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[Site Index](#)
[Video Index](#)
[Contact Us](#)

[HOME](#)
[DEPARTMENT OVERVIEW](#)
[ACADEMICS](#)
[RESEARCH](#)
[PEOPLE](#)
[CAREERS](#)
[NEWS AND EVENTS](#)
[RESOURCES](#)
[GLOBALIZATION](#)

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[BME Newsletter Fall 09](#)
[Graduate Student Handbook](#)
[Graduate Seminar](#)
[Undergraduate Program](#)
[Graduate Program](#)
[SEAS Bulletin](#)
[Contact Us](#)
[Directions](#)
[<-- Return to the previous page](#)

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[Home Page](#)


EDUCATION

- 1988-92: B.S.E., Biomedical Engineering, Johns Hopkins University, Baltimore, MD
- 1992-94: M.S.E., Bioengineering, University of Pennsylvania, Philadelphia, PA
- 1994-99: Ph.D., Bioengineering, University of Pennsylvania, Philadelphia, PA
- 1999: Postdoctoral, Traumatic Brain Injury, University of Pennsylvania, Philadelphia, PA
- 2000-1: Postdoctoral, Head Injury/Ischemia, University of Southampton, United Kingdom
- 2001-2: Postdoctