastic characterization of the P17 and adult rat brain*. J.Neurotrauma, 2011, **28**: p.2235-2244.
34. (RS) \*Elkin, B.S., Shaik, M.A., and **Morrison III, B.**, *Chondroitinase ABC reduces brain tissue swelling in vitro*. J.Neurotrauma, 2011, **28**: p.2277-2285.
35. (RSC) Gao, S., Simon, M.J., **Morrison III, B.**, and Banta, S., *An unusual cell penetrating peptide identified using a plasmid display-based functional selection platform*. ACS Chem.Bio., 2011 **6**: p.484-91.
36. (RSCI) \***Morrison III, B.**, Elkin, B.S., Dolle, J.P., Yarmush, M.L., *In vitro models of traumatic brain injury*. Ann.Rev.Biomed.Engin., 2011, **13**: p.91-126.
37. (RSC) \*Kang, W.H., Simon, M.J., Gao, S., Banta, S., and **Morrison III, B.**, *Attenuation of astrocyte activation by TAT delivery of a peptide JNK inhibitor*. J.Neurotrauma, 2011, **28**: 1219-1228.
38. (RS) \*Elkin, B.S., Ilankovan, I., **Morrison III, B.**, *Dynamic, regional mechanical properties of the porcine brain: Indentation in the coronal plane*. J.Biomech.Eng., 2011, **133**: 071009.

39. (RSP) \*Finan, J.D., Elkin, B.S., Pearson, E.M., Kalbian I.L., **Morrison III, B.**, *Viscoelastic properties of the rat brain in the sagittal plane: effects of anatomical structure and age*. Ann.Biomed.Eng., 2012, **40**: 70-78..
40. (RSC) Graudejus, O., Goletiani, C., Yu, Z., **Morrison III, B.**, and Wagner, S., *Encapsulating elastically stretchable neural interfaces: yield, resolution, and recording/stimulation of neural activity*. Advanced Functional Materials, 2012, **22**: 640-651.
41. (RC) Saggiu, R., **Morrison III, B.**, Lowe, J.P., Pringle, A.K., *Interleukin-1b does not affect the energy metabolism of rat organotypic hippocampal-slice cultures*. Neuroecience Letters, 2012, **508**: 114-118.
42. (RCI) Ateshian, G.A., **Morrison III, B.**, Holmes, J.W., and Hung, C.T., *Mechanics of cell growth*. Mechanics Research Communications, 2012, **42**: 118-125.
43. (RC) Baseri, B., Choi, J.J., Deffieux, T., Samiotaki, M., Tung, Y., Small, S.A., **Morrison III, B.**, and Konofagou, E.E., *Activation of signaling pathways following localized delivery of systemically administered neurotrophic factors across the blood–brain barrier using focused ultrasound and microbubbles*. Phys.Med.Biol., 2012, **57**: N65-N81.
44. (RSC) \*Effgen, G.B., Hue, C.D., Vogel, E.W., Panzer, M.B., Meaney, D.F., Bass, C.R., **Morrison III, B.**, *A multiscale approach to blast neurotrauma modeling: Part II: Methodology for inducing blast injury to in vitro models*, Frontiers in Neurology, 2012, **3**: 10.3389/fneur.2012.00023.
45. (RSC) Yu, Z., McKnight, T.E., Ericson, M.N., Melechko, A.V., Simpson, M.L., **Morrison III, B.**, *Vertically aligned carbon nanofiber as nano-neuron interface for monitoring neural function*, Nanomedicine: Nanotechnology, Biology, and Medicine, 2012, **8**: 419-423.
46. (RC) Panzer, M.B., Matthews, K.A., Yu, A.W., **Morrison III, B.**, Meaney, D.F., Bass, C.R., *A multiscale approach to blast neurotrauma modeling: Part I: Development of novel test devices for in vivo and in vitro blast injury models*, Frontiers in Neurology, 2012, **3**:46. doi: 10.3389/fneur.2012.00046.
47. (RSC) Dixon, S.J., Lemberg, K.M., Lamprecht, M.R., Skouta, R., Zaitsev, E., Gleason, C.E., Patel, D., Bauer, A.J., Cantley, A., Yang, W.S., **Morrison III, B.**, Stockwell, B.R., *Ferroptosis: an iron-dependent oncogenic-RAS-selective form of cell death*, Cell, 2012, **149**:1060-1072.
48. (RPC) Choo, A.M., Miller, W.J., Chen, Y., Nibley, P., Goletiani, C., **Morrison III, B.**, Kutzing, M.K., Firestein, B.L., Sul, J.Y., Haydon, P.G., Meaney, D.F., *Antagonism of astroglial purinergic signaling improves recovery from traumatic brain injury*, Brain, 2013, **136**: 65-80.
49. (RPC) Chen, C., Wu, S., Finan, J.D., **Morrison III, B.**, and Konofagou, E.E., *An experimental study on the stiffness of size-isolated microbubbles using atomic force microscopy*, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2013, **60**: 524-534.
50. (RC) Dolle, J.P., **Morrison III, B.**, Schloss, R.S., and Yarmush, M.L., *An organotypic uniaxial strain model using microfluidics*, Lab Chip, 2013, **13**: 432-42.
51. (RSC) Mao, H., Elkin, B.S., Genthikatti, V.V., **Morrison III, B.**, Yang, K.H., *Why is CA3 more vulnerable than CA1 in experimental models of controlled cortical impact-induced brain injury?*, J. Neurotrauma, 2013, **30**: 1521-1530.

52. (RSC) \*Hue, C.D., Cao, S., Haider, S.F., Vo, K. V., Effgen, G.B., Vogel, E.W., Panzer, M.B., Bass, C.R., Meaney, D.F., Morrison III, B., *Blood-brain barrier dysfunction after primary blast injury in vitro*, *J. Neurotrauma*, 2013, **30**: 1652-1663.
53. (RS) \*Elkin, B.S., Morrison III, B., *Viscoelastic properties of the P17 and adult rat brain in the coronal plane*, *J.Biomech.Eng.*, 2013, **135**: 114507.
54. (RC) Dolle, J.P., **Morrison III, B.**, Schloss, R.S., and Yarmush, M.L., *Brain-on-a-chip microsystem for investigating traumatic brain injury: Axon diameter and mitochondrial membrane changes play a significant role in axonal response to strain injuries*. Technology (Singapore), 2014. **2**: 106.
55. (RSC) \*Effgen, G.B., Vogel, E.W., Lynch, K.A., Lobel, A., Hue, C.D., Meaney, D.F., Bass, C.R., and Morrison III, B., *Isolated primary blast alters electrophysiological function with minimal cell death in organotypic hippocampal slice cultures*, *J.Neurotrauma*, 2014 **31**: 1202-10.
56. (RSP) \*Finan, J.D., Fox, P.M., Morrison III, B., *Non-ideal effects in indentation testing of soft tissues*, *Biomech. Model. Mechanobiol.*, 2014, **13**: 573-84.
57. (RC) Gullotti, D., Panzer, M., Beamer, M., Chen, Y.C., Patel, T., Yu, A., Jaumard, N., Winkelstein, B., Bass, C.R., **Morrison III, B.**, and Meaney, D.F., *Significant head accelerations can influence immediate neurological impairments in a murine model of blast-induced traumatic brain injury*. *J.Biomech.Eng.* 2014, **136**: 091004.
58. (RSC) \*Hue, C.D., Cao, S., Bass, C.R., Meaney, D.F., and Morrison III, B., *Repeated primary blast injury causes delayed recovery, but not additive disruption, in an in vitro blood-brain barrier model*. *J.Neurotrauma*, 2014, **31**: 951-60.
59. (RSC) \*Hughes, R.H., Silva, V.A., Ahmed, I., Shreiber, D.I., Morrison III, B., *Neuroprotection by genipin against reactive oxygen and reactive nitrogen species-mediated injury in organotypic hippocampal slice cultures*, *Brain Res.*, 2014, **1543**: 308-314.
60. (RS) \*Lamprecht, M.R. and Morrison III, B., *GPR30 activation is neither necessary nor sufficient for acute neuroprotection by 17 $\beta$ -estradiol after an ischemic injury in organotypic hippocampal slice cultures*, *Brain Res.*, 2014, **1563**: 131-7.
61. (RCI) Meaney, D.F., **Morrison III, B.**, and Bass, C.R., *The mechanics of traumatic brain injury: A review of what we know, and what we need to know, for reducing its societal burden*. *J.Biomechanical Eng.*, 2014, **136**: 021008.
62. (RC) Patel, T.P., Gullotti, D.M., Hernandez, P., O'Brien, W.T., Capehart, B.P., **Morrison III, B.**, Bass, C.R., Eberwine, J.E., Abel, T., and Meaney, D.F., *An open-source toolbox for automated phenotyping of mice in behavioral tasks*, *Front.Behav.Neurosci.*, 2014, **8**: 349, doi: 10.3389/fnbeh.2014.00349.
63. (RS) \*Kang, W.H. and Morrison III, B., *Functional tolerance to mechanical deformation developed from organotypic hippocampal slice cultures*, *Biomech.Model.Mechanobiol.*, 2015, **14**: 561-75.
64. (RSC) \*Kang, W.H., Cao, W., Graudejus, O., Patel, T.P., Wagner, S., Meaney, D.F., and Morrison III, B., *Alterations in hippocampal network activity after in vitro traumatic brain injury*, *J.Neurotrauma.*, 2015, **32**: 1011-9.
65. (RSC) \*Kang, W.H. and Morrison III, B., *Predicting changes in cortical electrophysiological function after in vitro traumatic brain injury*, *Biomech.Model.Mechanobiol.*, 2015, **14**: 1033-44.
66. (RS) \*Lamprecht, M.R. and Morrison III, B., *A combination therapy of 17 $\beta$ -estradiol and memantine is more neuroprotective than monotherapies in an organotypic brain slice culture model of traumatic brain injury*, in *J.Neurotrauma*, 2015, **32**: 1361-8.

67. (RSC) \*Hue, C.D., Cho, F.S., Cao, S., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Dexamethasone potentiates in vitro blood-brain barrier recovery after primary blast injury by glucocorticoid receptor-mediated upregulation of ZO-1 tight junction protein.* J.Cerebral Blood Flow & Metab., 2015, **35**: 1191-8.
68. (RC) Beamer, M., Tummala, S., Gullotti, D., Kopil, K., Gorka, S., Abel, T., Bass, C.R., **Morrison III, B.**, Cohen, A.S., and Meaney, D.F., *Primary blast injury causes cognitive impairments and hippocampal circuit alterations.* Experimental Neurology, 2016, 283: (Pt.A), 16-28.
69. (RSPC) \*Finan, J.D., Cho, F.S., Kernie, S.G., **Morrison III, B.** *Intracerebroventricular administration of chondroitinase ABC reduces acute edema after traumatic brain injury.* BMC Research Notes, 2016, **9**: 160.
70. (RSC) \*Effgen, G.B., Ong, T., Nammalwar, S., Ortuno, A.I., Meaney, D.F., Bass, C.R., **Morrison III, B.** *Primary blast exposure increases hippocampal vulnerability to subsequent exposure reducing long-term potentiation.* J.Neurotrauma, 2016, **33**: 1901-12.
71. (RSC) \*Hue, C.D., Cho, F.S., Cao, S., Nicholls, R.E., Vogel III, E.W., Sibindi C., Arancio O., Bass C.R., Meaney D.F., **Morrison III B.** *Time course and size of blood-brain barrier opening in a mouse model of blast-induced traumatic brain injury.* J.Neurotrauma, 2016, **33**: 1202-11.
72. (RSC) \*Vogel III, E.W., Effgen, G.B., Patel, T.P., Meaney, D.F., Bass, C.R., **Morrison III, B.** *Isolated primary blast inhibits long-term potentiation in organotypic hippocampal slice cultures.* J.Neurotrauma, 2016, 33:652-61.
73. (RS) \*Effgen, G.B. and **Morrison III, B.**, *Electrophysiological and pathological characterization of the period of heightened vulnerability to repetitive injury in an in vitro stretch model.* J.Neurotrauma., 2017, **34**: 914-24.
74. (RS) \*Effgen, G.B. and **Morrison III, B.**, *Memantine reduced cell death, astrogliosis, and functional deficits in an in vitro model of repetitive mild traumatic brain injury.* J.Neurotrauma, 2017, **34**: 934-42.
75. (RSC) Hu, F., Lamprecht, M.R., Wei, L., **Morrison III, B.**, and Min, W., *Bioorthogonal chemical imaging of metabolic activities in live mammalian hippocampal tissues with stimulated raman scattering.* Scientific Reports, 2016, **6**: p. 39660.
76. (RSC) \*Lamprecht, M.R., Elkin, B.S., Kesavabhotla, K., Crary, J.F., Raghupathi, R., **Morrison III, B.** *Strong correlation of genome-wide expression after traumatic brain injury in vitro and in vivo implicates a role for SORLA.* J.Neurotrauma, 2017, **34**: 97-108.
77. (RSC) \*Vogel III, E.W., Morales, F.N., Meaney, D.F., Bass, C.R., and **Morrison III, B.**, *Phosphodiesterase-4 inhibition restored hippocampal long term potentiation after primary blast.* Experimental Neurology, 2017, **293**: p. 91-100.
78. (RSC) \*Vogel III, E.W., Rwema, S.H., Meaney, D.F., Bass, C.R., **Morrison III, B.** *Primary blast injury depressed hippocampal long-term potentiation through disruption of synaptic proteins.* J. Neurotrauma, 2017, **34**: 1063-73.
79. (RSPC) \*Finan, J.D., Sundaresh, S., Elkin, B.S., McKhann 2nd, G.M., and **Morrison III, B.**, *Mechanical properties of living, human cortical grey and white matter.* Acta Biomaterialia, 2017, **55**: 333-9.
80. (RSC) Evans, B.S., Newell, E., Mahajan, M., Tsang, S.H., Ferguson, P.J., Mahoney, J., Hue, C.D., Vogel III, E.W., **Morrison III, B.**, Arancio, O., Nicholls, R.E., Bassuk, A.G., and Manajan, V.B., *Acute vitreoretinal trauma and inflammation after traumatic brain injury in mice.* Annals of Clinical and Translational Neurology, 2018, **5**: 240-51
81. (RC) Chierto, E., Simon, A., Castoldi, F., Meffre, D., Cristinziano, G., Sapone, F., Carrete, A., Borderie, D., Etienne, F., Rannou, F., **Morrison III, B.**, Massaad, C., Jafarian-

Tehrani, M. *Mechanical Stretch of High Magnitude Provokes Axonal Injury, Elongation of Paranodal Junctions, and Signaling Alterations in Oligodendrocytes*. Molecular Neurobiology, 2018.

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83. (RSC) Takahashi, Y., Yanaoka, T., Sugaya, H., Basilio, A.V., Xu, P., Ateshian, G.A., **Morrison III, B.** *Prediction of Probability of Fatality Due to Brain Injury in Traffic Accidents*. Traffic Injury Prevention, 2019. **20**: S27-31.
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### **E.3 Manuscripts under Review**

### **E.4 Books**

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3. (RC) Tsay, C., Lacour, S.P., Wagner, S., and **Morrison III, B.**, *Architecture, fabrication, and properties of stretchable microelectrode arrays*. Proc.IEEE Sensors, 2005: p. 1169-72.
4. (RSC) \*Yu, Z., Tsay, C., Lacour, S.P., Wagner, S., and **Morrison III, B.**, *Stretchable microelectrode arrays: A tool for discovering mechanisms of functional deficits underlying traumatic brain injury and interfacing neurons with neuroprosthetics*. IEEE Proc.EMBC, 2006: p. 6732-5.
5. (RSC) Choi, J.J., Wang, S., **Morrison III, B.**, and Konofagou, E.E., *Focused ultrasound-induced molecular delivery through the blood-brain barrier*. IEEE International Ultrasonics Symposium, 2007.

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14. (RS) \*Elkin, B.S. and **Morrison III, B.**, *Mechanical properties of the rat brain: Effect of age and anatomical region*. ASME Summer Bioengineering Division, 2010.
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16. (RS) \*Elkin, B.S. and **Morrison III, B.**, *High-rate, regional mechanical properties of the porcine brain cross-validated with two methods of indentation*. IRCOBI Proceedings, 2010.
17. (RS) \*Elkin, B.S., Shaik, M.A., and **Morrison III, B.**, *Chondroitin sulfate proteoglycans contribute to brain tissue swelling behavior*. Northeastern Bioengineering Conference, 2010.
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3. (ISC) Vogel, E.W., Morrison III, B., Evilsizor, M.N., Griffiths, D.R., Thomas, T.C., Lifshitz, J., Sutton, R.L., Long, J.B., Ritzel, D., Ling, G.S.F., Huh, J., Raghupathi, R., McIntosh, T.K., *Experimental models of TBI: Clinical Relevance and Shortcomings*, in Cellular Therapy for Neurological Injury, Cox, C., Atala, T., eds. 2016, CRC Press.

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89. \***Lamprecht, M.R., Effgen, G.B., Elkin, B.S., and Morrison III, B.,** *Memantine and estrogen combination therapy for traumatic brain injury*. BMES, 2011. (Abstract)
90. \***Lamprecht, M.R., Effgen, G.B., Elkin, B.S., and Morrison III, B.,** *Combinational drug therapies as treatment for traumatic brain injury*. J.Neurotrauma, 2011. (Abstract)

91. Panzer, M.B., Bass, C.R., Capehart, B.P., **Morrison III, B.**, and Meaney, D.F., *A novel method for exposing tissue cultures to blast overpressure for determining injury criteria*. BMES, 2011. (Abstract)
92. Ahmed, I., Morrison III, B., Hughes, R.R., and Shreiber, D.I., *Genipin provides neuroprotection following glutamate exposure in organotypic hippocampal slice cultures*. BMES, 2012. (Abstract)
93. Bogdanowicz, D.R., Subramony, S.D., Levine, W.N., **Morrison III, B.**, and Lu, H.H., *Methods for directing stem cell differentiation*. Gordon Research Conference: Musculoskeletal Biology and Bioengineering, 2012. (Abstract)
94. Chen, C.C., Wu, S.Y., Finan, J.D., **Morrison III, B.**, and Konofagou, E.E., *An experimental study on the stiffness of size-isolated microbubbles used for blood-brain barrier opening*. International Society for Therapeutic Ultrasound, 2012. (Abstract)
95. \*Effgen, G.B., Gill, E., and **Morrison III, B.**, *A combination of 17-beta-estradiol and memantine after repetitive, mild traumatic brain injury reduces injury synergy*. J.Neurotrauma, 2012. (Abstract)
96. \*Effgen, G.B., Panzer, M.B., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *An in vitro model of blast-induced traumatic brain injury*. Ninth World Congress on Brain Injury, 2012. (Abstract)
97. Gullotti, D., Chen, Y., Patel, T., Merdiushev, T., Jaumard, N., Winkelstien, B., **Morrison III, B.**, Bass, C.R., Panzer, M., and Meaney, D., *A model of blast induced traumatic brain injury in mice*. BMES, 2012. (Abstract)
98. \*Haider, S.F., Hue, C.D., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Increased solute permeability of an in vitro blood-brain barrier model exposed to blast overpressure*. Annual Biomedical Research Conference for Minority Students, 2012. (Abstract)
99. \*Hue, C.D., Vo, K.V., Panzer, M.B., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Blast-induced disruption of an in vitro blood-brain barrier model*. J.Neurotrauma, 2012. (Abstract)
100. \*Hughes, R.R., Silva, V.A., Ahmed, I., Shreiber, D.I., and **Morrison III, B.**, *Neuroprotection by genipin against free-radical mediated injury in organotypic hippocampal slice cultures*. J.Neurotrauma, 2012. (Abstract)
101. \*Kang, W.H., Yu, Z., and **Morrison III, B.**, *Quantification and prediction of electrophysiological function in the hippocampus after in vitro traumatic brain injury*. J.Neurotrauma, 2012. (Abstract)
102. Konofagou, E., Baseri, B., Choi, J.J., Deffieux, T., Samiotaki, M., Tung, S., Small, S.A., and **Morrison III, B.** *Activation of signaling pathways following localized delivery of systemically-administered neurotrophic factors across the blood-brain barrier using focused ultrasound and microbubbles*. Focused Ultrasound Symposium, 2012. (Abstract)
103. Wood, G., Rafaels, K., Yu, A., Shridharani, J., Panzer, M., Meaney, D., **Morrison III, B.**, Laskowitz, D., Wang, H., and Bass, C.R., *Interspecies scaling of blast-induced apnea*. BMES, 2012. (Abstract)
104. Yu, A., Wang, H., Matthews, K., Rafaels, K., Laskowitz, D., Gullotti, D., Meaney, D., **Morrison III, B.**, and Bass, C.R., *Mouse lethality risk and intracranial pressure during exposure to blast*. BMES, 2012. (Abstract)
105. \*Effgen, G.B., Vogel, E.W., Lynch, K.A., and **Morrison III, B.**, *In vitro primary blast injury induces cell death in the hippocampus*, in *IRCOBI*. 2013. (Abstract)
106. \*Effgen, G.B., Vogel, E.W., Lynch, K.A., and **Morrison III, B.**, *Isolated primary blast-exposure induces cell death in the hippocampus*, in *National Neurotrauma Symposium*. 2013. (Abstract)

107. \*Finan, J.D. and **Morrison III, B.**, *Chondroitinase abc reduces post-traumatic edema in mice*, in *National Neurotrauma Symposium*. 2013. (Abstract)
- 108.\* Hue, C.D., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Interval-specific, blood-brain barrier disruption in vitro after repetitive primary blast injury*, in *IRCOBI*. 2013. (Abstract)
109. \*Hue, C.D., Cao, S., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Window of heightened vulnerability to repetitive primary blast injury in an in vitro blood-brain barrier model*, in *National Neurotrauma Symposium*. 2013. (Abstract)
110. \*Vogel, E.W., Effgen, G., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Primary blast injury initiates functional differences in rat organotypic hippocampal slices*, in *IRCOBI*. 2013. (Abstract)
111. \*Vogel, E.W., Effgen, G., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Primary blast injury induces electrophysiological changes in rat organotypic hippocampal slices*, in *National Neurotrauma Symposium*. 2013. (Abstract)
112. \*Effgen, G.B., Nammalwar, S., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Primary blast does not increase vulnerability of the brain to subsequent primary blast or glutamate exposure*, in *National Neurotrauma Symposium*. 2014. (Abstract)
113. \*Finan, J.D., Cho, F.S., Kernie, S.G., and **Morrison III, B.**, *Intracerebroventricular delivery of chondroitinase abc reduces post-traumatic brain edema in mice*, in *National Neurotrauma Symposium*. 2014. (Abstract)
114. \*Hue, C.D., Cao, S., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Dexamethasone potentiates recovery of the blood-brain barrier after primary blast injury in vitro*, in *National Neurotrauma Symposium*. 2014. (Abstract)
115. \***Morrison III, B.**, Effgen, G.B., Hue, C.D., Vogel, E.W., Bass, C.R., and Meaney, D.F., *Studying blast traumatic brain injury with in vitro models*, in *United States National Congress on Theoretical and Applied Mechanics*. 2014. (Abstract)
116. \***Morrison III, B.**, Effgen, G.B., Hue, C.D., W., V.E., Bass, C.R., and Meaney, D.F., *Blast traumatic brain injury: Insights from in vitro models*, in *World Congress of Biomechanics*. 2014. (Abstract)
117. \***Morrison III, B.**, Finan, J.D., and Elkin, B.S., *A novel therapy for traumatic brain injury with a biomechanical basis*, in *World Congress of Biomechanics*. 2014. (Abstract)
118. \***Morrison III, B.** and Kang, W.H., *Electrophysiological changes within the hippocampus after controlled biaxial deformation*, in *World Congress of Biomechanics*. 2014. (Abstract)
119. \*Vogel III, E., Villacorta, J., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Primary blast injury eliminates long-term potentiation in rat organotypic hippocampal slice cultures*, in *National Neurotrauma Symposium*. 2014. (Abstract)
120. \*Vogel III, E., Villacorta, J., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Primary blast injury erases long term potentiation in rat brain organotypic hippocampal slices*, in *IRCOBI*. 2014. (Abstract)
121. Yu, A.W., Panzer, M.B., Bigler, B.R., Wood, G.W., Rzeznik, C.L., Akshareef, A., Meaney, D.F., **Morrison III, B.**, and Bass, C.R., *In vs. Out: Controversies in shock tube blast experiments*, in *Personal Armour Systems Symposium*. 2014. (Abstract)
122. \*Vogel III, E., Effgen, G.B., Bass, C.R., meaney, D.F., and **Morrison III, B.**, *Primary blast injury impairs learning in rat organotypic hippocampal slices. State-of-the-Science (SoS) Meeting on the Biomedical Basis for mTBI Environmental Sensor Threshold Values*. 2014. (Abstract).
123. \*Effgen, G.B., Nammalwar, S., Ong, T., Ortuno, A.I., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Repetitive primary blast-induced vulnerability and deficits in long-term potentiation without cell death. National Neurotrauma Symposium*. 2015. (Abstract).

124. \*Effgen, G.B., Ong, T., Nammalwar, S., Ortuno, A.I., Bass, C.R., Meaney, D.F., and Morrison III, B., *Primary blast exposure reduces brain tolerance to subsequent blast*. *IRCOBI*. 2015. (Abstract).
125. \*Kang, W.H., Cao, W., Graudejus, O., Patel, T.P., Wagner, S., Meaney, D.F., and Morrison III, B., *Traumatic brain injury in a dish enabled by the stretchable microelectrode array*. *Materials Research Society*. 2015. (Abstract).
126. \*Vogel III, E.W., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Delayed primary blast-induced elimination of long-term potentiation in rat organotypic hippocampal slice cultures*. *National Neurotrauma Symposium*. 2015. (Abstract).
127. \*Vogel III, E.W., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Delayed inhibition of long-term potentiation in rat brain slice cultures caused by primary blast exposure*. *IRCOBI*. 2015. (Abstract).
128. Graudejus, O., Mandlik, P., Ahuja, S., **Morrison III, B.**, and Wagner, S., *From lab-to-marketplace: Challenges and discoveries during the commercialization of a stretchable microelectrode array*. *Material Research Society*. 2016. (Abstract).
129. Yu, A., **Morrison III, B.**, Meaney, D.F., and Bass, C.R., *Investigation of CSF cavitation as an injury mechanism of traumatic brain injury*, in *BMES*. 2016. (Abstract).
130. \*Vogel III, E.W., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Roflumilast treatment prevented primary blast-induced deficits in long-term potentiation*, in *National Neurotrauma Symposium*. 2016. (Abstract).
132. \*Vogel III, E.W., Bass, C.R., Meaney, D.F., and **Morrison III, B.**, *Drug treatment prevents primary blast-induced deficit in long-term potentiation in rat brain slice cultures*, in *IRCOBI*. 2016. (Abstract).
133. \***Morrison III, B.**, Vogel III, E.W., Varghese, N., Bass, C.R., and Meaney, D.F., *Toward a tissue-level tolerance criteria for computational models of blast traumatic brain injury*, in *Military Health System Research Symposium*. 2017. (Abstract)
134. Graudejus, O., Wong, R.P., Varghese, N., Wagner, S., and **Morrison III, B.**, *A stretchable microelectrode array to reproduce a blunt trauma: Electrophysiology, mechanical stretching, and imaging of cells in vitro, concurrently and independently in National Neurotrauma Symposium*. 2018.
135. Graudejus, O., Wong, R.P., Varghese, N., Wagner, S., and **Morrison III, B.**, *3 methods - 1 tool: Electrophysiology, mechanical stretching, and imaging of cells in vitro, concurrently and independently in International Meeting on Substrate-Integrated Microelectrode Arrays*. 2018.
136. \***Morrison III, B.**, *Biomechanics, traumatic brain injury, and cerebral edema*, in *Society of Engineering Sciences Annual Technical Meeting*. 2018.
137. \*Sundaresh, S.N., Finan, J.D., and **Morrison III, B.**, *Regional differences in the mechanical properties of porcine brain tissue*, in *National Neurotrauma Symposium*. 2018.
138. \*Sundaresh, S.N., Finan, J.D., and **Morrison III, B.**, *Regional and directional differences in the material properties of porcine brain tissue*, in *IRCOBI Proceedings*. 2018.
139. \*Varghese, N. and **Morrison III, B.**, *Long term potentiation deficits and recovery following repeated blast-induced traumatic brain injury in rat organotypic hippocampal slices*, in *National Neurotrauma Symposium*. 2018.
140. \*Varghese, N. and **Morrison III, B.**, *Recovery of long term potentiation in rat brain organotypic hippocampal slice cultures following repeated blast-induced traumatic brain injury*, in *IRCOBI Proceedings*. 2018.
141. \*Varghese, N. and **Morrison III, B.**, *Informing return-to-combat criteria in soldiers following blast-induced traumatic brain injury based on recovery of long term*

- potentiation in rat organotypic hippocampal slice cultures*, in *Military Health System Research Symposium*. 2018.
142. Sundaresh, S.N., Finan, J.D., Elkin, B.S., Lee, C., Xiao, J., and **Morrison III, B.**, *Characterization of porcine brain tissue mechanical properties at large deformations*, in *IRCOBI Proceedings*. 2019.
143. Sundaresh, S.N., Finan, J.D., Elkin, B.S., Lee, C., Xiao, J., and **Morrison III, B.**, *Regional and directional characterization of porcine brain tissue mechanical properties at large deformations*, in *National Neurotrauma Symposium*. 2019.
144. Varghese, N. and **Morrison III, B.**, *Recovery of long term potentiation in rat organotypic hippocampal slice cultures to inform return-to-duty criteria in soldiers following blast-induced traumatic brain injury*, in *Military Health System Research Symposium*. 2019.
145. Varghese, N. and **Morrison III, B.**, *Characterizing recovery of long term potentiation following repeated blast-induced traumatic brain injury in rat brain organotypic hippocampal slice cultures*, in *IRCOBI Proceedings*. 2019.
146. Varghese, N. and **Morrison III, B.**, *Effects of repeated blast-induced traumatic brain injury in rat organotypic hippocampal slices on long term potentiation*, in *National Neurotrauma Symposium*. 2019.
147. \*Basilio, A.V., Lichay, L., Xu, P., Takahashi, Y., Yanaoka, T., Sugaya, H., Ateshian, G.A., **Morrison III, B.** *Improvements for simulating cerebral edema and delayed fatality after traumatic brain injury using triphasic swelling biomechanics*. *IRCOBI Proceedings*. 2020.
148. Varghese, N. and **Morrison III, B.**, *Ibuprofen ameliorates long term potentiation deficits following repeated blast-induced traumatic brain injury in rat organotypic hippocampal slice cultures*, in *Military Health System Research Symposium*. 2020.

## **E.8 Popular Press Articles**

(I) **Morrison III, B.**, The brain injury epidemic, *Technology Review*, January 2007  
<http://www.technologyreview.com/Biotech/17996/>

(IC) **Morrison III, B.**, Meaney, D.F., Bass, C.R., Fundamental insights into blast TBI, in *The Challenge: The Future of Research*, Summer 2013  
<http://www.biausa.org/LiteratureRetrieve.aspx?ID=125697>

## **E.9 Press Releases and Quotations**

10/21/2005 “SEAS’ Banta, Morrison Receive Brain Trust Award” from Columbia University  
[http://www.columbia.edu/cu/news/05/10/brain\\_trust.html](http://www.columbia.edu/cu/news/05/10/brain_trust.html)

9/6/2005 “Four Leading Medical Research Philanthropies Announce 2005 Brain Trust Awards” from the Brain Trust  
[http://www.brain-trust.org/html/award\\_release.html](http://www.brain-trust.org/html/award_release.html)

9/1/2006 Quoted in “2006 Technology Review Young Investigator Awards: Stephanie Lacour”, *Technology Review*, September 2006  
<http://www.technologyreview.com/tr35/Profile.aspx?Cand=T&TRID=471>

Prepared April 6, 2020

- 12/1/2006 Quoted in “Elastic Electrodes” from ScienceLine, New York University’s Science, Health, and Environmental Reporting Program  
[http://scienceline.org/2006/12/01/tech\\_peck\\_strech/](http://scienceline.org/2006/12/01/tech_peck_strech/)
- 4/6/2007 “Deflecting damage: Flexible electronics aid brain injury research” from Princeton University  
[http://www.eurekalert.org/pub\\_releases/2007-04/pues-ddf040607.php](http://www.eurekalert.org/pub_releases/2007-04/pues-ddf040607.php)
- 7/24/2007 “Plugging into the brain with carbon nanofibers” from NanoWerk  
<http://www.nanowerk.com/spotlight/spotid=2264.php>
- 8/2007 “Carbon nanofibres: On the brain”, Nature Nanotechnology 2(8): 465, 2007  
<http://www.nature.com/nnano/journal/v2/n8/full/nnano.2007.245.html>
- 1/29/2009 “Stretchy Electrodes Wire Up Cells”  
<http://www.technologyreview.com/biomedicine/22031/>
- 9/2009 “Preventing traumatic brain injury”, featured in Engineering News - the Columbia University’s School of Engineering and Applied Sciences (SEAS) newsletter  
[http://engineering.columbia.edu/web/newsletter/fall\\_2009/preventing\\_traumatic\\_brain\\_injury](http://engineering.columbia.edu/web/newsletter/fall_2009/preventing_traumatic_brain_injury)
- 4/19/2010 “Ultrathin silk-based electronics make better brain implants”  
<http://www.wired.com/wiredscience/2010/04/silk-brain-computer-interface/>
- 6/9/2010 Portilla, L.M. and B. Alving, Reaping the benefits of biomedical research: partnerships required. Sci.Transl.Med., 2010. 2(35): p. 35cm17.  
<http://stm.sciencemag.org/content/2/35/35cm17.full>
- 6/8/2011 “Imaging method reveals hidden brain injuries”  
<http://www.technologyreview.com/biomedicine/37722/>
- 10/16/2012 "Understanding the biomechanics of brain injury to find treatments for injured soldiers, athletes", featured in The Record, Columbia University
- 3/11/2015 “Steroids rapidly restore blood-brain barrier function after blast”  
<http://engineering.columbia.edu/steroids-rapidly-restore-blood-brain-barrier-function-after-blast-0>
- 9/23/2015 “Prof. Barclay Morrison lecture underscores advances in brain injury research”  
<http://engineering.columbia.edu/prof-barclay-morrison-lecture-underscores-advances-brain-injury-research>
- 1/30/2018 “Outfitting a football helmet to diagnose concussion”  
<http://www.columbianeurology.org/outfitting-football-helmet-diagnose-concussion>
- 12/1/2018 “New smart helmet could spot concussions in real time”  
<https://magazine.columbia.edu/article/new-smart-helmet-could-spot-concussions-real-time>
- 1/22/2019 “Cyton-based EEG Headset Prototype Used To Detect Brain Injury In Real-Time”  
<https://openbci.com/community/cyton-based-eeg-headset-prototype-used-to-detect-brain-injury-in-real-time/>

## **F. Other Honors and Awards**

- 1999 Biomedical Engineering Society Travel Award  
1999 National Neurotrauma Society Travel Award

- 2001 Richard Skalak Best Paper Award in the *Journal of Biomechanical Engineering* for 2000, Bioengineering Division of the American Society of Mechanical Engineers: **Morrison III, B.**, Meaney, D.F., Margulies, S.S., and McIntosh, T.K., *Dynamic mechanical stretch of organotypic brain slice cultures induces differential genomic expression: Relationship to mechanical parameters*. J.Biomech.Eng., 2000. **122**: p. 224-30.
- 2004 John Paul Stapp Best Paper Award in the *Stapp Car Crash Journal* for 2003: **Morrison III, B.**, Cater, H.L., Wang, C.B., Thomas, F.C., Hung, C.T., Ateshian, G.A., and Sundstrom, L.E., *A tissue level tolerance criteria for living brain developed with an in vitro model of traumatic mechanical loading*. Stapp Car Crash J., 2003. **47**: p. 93-105.
- 2006 The Kim Award for Student-Faculty Involvement, Fu Foundation School of Engineering and Applied Science, Columbia University, New York, NY
- 2006 Invited speaker, annual National Neurotrauma Symposium
- 2009 Keynote speaker, annual meeting of the International Research Council on Biomechanics of Injury
- 2010 Invited speaker, annual National Neurotrauma Symposium
- 2013 Cover image, Journal of Neurotrauma for Hue, C.D., Cao, S., Haider, S.F., Vo, K. V., Effgen, G.B., Vogel, E.W., Panzer, M.B., Bass, C.R., Meaney, D.F., **Morrison III, B.**, *Blood-brain barrier dysfunction after primary blast injury in vitro*, J. Neurotrauma, 2013, **30**: 1652-1663.
- 2015 Elected Vice President of the *International Research Council on Biomechanics of Injury*
- 2018 Elected Fellow of the *American Institute for Medical and Biological Engineering*
- 2019 Great Teacher Award, The Society of Columbia Graduates, *Columbia University*

## **F.1 Honors and Awards won by Morrison Research Group**

- 2005 **Student Travel Grant (Z. Yu)** from the NINDS Neural Interfaces Workshop 2005; “Highly compliant electrode arrays for improved modulus matching”, Advisor: **B. Morrison III**
- 2006 **Student Travel Grant (Z. Yu)** from the 24<sup>th</sup> Annual National Neurotrauma Symposium; “A new tool to study post-traumatic neuronal dysfunction: stretchable microelectrode arrays”, Advisor: **B. Morrison III**
- 2006 Extraordinary Teaching Assistant Award (B.S. Elkin), from the Fu Foundation School of Engineering and Applied Science, Columbia University, Advisor: **B. Morrison III**
- 2007 **National Science Foundation Graduate Research Fellowship (M.J. Simon)**; “Discovery of Protein Engineering Design Principles for Cell-Specific, Cell-Penetrating Peptides”, Advisor: **B. Morrison III**
- 2007 **Stapp Student Award (B.S. Elkin)** from the 51<sup>st</sup> Stapp Car Crash Conference; “Region-specific tolerance criteria for the living brain”, Second Place, Advisor: **B. Morrison III**

- 2008 **Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship (B.S. Elkin)** “Mechanical Properties of Brain Tissue: Implications for Traumatic Brain Injury” Advisor: **B. Morrison III**
- 2008 **Student Travel Grant (M.J. Simon)** from the 26<sup>th</sup> Annual National Neurotrauma Symposium; “TAT-mediated intracellular delivery is dependent upon cell-type and phenotype: implications for delivery to activated astrocytes following injury” Advisor: **B. Morrison III**
- 2009 **National Science Foundation Graduate Research Fellowship (M.R. Lamprecht)**; “Utilizing Dual Sensing Electrode Arrays to Delineate the Role of Astrocytes in Spike-Timing-Dependent Plasticity after Traumatic Brain Injury”, Advisor: **B. Morrison III**
- 2010 **Student Award (B.S. Elkin)** from the 36<sup>th</sup> Northeast Bioengineering Conference “Chondroitin Sulfate Proteoglycans Contribute to Brain Tissue Swelling Behavior”, Advisor: **B. Morrison III**
- 2010 **Student Travel Grant (B.S. Elkin)** from the 28<sup>th</sup> Annual National Neurotrauma Symposium, “The effect of chondroitinase ABC on brain tissue swelling *in vitro*”, Advisor: **B. Morrison III**
- 2010 **Ph.D. Student Poster Competition Finalist (B.S. Elkin)** from the Summer Bioengineering Conference of ASME, “Mechanical properties of the rat brain: effect of age and anatomical region”, Advisor: **B. Morrison III**
- 2011 **Student Travel Grant (M.R. Lamprecht)** from the Annual National Neurotrauma Symposium, “Combinational Drug Therapies as Treatment for Traumatic Brain Injury”, Advisor: **B. Morrison III**
- 2011 **Student Travel Grant (C.D. Hue)** from the Annual National Neurotrauma Symposium, “Blast overpressure induces disruption of brain endothelial monolayer integrity”, Advisor: **B. Morrison III**
- 2011 **Student Poster Competition Finalist (M.R. Lamprecht)** from the Annual National Neurotrauma Symposium, “Combinational Drug Therapies as Treatment for Traumatic Brain Injury”, Advisor: **B. Morrison III**
- 2012 **The Murray Mackay Young Researcher Award (C.D. Hue)** from the International Research Council on Biomechanics of Injury, “Blast-induced disruption of an *in vitro* blood-brain barrier model”, Advisor: **B. Morrison III**
- 2012 **Oral Presentation Award in Engineering, Mathematics and Physics (S.F. Haider)** from the Annual Biomedical Research Conference for Minority Students, “Increased solute permeability of an *in vitro* blood-brain barrier model exposed to blast overpressure”, Advisor **B. Morrison III**
- 2012 **Student Poster Competition Finalist (G.B. Effgen)** from the Annual National Neurotrauma Symposium, “A combination of 17 $\beta$ -estradiol and memantine after repetitive, mild traumatic brain injury reduces injury synergy”, Advisor: **B. Morrison III**
- 2013 **Columbia University Presidential Award for Outstanding Teaching by Graduate Students - Finalist (C.D. Hue)**, Advisor **B. Morrison III**
- 2014 **Acorda Scientific Excellence Award from Acorda Therapeutics (A. Huang)**, Advisor **B. Morrison III**

- 2014            **Student Travel Grant (C.D. Hue)** from the Annual National Neurotrauma Symposium, “Dexamethasone potentiates recovery of the blood-brain barrier after primary blast injury in vitro”, Advisor: **B. Morrison III**

## **G. Patents**

1. Spermidine derivatives for the treatment of chronic neurodegenerative diseases (European patent #EP2003704764; US patent application #20050124554)
2. Treatment of chronic neurodegenerative and related diseases (European patent #EP1471901)
3. Enzyme combinations to reduce brain tissue swelling (US9040040 B2)
4. Systems and methods for real-time concussion diagnosis by electroencephalogram activity monitoring (PCT application filed 6/17)
  - i. Licensed to NoMo Diagnostics Inc. (12/17)
5. Hyaluronidase for the treatment of cerebral edema (PCT application filed 12/17)

## **H. Professional Service**

### **H.1 Editorial Positions**

- 2010 – 2013 Associated Editor, *BMC Neuroscience*  
2011 – 2012 Review Editor, *Frontiers in Neurotrauma*  
2012 – 2018 Associate Editor, *Journal of Biomechanical Engineering*  
2016 – Associate Editor, *Journal of Neurotrauma*  
2020 – Associate Editor, *Brain Multiphysics*

### **H.2 Professional Board Positions**

- 2006 –2013 Engineering Conferences International, Advisory Board Member  
2012 – International Research Council on Biomechanics of Injury, Council Member  
2012 – 2015 International Research Council on Biomechanics of Injury, Publications Committee  
2014 – 2016 International Research Council on Biomechanics of Injury, Membership & Awards Committee  
2015 – Scientific Advisory Board, Center for Injury Epidemiology and Prevention at Columbia University Medical Center, NY  
2015 – 2018 Vice President, International Research Council on Biomechanics of Injury  
2016 – Board of Directors, Football Research, Inc., NY  
2018 – President, International Research Council on Biomechanics of Injury

### **H.3 Consulting**

1. NeoStem, Inc., NY, 2014
2. Falcon Sports Biomedical Engineering & Design, Inc., NY 2014 –
3. Honda R&D, Japan 2017

### **H.4 Conference Organization**

1. Material Research Society, Spring 2006, San Francisco: Symposium CC: Electrobiological Interfaces on Soft Substrates with Stephanie Lacour (Princeton University) and Joao Conde (Instituto Superior Tecnico)
2. IASTED International Conference on Biomechanics (BioMech 2006), Palma De Mallorca, Spain, Advisory Board
3. Material Research Society, Spring 2007, San Francisco: Advanced Materials for Neuroprosthetics with Daryl Kipke (University of Michigan), Stephanie Lacour (Cambridge University), Dustin Tyler (Case Western Reserve)
4. Material Research Society, Spring 2008, San Francisco: Materials and Technology for Fully Elastic Electronic Applications with Stephanie Lacour (Cambridge University) John Rogers (University of Illinois, Urbana-Champaign), Takao Someya (University of Tokyo)
5. Engineering Conference International, Nanotechnology for the Study of Cellular and Molecular Interactions, session titled “Nanoscience for Neuroscience”, June 14-18<sup>th</sup>, 2009.
6. Engineering in Medicine and Biology Conference, Co-chair of track 6.9 Neural Trauma with Michelle LaPlaca (Georgia Technical Institute), September 2-6<sup>th</sup>, 2009.
7. Material Research Society, Spring 2010, San Francisco: Stretchable electronics and conformal biointerfaces with Stephanie Lacour (Cambridge University) John Rogers (University of Illinois, Urbana-Champaign), Siegfried Bauer (Johannes-Kepler Universität Linz)
8. Material Research Society, Fall 2011, Boston: Compliant electronics and photonics with Sigfried Bauer (Johannes-Kepler Universitat Linz), Kunigunde Cherenack (ETH), and Tsuyoshi Sekitani (University of Tokyo)
9. Biomedical Engineering Society, Fall 2011, Hartford: Neural Engineering Track Chair with Lance Kam (Columbia University)
10. 6<sup>th</sup> International Conference on Biomechanics, International Association of Science and Technology for Development (IASTED), Conference Chair, November 7-9<sup>th</sup>, 2011.
11. 17<sup>th</sup> US National Congress on Theoretical & Applied Mechanics, Minisymposium Chair with King Yang (Wayne State University), “Traumatic Brain Injury Biomechanics”, June 15-20<sup>th</sup>, 2014.
12. International Research Council on Biomechanics of Injury Conference, Vice President, Malaga, Spain, September 14-16, 2016.
13. International Research Council on Biomechanics of Injury Conference, Vice President, Antwerp, Brussels, September 13-15, 2017.
14. International Research Council on Biomechanics of Injury Conference, Vice President, Athens, Greece, September 12-14, 2018.

15. International Research Council on Biomechanics of Injury Conference, President, Florence, Italy, September 11-13, 2019.

## **H.5 Session Chair**

1. 5<sup>th</sup> World Congress on Biomechanics, 2006, Munich, Germany: Impact biomechanics; spine kinematics and injury biomechanics with Dale Bass (University of Virginia)
2. IEEE Engineering in Medicine and Biology Conference 2006, New York City: Neural and Rehabilitation Engineering, and Neuromuscular Systems
3. Material Research Society, Spring 2006, San Francisco: Electrode coating: Electrical transfer I
4. Material Research Society, Spring 2007, San Francisco: Surface Biofunctionalization
5. NIH, NINDS workshop Combination Therapies for TBI, 2008, Rockville, MD: "Strategies for Testing Combination Therapies for TBI: *in vitro* screening" with Dr. David Meaney (*University of Pennsylvania*)
6. NIH, NINDS Workshop, Neurological Effects of Blast Injury, 2008 Rockville, MD: "Understanding the Biophysics and Biomechanics of the Brain" with Dr. Christopher White (*National Institute of Standards and Technology*).
7. Material Research Society, Spring 2008, San Francisco: Chaired 3 Sessions
8. Engineering Conference International, Nanotechnology for the Study of Cellular and Molecular Interactions, session titled "Nanoscience for Neuroscience", June 14-18<sup>th</sup>, 2009.
9. Engineering in Medicine and Biology Conference, "Neural Trauma", September 2-6<sup>th</sup>, 2009.
10. Northeast Bioengineering Conference, "Imaging of Biomaterials", March 28<sup>th</sup>, 2010.
11. Material Research Society, "Electrode-tissue Interface", April 8-9<sup>th</sup>, 2010.
12. 6<sup>th</sup> World Congress on Biomechanics, 2010, Singapore: "Head/Brain Injury: Tolerances", August 1-6<sup>th</sup>, 2010.
13. Material Research Society, Chaired 2 Sessions, November 29-30, 2011.
14. 45<sup>th</sup> Winter Conference on Brain Research, Snowbird, UT: "Blast traumatic brain injury", January 21-26, 2012
15. Biomedical Engineering Society, Fall 2012, Atlanta: "Neuro Trauma Injury & Repair I", October 26, 2012.
16. Biomedical Engineering Society, Fall 2012, Atlanta: "Neuro Trauma Injury & Repair II", October 27, 2012.
17. International Research Council on Biomechanics of Injury Conference, 2013, Gothenburg, Sweden: "Tissue Characterization II", September 12, 2013
18. International Research Council on Biomechanics of Injury Conference, 2013, Gothenburg, Sweden: "Tissue Characterization III", September 13, 2013
19. Biomedical Engineering Society, Fall 2013, Seattle: "Clinical Biomechanics", September 28, 2013.
20. International Research Council on Biomechanics of Injury Conference, 2014, Berlin, Germany: "Tissue Biomechanics - Tissue Characterization I", September 10, 2014

21. International Research Council on Biomechanics of Injury Conference, 2014, Berlin, Germany: "Tissue Biomechanics - Tissue Characterization II", September 11, 2014
22. Material Research Society, "Stretchable Electronic Materials for Transducers, Biosensors and Optical Devices I", April 8<sup>th</sup>, 2015.
23. International Research Council on Biomechanics of Injury Conference, 2015, Lyon, France: "Brain / Head Injury/ Tissue Biomechanics", September 10, 2015
24. International Research Council on Biomechanics of Injury Conference, 2015, Lyon, France: "Blast Injury", September 10, 2015
25. International Research Council on Biomechanics of Injury Conference, 2016, Malaga, Spain: "Brain / Head Injury / Helmets", September 15, 2016
26. International Research Council on Biomechanics of Injury Conference, 2016, Malaga, Spain: "Brain / Head Injury / Helmets", September 16, 2016
27. International Research Council on Biomechanics of Injury Conference, 2017, Antwerp, Brussels: "Tissue Biomechanics / Computer Modeling", September 14, 2017
28. International Research Council on Biomechanics of Injury Conference, 2017, Antwerp, Brussels: "Brain / Head Injury", September 14, 2017
29. International Research Council on Biomechanics of Injury Conference, 2018, Athens, Greece: "Head Injury / Vulnerable Road Users", September 12, 2018
30. International Research Council on Biomechanics of Injury Conference, 2018, Athens, Greece: "High Energy Trauma", September 14, 2018
31. 2<sup>nd</sup> Annual Biomedical Engineering Mechanomedicine Symposium, Columbia University, October 23, 2018
32. International Research Council on Biomechanics of Injury Conference, 2019, Florence, Italy: "Tissue Biomechanics S2-1", September 11, 2019
33. International Research Council on Biomechanics of Injury Conference, 2019, Florence, Italy: "Tissue Biomechanics S2-2", September 11, 2019

## **H.6 Conference Panel Participant**

1. Brain Injuries and Neuro-Regeneration Panel, Biomedical Science and Engineering Conference, Oak Ridge National Laboratory, May 26<sup>th</sup>, 2010.
2. IEEE EMBS Forum on Grand Challenges in Neuroengineering, Bethesda, May 7<sup>th</sup> & 8<sup>th</sup>, 2010
3. Kavli Salon on Neurodegeneration III, Rockefeller University, NY, November 5<sup>th</sup>, 2015
4. National Football League HeadHealthTECH Symposium panelist, Washington D.C., November 10<sup>th</sup> & 11<sup>th</sup>, 2016
5. Allen Frontiers Symposium, Brain Health Roundtable Discussion, Boston, MA, October 17<sup>th</sup> 2019
6. National Football League Helmet Challenge, Breakout Session Chair and Panel Participant, Youngstown, OH, November 14<sup>th</sup>, 2019

## **H.7 Grant Reviewer**

2009                    Center for Materials Innovation, Washington University in St. Louis

|      |   |
|------|---|
| 2009 | The Severnside Alliance for Translational Research, United Kingdom  |
| 2009 | Collaborative and Multidisciplinary Pilot Research (CaMPR) Phase I, Irving Institute for Clinical and Translational Research, Columbia University |
| 2010 | United States-Israel Binational Science Foundation, Israel  |
| 2010 | Wessex Medical Research, United Kingdom   |
| 2010 | Wellcome Trust, United Kingdom  |
| 2010 | National Football League Charities Medical Research Grants (internal Columbia review)   |
| 2011 | Emerging Technologies and Training in Neurosciences (ETTN-10), National Institutes of Health (2X)   |
| 2012 | New Jersey Commission on Spinal Cord Research   |
| 2012 | Research Council Katholieke Universiteit Leuven, Netherlands  |
| 2012 | Emerging Technologies and Training in Neurosciences (ETTN-10), National Institutes of Health  |
| 2012 | Collaborative and Multidisciplinary Research (CaMPR) Award Phase I, (internal Columbia review)  |
| 2013 | Collaborative and Multidisciplinary Research (CaMPR) Award Phase II, (internal Columbia review)   |
| 2015 | Research Initiative in Science and Engineering (RISE) (internal Columbia review)  |
| 2015 | Blavatnik Awards for Young Scientists (internal Columbia review)  |
| 2016 | NSF Partnerships for International Research and Education (PIRE) (internal Columbia review)   |
| 2017 | Research Initiative in Science and Engineering (RISE) (internal Columbia review)  |
| 2018 | Global Scholars Program (internal Columbia review)  |

## **H.8 Manuscript Reviewer**

1. *ACS Nano*
2. *Acta Biomaterialia*
3. *Annals of Biomedical Engineering*
4. *American Association of Pharmaceutical Scientists Journal*
5. *Biomechanics and Modeling in Mechanobiology*
6. *Biomedical Microdevices*
7. *Biophysical Journal*
8. *Cellular and Molecular Bioengineering*
9. *Computational Material Science*
10. *Computer Methods in Biomechanics and Biomedical Engineering*
11. *Cytoskeleton (formerly Cell Motility and the Cytoskeleton)*
12. *Experimental Neurology*
13. *IEEE Transactions on Biomedical Engineering*
14. *Journal of Biomechanics*

15. *Journal of Biomechanical Engineering*
16. *Journal of the Mechanical Behavior of Biomedical Materials*
17. *Journal of Neural Engineering*
18. *Journal of Neurotrauma*
19. *Journal of Physical Chemistry*
20. *Mechanical and Chemical Biosystems*
21. *Nature Nanotechnology*
22. *Neurobiology of Disease*
23. *PLoS ONE*
24. *Restorative Neurology and Neuroscience*

## **H.9 Abstract Reviewer**

1. National Neurotrauma Society annual meeting, 2001
2. 1<sup>st</sup> Joint Symposium of the National and International Neurotrauma Societies, 2002
3. Material Research Society, Symposium CC: Electrobiological Interfaces on Soft Substrates, Spring 2006
4. Material Research Society, Symposium U: Advanced Materials for Neuroprosthetics, Spring 2007
5. ASME Summer BED Conference Ph.D. student competition, 2007
6. Material Research Society, Symposium M: Materials and Technology for Flexible, Conformable, and Stretchable Sensors and Transistors, Spring 2007
7. National Neurotrauma Society annual meeting, 2008
8. ASME Summer BED Conference Ph.D. student competition, 2008
9. ASME Summer BED Conference Ph.D. student competition, 2009
10. National Neurotrauma Society annual meeting, 2009
11. Northeast Bioengineering Conference, 2010
12. Biomedical Science & Engineering Center Conference, Oak Ridge National Laboratory, 2010
13. Engineering in Medicine and Biology Conference, 2011
14. Biomedical Engineering Society Conference, 2011
15. 6<sup>th</sup> International Conference on Biomechanics, IASTED, 2011
16. Engineering in Medicine and Biology Conference, 2012
17. International Research Council on Biomechanics of Injury Conference, 2013
18. Engineering in Medicine and Biology Conference, 2013
19. Biomedical Engineering Society Conference, 2013
20. National Neurotrauma Society annual meeting, 2014
21. International Research Council on Biomechanics of Injury Conference, 2014
22. International Research Council on Biomechanics of Injury Conference, 2015
23. National Neurotrauma Society annual meeting, 2015

24. International Research Council on Biomechanics of Injury Conference, 2016
25. National Neurotrauma Society annual meeting, 2016

#### **H.10 Membership in Professional Societies**

1. Biomedical Engineering Society (BMES, 1995 – present)
2. Engineering in Medicine and Biology Society (IEEE EMBS, 1995 – present)
3. National Neurotrauma Society (1995 - present)
4. American Institute for Medical and Biological Engineering, Fellow (2018 – present)
5. Society for Neuroscience (1995 - 2010)
6. Material Research Society (2004 – 2012, 2015)
7. International Research Council on Biomechanics of Injury (2012 – present)
8. American Society of Mechanical Engineers (2013 – 2018)

#### **H.11 Invited Presentations**

1. April 7, 1997 “*In vitro* mechanical injury of organotypic brain slice cultures” for the Head Injury Research Center of the *University of Pennsylvania*
2. June 19, 1998 “An *in vitro* model of brain trauma: A combination of engineering and molecular biology” for the Institute for Medicine and Engineering of the *University of Pennsylvania*
3. July 15, 1999 “Mechanisms of cell death after traumatic brain injury: implications for therapeutic strategies” for the Department of Clinical Neurological Sciences, *University of Southampton, UK*
4. July 16, 1999 “Mechanisms of cell death after traumatic brain injury: implications for therapeutic strategies” for the Department of Neurosurgery, *King’s College Hospital, UK*
5. October 13, 1999 “Differential genomic expression after *in vitro* mechanical injury of organotypic brain slice cultures” for the joint BMES EMBS Annual Conference, Atlanta, GA
6. October 27, 1999 “Differential gene expression after mechanical injury of organotypic brain slice cultures” for the 29<sup>th</sup> Annual Meeting of the Society for Neuroscience, Miami, FL
7. October 16, 2000 “*In vitro* traumatic brain injury affects the expression of both cell death and cell survival genes” for the International Workshop on Medical and Engineering Aspects of Dynamic Head and Neck Injuries, Cranfield, UK
8. February 15, 2001 “Re-engineering *in vitro* models of traumatic brain injury” for the Neuroscience Research Department, Glaxo SmithKline, Harlow, UK
9. February 23, 2001 “Can animal models of traumatic brain injury be reproduced in tissue culture?” for the CNS Seminar Series, *Southampton University, UK*
10. December 14, 2001 “Molecular Consequences of *In vitro* Traumatic Brain Injury of Organotypic Slice Cultures” for the Department of Bioengineering, *University of Toledo*

11. March 14, 2002 “Molecular consequences of *in vitro* traumatic brain injury of organotypic slice cultures” for the Department of Bioengineering, *University of Pittsburgh*
12. April 19, 2002 “Molecular consequences of *in vitro* traumatic brain injury of organotypic slice cultures” for the Department of Bioengineering, *Wayne State University*
13. April 22, 2002 “Utilizing *in vitro* models to study traumatic brain injury” for the Biomechanics Division of the National Highway Traffic Safety Administration, Washington, D.C.
14. April 23, 2002 “Utilizing *in vitro* models to study traumatic brain injury” for the Division of Neurosciences, Walter Reed Army Institute of Research, Silver Spring, MD
15. April 25, 2002 “Molecular consequences of *in vitro* traumatic brain injury of organotypic slice cultures” for the Department of Biomedical Engineering, *City College of New York*
16. April 29, 2002 “Molecular consequences of *in vitro* traumatic brain injury of organotypic slice cultures” for the Department of Biomedical Engineering, *Columbia University*
17. May 21, 2003 “Development of universal injury criteria for living brain tissue” for the NATO sponsored Personal Protection joint AVT-HFM Meeting, Koblenz, Germany.
18. October 27, 2003 “A tissue level tolerance criteria for living brain developed with an *in vitro* model of traumatic mechanical loading”, Stapp Car Crash Conference, San Diego, CA.
19. July 21, 2005 “Quantitative Tolerance Criteria for SIMon: Cell Death and Dysfunction” Southern Consortium for Injury Biomechanics, *University of Alabama*, Birmingham, AL.
20. October 6, 2005 “Brain constitutive properties measured with atomic force microscopy: implications for head injury” for the Department of Biomedical Engineering, *Georgia Technical Institute*
21. November 17, 2005 “Are sub-regions of the hippocampus more vulnerable to post-traumatic cell death? Insights from atomic force microscopy and an *in vitro* model” for the Virginia Tech - Wake Forest Center for Injury Biomechanics, *Virginia Technical Institute*
22. November 30, 2005 “*In vitro* approaches can increase our understanding of head injury biomechanics using atomic force microscopy and an organotypic slice culture model of traumatic brain injury” for the Department of Biomedical Engineering, *City College of New York*
23. December 1, 2005 “Heterogeneous constitutive properties of the hippocampus measured by atomic force microscopy may explain trauma-induced, regional patterns of cell death” for the Departments of Biomedical Engineering and Mechanical and Aerospace Engineering, *University of Virginia*
24. December 12, 2005 “Hippocampal mechanical properties determined with the atomic force microscope: implications for head injury” for the Department of Biomedical Engineering, *Wayne State University*
25. February 20, 2006 “Regional brain material properties and injury tolerance criteria” for the Department of Neurosurgery, *University of Pennsylvania*
26. March 30, 2006 “Structural properties of the hippocampus and injury tolerance criteria” for the Department of Biomedical Engineering, *Duke University*
27. June 19, 2006 “Understanding the biomechanics of head injury” for the Summer Undergraduate Research Fellowship program, *Columbia University*

28. July 8, 2006 “Flexible microelectrode arrays” for the 24<sup>th</sup> Annual National Neurotrauma Society Conference, St. Louis, MO
29. November 3, 2006 “Is post-traumatic, intra-hippocampal regional vulnerability a function of biomechanical heterogeneity?” for the Spinal Cord and Brain Injury Research Center, *University of Kentucky*
30. December 13, 2006 “Quantitative tolerance criteria for SIMon: Cell death and dysfunction” for the Southern Consortium of Injury Biomechanics, *University of Alabama*
31. February 26, 2007 “Advances in cellular brain injury biomechanics” for the Brain Injury Symposium, National Highway Traffic Safety Administration
32. March 6, 2007 “Flexible electronics and stretchable microelectrode arrays” for the Center for Biomaterials & Advanced Technologies, Medical Devices Group, Ethicon, Inc. (J&J)
33. March 12, 2007 “Reducing the societal cost of traumatic brain injury”, for the Virginia Tech - Wake Forest Center for Injury Biomechanics, *Virginia Technical Institute*
34. April 27, 2007 “Toward understanding regional vulnerability in traumatic brain injury” for the Department of Biomedical Engineering, *New Jersey Institute of Technology*
35. May 16, 2007 “Softening the impact of traumatic brain injury” for the Spinal Cord and Brain Injury Research Center, *University of Kentucky*
36. December 6, 2007 “Quantitative tolerance criteria for SIMon: Cell death and dysfunction” for the Southern Consortium of Injury Biomechanics, *University of Alabama*
37. January 27, 2008 “Biomechanics and modeling of mild traumatic brain injury” for the *Winter Conference on Brain Research*, Snowbird, UT
38. February 11, 2008 “Mind storm: Traumatic brain injury... a silent epidemic” for Café Science, *Columbia University*
39. May 8, 2008 “Development of methods to enable the directed evolution of cell penetrating peptides for targeted brain cell delivery” *Wyeth Research*, NJ
40. October 3, 2008 “The Neurotrauma and Repair Laboratory” for the Graduate Student Seminar Series, *Columbia University*, NY.
41. October 15, 2008 “Modeling traumatic brain injury: lessons learned and critical data” for the Man Vehicle Laboratory, *Massachusetts Institute of Technology*, MA.
42. November 14, 2008 “Enabling data for modeling traumatic brain injury” for the Biomechanics & Injury Mitigation Systems, *Johns Hopkins University Applied Physics Laboratory*, MD.
43. March 19, 2009 “Modeling traumatic brain injury *in vitro*: functional changes in the absence of cell death” for the Biomedical Science and Engineering Conference, *Oak Ridge National Laboratory*, TN.
44. April 6, 2009 “Vertically aligned carbon nanofiber arrays for neuroscience” for the CTSA Nanotechnology Seminar Series, *Columbia University Medical Center*, NY.
45. June 5, 2009 “Brain tissue heterogeneity and implications for traumatic brain injury” for Grand Rounds in the Department of Neurosurgery, *Medical College of Wisconsin*, WI.
46. June 17, 2009 “Vertically aligned carbon nanofiber arrays for electrophysiological and electrochemical recordings from brain slices” for the Nanotechnology for the Study of Cellular and Molecular Interactions Conference, *Engineering Conferences International*, Barga, Italy.

47. September 3, 2009 “Quantification of functional alterations after in vitro traumatic brain injury” for the “Neural Injury” session at the *Engineering in Medicine and Biology Conference*, MN.
48. September 4, 2009 “Neural sensing of electrical activity with stretchable microelectrode arrays” for the “Neural Sensing and Applications” session at the *Engineering in Medicine and Biology Conference*, MN.
49. September 9, 2009 “Advances in the study of brain injury biomechanics”, **Keynote lecture** for the *International Research Council on Biomechanics of Injury* conference, UK.
50. November 12, 2009 “Studying traumatic brain injury through a combination of biomechanics and cell biology”, for Grand Rounds, Department of Neurosurgery, *Columbia University Medical Center*, NY.
51. February 11, 2010 “Compliant tissue/electronics interfaces for biomedical studies”, for the Electrical Engineering Department, *Princeton University*.
52. March 18, 2010 “Brain material properties and tolerance criteria: critical ingredients for computational models of brain injury” for the Mechanical Engineering department, *City College of New York*.
53. March 28, 2010 “Mechanical properties of anatomical structures of the rat brain” for the *Northeast Bioengineering Conference*, NY.
54. May 5, 2010 “Material properties and failure criteria for brain: understanding brain injury biomechanics” for the Department of Chemistry, Chemical Biology, and Biomedical Engineering, *Stevens Institute of Technology*.
55. June 15, 2010 “Outcome measures in *in vitro* modeling of TBI / validation of *in vitro* models” for the *National Neurotrauma Symposium*, NV.
56. August 3, 2010 “Determining a mechanical tolerance criterion for neuron function within the hippocampus” for the *6<sup>th</sup> World Congress on Biomechanics*, Singapore.
57. August 12, 2010 “Heterogeneous material properties and tolerance criteria for brain injury models” for the DoD Brain Injury Computational Modeling Expert Panel, FL.
58. October 20, 2011 “Region and mechanism-specific tolerance criteria for traumatic brain injury” for the Columbia University Seminar on Injury Prevention, NY.
59. November 9, 2011 “Traumatic Brain Injury Tolerances: *In Vitro* Insights” for the Safar Center, University of Pittsburgh Medical Center, PA.
60. January 12, 2012 "Biomechanical insight to traumatic brain injury from brain slice models" for the Center for Neuroscience & Regenerative Medicine, Uniformed Services University of the Health Sciences, MD.
61. November 14, 2012 "Brain trauma: Biomechanical Insights" for First Year Seminars in Modern Biology, *Columbia University*, NY
62. March 21, 2013 “Traumatic Brain Injury: Inertia- and Blast-Injuries and an Edema Therapy” for Grand Rounds, Department of Neurosurgery, *Columbia University Medical Center*, NY
63. August 10, 2013 “Better Strategies to Prevent Brain Injuries”, for *Aspen BrainLab*, Aspen, CO
64. October 2, 2013 "Brain trauma from Blast" for First Year Seminars in Modern Biology, *Columbia University*, NY

65. December 10, 2013 “From biomechanics to cerebral edema after traumatic brain injury” for Visiting Professor Research Seminar, Department of Anesthesiology, *Columbia University Medical Center*, NY
66. March 3, 2014 “Traumatic brain injury: at the intersection of neuroscience and biomechanics” for the Current Issues in Neuroscience seminar series, *Teacher College, Columbia University*, NY
67. September 23, 2014 “Biomechanics at the mesoscopic scale: Knowledge and tools to define tolerance” for Army Research Laboratory, Aberdeen Proving Grounds, MD
68. October 14, 2014 “Traumatic brain injury alters electrophysiological function in organotypic brain slice cultures” for The Head Injury Center CNS Injury Seminar Series, *University of Pennsylvania*, PA
69. November 12, 2014 "Mild traumatic brain injury – in a dish!?" for First Year Seminars in Modern Biology, *Columbia University*, NY
70. December 4, 2014 “Neuronal network function is altered after in vitro traumatic brain injury” for the Neuroscience Seminar, *Tulane University*, LA
71. February 6, 2015 “Learning deficits in hippocampal slice cultures after traumatic brain injury” for the Biomedical Engineering Seminar Series, *New Jersey Institute of Technology*, NJ
72. June 23, 2015 “Traumatic brain injury”, for the GEM4 2015 Summer Institute, *Carnegie Mellon University*, PA
73. September 17, 2015 “Heading Off Damage: New insights in traumatic brain injury”, for Columbia University’s Mortimer B. Zuckerman Mind Brain Behavior Institute, Stavros Niarchos Foundation – Brain Insight Lecture Series, *Columbia University*, NY.
74. November 5, 2015 Kavli Salon on Neurodegeneration III, Roundtable discussion, *Rockefeller University*, NY.
75. December 4, 2015 “Reproducing mild traumatic brain injury in a slice culture model”, for the Columbia Translational Neuroscience Initiative, *Columbia University*, NY.
76. May 6, 2016 “Comparing primary and tertiary phases of blast traumatic brain injury with an in vitro model”, for Department of Anatomy & Neurobiology, *Virginia Commonwealth University*, VA.
77. June 16, 2016 “Studying repetitive TBI in a culture dish”, for the Center for Injury Epidemiology and Prevention, *Columbia University*, NY.
78. July 13, 2016 “Biomechanics for Prevention: Preventing synergy of repetitive mTBI” for the Big Ten–Ivy League Traumatic Brain Injury Research Collaboration, Philadelphia, PA.
79. October 12, 2016 “Mild TBI and Learning Impairments in an Organotypic Slice Culture Mode” for *Burke Medical Research Institute*, White Plains, NY.
80. December 14, 2016 “Synaptic Disruption after Mild Traumatic Brain Injury in an Engineered Organotypic Slice Culture System” for Department of Biomedical Engineering, *Southern University of Science and Technology*, Shenzhen, China.
81. February 16, 2017 “Mechanobiology of Traumatic Brain Injury: Applications to Prevention and Treatment” for Columbia Engineering in Medicine Symposium, *Columbia University*, NY.

82. March 13, 2017 “In Pursuit of Treatments for Traumatic Brain Injury” for Institute of Engineering in Biology and Medicine, *Pontificia Universidad Catolica de Chile*, Santiago, Chile.
83. March 14, 2017 “Columbia Engineering: An Undergraduate Snapshot” for Institute of Engineering in Biology and Medicine, *Pontificia Universidad Catolica de Chile*, Santiago, Chile.
84. April 2, 2017 “Primary Blast Injury Decreases Neuronal Plasticity” for Northeastern Bioengineering Conference, *New Jersey Institute of Technology*, NJ.
85. April 14, 2017 “Continuing Efforts to Reduce the Societal Costs of Brain Injury: Material Properties, Mild Injury, and Interventions”, for Department of Biomedical Engineering, *University of Virginia*, VA.
86. April 22, 2017 “Traumatic Brain Injury from a Biomedical Engineering Perspective” for Days on Campus, *Columbia University*, NY.
87. April 28, 2017 “Rescuing Deficits in Neuronal Plasticity after Mild Traumatic Brain Injury” for Faculty of Basic and Biomedical Sciences, *Paris Descartes University*, Paris, France.
88. May 11, 2017 “Investigating Traumatic Brain Injury: Engineering and Neuroscience Collide” for the Neuroscience Education, University Research and Outreach Group, *University of Chicago*, IL.
89. October 10, 2017 “Thinking about concussion” for Columbia University Scholars Program, *Columbia University*, NY.
90. November 19, 2017 “NoMo Diagnostics, Concussion Detection Technology” for New York Angels, NY.
91. May 23, 2018 “Concussion Biomechanics and Mechanisms” for the Epidemiology and Population Health Summer Institute at Columbia University (EPIC), Mailman School of Public Health, *Columbia University*.
92. October 12, 2018 “Biomechanics, Traumatic Brain Injury, and Cerebral Edema”, Session keynote for the technical meeting of the Society of Engineering Science session, Madrid, Spain.
93. October 17, 2018 “Approaches to the Prevention and Treatment of Concussion” for the Neuroscience and Law Center, *Fordham Law School*.
94. November 12, 2018 “A Treatment for Cerebral Edema Grounded in Biomechanics” for the Department of Biomedical Engineering, *University of Delaware*.
95. February 21, 2019 “A Biomechanically-Inspired Treatment for Cerebral Edema” for the Engineering in Medicine Symposium, *Columbia University*.
96. March 15, 2019 “Biomechanical Insights into Brain Edema and its Treatment” for the Department of Bioengineering, *Stanford University*.
97. April 16, 2019 “Biomechanical Insights to Improve Treatment of Traumatic Brain Injury” for the Department of Mechanical Engineering, *Columbia University*.
98. April 26, 2019 “Deficits in Neuronal Functional after Blast Exposure” for the Army Research Laboratory, Aberdeen Proving Grounds, MD.
99. September 26, 2019 “Traumatic Brain Injury Biomechanics and Mechanisms” for the Department of Neurosurgery Grand Rounds, *Columbia University Irving Medical Center*.

## **I. Academic Service**

### **I.1 University Committees**

- 2007 – 2013 University Institutional Animal Care and Use Committee (Morningside)
- 2013 – University Financial Conflict of Interest Committee (Morningside), Co-chair 2018-
- 2013 – University Committee on Animal Welfare
- 2014 Promotions and Tenure Committee, School of Arts and Sciences (*ad hoc*, external reader)
- 2014 – Committee on Instruction, Columbia College and General Studies, SEAS representative
- 2014 – Educational Policy and Planning Committee, Columbia College and General Studies, SEAS representative
- 2014 – 2016 Provost's Middle States Commission on Higher Education Accreditation Subcommittee
- 2015 – 2017 Chandler Classroom Steering Committee
- 2015 – 2016 Educational Policy and Planning Committee, Columbia College and General Studies, working group for course numbering
- 2016 – 2017 University Travel Policy Committee
- 2017 – JED Foundation Assessment Steering Committee
- 2017 – Center for Teaching and Learning Advisory Board
- 2019 Vice President of Student Affairs, Office of University Life Search Committee
- 2019 SEAS Representative to the visiting Association of University Administrators group from the UK

### **I.2 School of Engineering and Applied Science Committees and Duties**

- 2012 – 2014 SEAS Committee on Instruction
- 2012 – 2014 SEAS Advisory Committee on Undergraduate Curriculum
- 2013 Chair, SEAS-level Tenure Review Committee (*ad hoc*)
- 2014 – Vice Dean for Undergraduate Programs, SEAS
- 2014 – Co-Chair, SEAS Committee on Instruction
- 2015 Facilitator, SEAS Strategic Forum Discussion on Undergraduate Education
- 2016 Presenter, SEAS Strategic Forum Discussion on Graduate Education
- 2016 SEAS Website Redesign Review Committee
- 2016 – 2018 Academic Integrity Task Force
- 2016 – 2019 ABET Coordination Team for Reaccreditation
- 2016 – 2017 Initiated the Johnson and Johnsons Scholars Program
- 2016 – 2017 Initiated Engineering Summer Scholarship for students on financial aid
- 2017-2018 Johnson and Johnsons Scholars Program, Principal Investigator
- 2017 – 2019 Interschool Committee to institute new timing for Course Evaluations
- 2018 – 2019 Provost's Academic Review Preparation Committee, met with internal and external review panels

- 2018-2019 Johnson and Johnsons Scholars Program, Principal Investigator
- 2019 Interviewed candidate for SEAS Associate Director of Wellness
- 2019 Led task force to improve first-year exposure to SEAS majors and generate a request for proposals to enhance offerings
- 2019-2020 Johnson and Johnsons Scholars Program, Principal Investigator
- 2019 – Organized Faculty Teaching Innovations Lunch Series
- 2020 Orchestrated introduction of Spatial Visualization and Reasoning Skills in the Summer Bridge Program of the Academic Success Program
- 2019 Multivariable Calculus Review of the Impact on Student Preparation
- 2019 Assisted in preparing presentation to the Board of Trustees subcommittee on the Undergraduate Experience
- 2020 Initiated efforts to develop online interactive modules for calculus review
- 2020 SEAS Dean’s Retreat participant
- 2020 Reviewed Admissions Applications for Egleston Candidates

### **I.3 Departmental Committees and Duties**

- 2003 – 2012 Undergraduate Student Advisor
- 2003 – 2012 Graduate Student Advisor
- 2003 – 2005 Chair of the International Student Exchange Program Committee
- 2003 – 2007 Chair of the Industrial Liaison Committee
- 2004 – 2005 Chair of the Departmental Holiday Reception Committee
- 2004 – 2006 Member of the ABET Committee
- 2004 – 2014 Member of the Undergraduate Curriculum Committee
- 2004 – 2014 Member of the Undergraduate Laboratory Committee
- 2004 – 2006 Member of the BME New Science Building Space Proposal Committee
- 2004 – 2008 Member of the Biomechanics Track Faculty Search Committee
- 2005 Member of the Coulter Foundation Partnership Preliminary Application Committee
- 2006 – 2007 Chair of the Biomechanics Track Faculty Search Committee: Hired Drs. Chris Jacobs and Hayden Huang
- 2006 – 2012 Member of the Undergraduate Teaching Laboratory Committee
- 2006 Chair of the Undergraduate Teaching Laboratory Committee
- 2007 – 2008 Chair of the Biomechanics Track Faculty Search Committee: Hired Dr. Henry Hess
- 2007 – 2010 Chair of the Undergraduate Curriculum Committee
- 2007 – 2010 3-2 Program (Transfer Student) Advisor
- 2008 – 2009 Instituted an Online Undergraduate Advising and Academic Tracking System
- 2009 Member of the Search Committee for Instructor in Biomedical Engineering: Hired Dr. Aaron Kyle
- 2010 Instituted a totally revised Online Undergraduate Advising and Academic Tracking System

- 2011 – 2013 Member of the ABET Renewal Committee
- 2012 – 2014 Vice-chair, Department of Biomedical Engineering
- 2012 – Administrative Committee, Department of Biomedical Engineering
- 2013 – 2014 Member of the Biomedical Engineering Instructor Search Committee: Hired Dr. Katherine Reuther
- 2013 – 2014 Chair, Biomedical Engineering Neural Engineering Faculty Search Committee: Hired Dr. Josh Jacobs
- 2018 Panelist, Careers in Academia for the Department of Biomedical Engineering Retreat
- 2019-2020 Department of Biomedical Engineering 20<sup>th</sup> Anniversary Organizing Committee

#### **I.4 Department, School, and University Outreach**

- 2003 Organized the BME-Center for Career Education Orientation
- 2004 Engineering Invitational Presentation on BME Senior Design
- 2004 Parents' Weekend Open House
- 2004 Organized the BME-Center for Career Education Orientation
- 2005 Days on Campus Luncheon and Laboratory Tours
- 2005 Organized Engineering Open House for Rising Sophomores
- 2005 Organized Sophomore Group Advising Session
- 2005 Departmental Participant in Days on Campus Luncheon and Laboratory Tours
- 2005 Hosted Katherine Jernberg, Dean of Admissions, Keck Graduate Institute
- 2006 Departmental Gateway Lecture
- 2006 Participant in Collegiate School Laboratory Tours
- 2006 SURF lecture, "Understanding the biomechanics of head injury"
- 2006 Departmental Coordinator for Summer Engineering Invitational
- 2006 Academic Resources Fair Departmental Representative
- 2006 Prospective Student Host: Brandon Boston
- 2006 Prospective Student Host: Nicholas Fountoulakis
- 2007 Departmental Gateway Lecture
- 2007 Prospective Student Host: Janelle Geddes
- 2007 BMES Career Panel Member during Engineering Week
- 2007 Faculty Representative at Summer Engineering Invitational
- 2007 3-2 Program Student Orientation
- 2007 Organized two Faculty Academic Advising Training Sessions
- 2007 Conducted the Town Hall Meeting for Junior BME Students
- 2008 Café Science, Featured Scientist
- 2008 Departmental Gateway Lecture
- 2008 Departmental Representative for Days on Campus
- 2008 Prospective student host: Colin Hoffman
- 2008 Departmental Representative at the Engineering Invitational Parent Student Reception

- 2008 Prospective student host: Nabil Mehta
- 2008 Departmental Representative for SEAS Major Night
- 2008 3-2 Program Student Orientation
- 2008 Conducted the Town Hall Meeting for Junior BME Students
- 2008 Met with Diversified Search Ray & Berndston to inform the search for Dean of Division of Student Affairs
- 2009 Untenured Faculty Focus Group Leader
- 2009 Facilitator of a meeting between Junior Faculty and Dean Feniosky Pena-Mora
- 2009 Presented to the SEAS Committee on Instruction the BME system for undergraduate advising and tracking
- 2009 Days on Campus Biomedical Engineering Department Representative
- 2009 Participant in Collegiate School Laboratory Tours
- 2009 Prospective student host: Natasha Satya
- 2009 Engineering Invitational Biomedical Engineering Lecture
- 2009 New Student Orientation Program Biomedical Engineering Representative
- 2009 SEAS Parents Weekend Lecture
- 2009 Conducted the Town Hall Meeting for Junior BME Students
- 2010 Departmental Gateway Lecture
- 2010 Addressed the President's Council, Cold Spring Harbor Laboratory
- 2011 Participant in Collegiate School Laboratory Tours
- 2012 Science Expo, The School at Columbia
- 2012 First Year Seminars in Modern Biology BIOL C2908, "Brain Trauma: Biomechanical Insights"
- 2012 Participant in Collegiate School Laboratory Tours
- 2013 Alumni Weekend Departmental Lunch representative
- 2013 Participant in Collegiate School Laboratory Tours
- 2013 First Year Seminars in Modern Biology BIOL C2908, "Brain Trauma: Biomechanical Insights"
- 2013 – 2014 Organizing Committee, Science Expo, The School at Columbia University
- 2014 ResInc, introductions at fall kickoff speaker series
- 2014 Just Desserts, Dean's office representative
- 2014 Student Leadership Dinner, Dean's office representative
- 2014 First Year Seminars in Modern Biology BIOL C2908, "Mild traumatic brain injury – in a dish!?"
- 2014 Engineering Career Fair Dinner, Dean's office representative
- 2014 Faculty Excellence Celebration dinner with donors, Dean's office representative
- 2015 Columbia Engineering Scholarship Dinner, Dean's office representative
- 2015 Columbia Engineering Alumni Association Dinner, speaker
- 2015 Columbia Engineering Days on Campus, speaker
- 2015 Davis Scholars lunch for prospective families
- 2015 Perspectives on Diversity Alumni Brunch

- 2015 SEAS Awards of Distinction Dinner, speaker
- 2015 Archimedes Dinner
- 2015 Carleton Commons Dedication lunch
- 2015 SWE dinner, speaker
- 2015 Academic Success Program lunch
- 2015 SEAS Senior Dinner
- 2015 Columbia Engineering Class Day
- 2015 Prospective Egleston Scholars reception
- 2015 Alumni Reception and Dinner
- 2015 Convocation
- 2015 Egleston Family welcome reception
- 2015 Academic Assembly
- 2015 SEAS Manhattanville brainstorming session, participant
- 2015 Just Desserts, speaker
- 2015 SEAS Strategy meeting on undergraduate education, chaired & presented
- 2015 Race, Ethnicity and University Life: Next Steps from Office of University Life
- 2015 Chairs' Meeting, presentation on advising
- 2015 SEAS Faculty Meeting, presentation on advising
- 2015 Columbia Engineering Alumni Association Cruise
- 2015 Summer Engineering Research Invitational, speaker
- 2015 – 2016 Organizing Committee, Science Expo, The School at Columbia University
- 2016 SEAS strategy meeting on graduate education, presented
- 2016 Egleston Scholar enhanced advising
- 2016 Scholarship Dinner
- 2016 Columbia Engineering Young Alumni dinner, speaker
- 2016 Lynn Conway Lunch on Diversity in STEM
- 2016 Magill Lecture by Lynn Conway
- 2016 Engineering Strategic Discussion Dinner
- 2016 Senior Toast
- 2016 Egleston Recruitment Dinner
- 2016 Days on Campus Reception, speaker
- 2016 Davis Scholars Lunch for prospective families
- 2016 Diversity brunch
- 2016 Deans in Halls, named guest
- 2016 Awards of Distinction dinner
- 2016 Senior Dinner
- 2016 Academic Success Program lunch, speaker
- 2016 Egleston Scholars Graduation Reception, speaker
- 2016 Rio Innovation Hub Design Challenge, chaperone
- 2016 New Faculty Orientation, speaker

- 2016 First in Family Orientation, speaker
- 2016 Transfer Student Welcome Reception
- 2016 Academic Resource Fair
- 2016 ResInc Welcome Reception, speaker
- 2016 Just Desserts Networking Reception, speaker
- 2016 American Council of Engineering Companies of New York Annual Engineering Excellence Awards, judge
- 2016 Work-Life Balance in Academia Panelist, SEAS Path to Professorship Workshop
- 2017 Met with Boeing representatives for recruiting students
- 2017 Senior Toast
- 2017 American Council of Engineering Companies of New York Engineering Excellence Awards Gala
- 2017 Columbia Engineering Scholarship Dinner
- 2017 Johnson and Johnson Scholars meeting, presenter
- 2017 Student Leadership Lunch
- 2017 Davis Scholars Lunch, Days on Campus
- 2017 Diversity Brunch, Days on Campus
- 2017 Columbia Engineering Awards of Distinction Dinner, speaker
- 2017 Columbia Engineering Senior Dinner
- 2017 Academic Success Program Senior Banquet, speaker
- 2017 Alumni Dinner
- 2017 Oversaw renovations of CEPSR 414
- 2017 – 2018 Oversaw implementation of APMA E2000 Multivariable Calculus of Engineers
- 2017 – 2018 Oversaw implementation of ORCA E2500 Foundations in Data Science
- 2017 Egleston Scholars Welcome Reception, speaker
- 2017 New Family Orientation, panelist
- 2017 New Faculty Orientation, speaker
- 2017 Academic Assembly
- 2017 Visiting Student Reception
- 2017 Transfer and Combined Plan Student Reception
- 2017 SCOOPS activity for first year students
- 2017 Family Weekend Welcome Reception
- 2017 Just Desserts Student-Alumni Networking Reception, speaker
- 2017 Tree Lighting Ceremony, speaker
- 2018 Pi-Day Student Reception, speaker
- 2018 Columbia Engineering Scholarship Dinner
- 2018 Columbia Engineering Awards of Distinction Dinner, speaker
- 2018 Columbia Engineering Senior Dinner
- 2018 Academic Success Program Senior Banquet, speaker
- 2018 Columbia Engineering Awards of Distinction Dinner, speaker
- 2018 Faculty Roundtable on Financial Conflict of Interest, panelist

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2018 Columbia Engineering Senior Dinner  
2018 Columbia Engineering Benefactors Dinner  
2018 Engineering Class Day, speaker  
2018 Senior Toast  
2018 Columbia Engineering Scholarship Dinner  
2018 Engineering Reunion Dinner  
2018 NSOP Family Program Resource Program, panelist  
2018 Egleston Scholars Reception  
2018 Columbia Engineering Family Dinner  
2018 Columbia Engineering Visiting Students Welcome  
2018 Parents Weekend Welcome with Dean Boyce  
2018 Columbia Engineering representative to welcome Cuban President Miguel Diaz-Canal  
2018 American Council of Engineering Companies (ACEC) Engineering Excellence Awards, judge  
2018 Mental Health Task Force Mixer, representative  
2018 Met with Jeffry Franklin, Columbia Engineering Alumnus  
2018 Tree Lighting Ceremony, speaker  
2019 Met with Rear Admiral Mike Bernacchi, head of all Naval Reserve Officers Training Corps (NROTC)  
2019 Columbia Engineering Alumni Association Dinner  
2019 SEAS Scholarship Dinner  
2019 American Council of Engineering Companies of New York Engineering Excellence Awards Gala  
2019 Undergraduate Admissions Diversity Brunch  
2019 SEAS Awards of Distinction Dinner  
2019 Panel Participant, "How to get into graduate school"  
2019 Senior Toast  
2019 SEAS Archimedes Award Dinner  
2019 Academic Success Program Graduation Lunch  
2019 SEAS Senior Dinner  
2019 Egleston Graduation Reception, speaker  
2019 NROTC Commissioning Ceremony, speaker  
2019 NSOP Leadership Meeting  
2019 New Faculty Orientation: Student Advising, presenter  
2019 NSOP First-in-Family Reception  
2019 NSOP Academic Resource Panel, speaker  
2019 NSOP Egleston Reception, speaker  
2019 Convocation Representative for SEAS  
2019 SEAS Academic Assembly  
2019 Visiting and Exchange Students Welcome

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- 2019 Transfer and Combined Students Welcome
- 2019 Columbia Engineering Alumni Association Ties and Scarves Event
- 2019 Columbia Engineering Alumni Association Just Desserts, speaker
- 2019 Board of Visitors Reception
- 2019 SEAS Work-Life Balance Panel: Path to Professorship, speaker
- 2019 Tree Lighting Ceremony, speaker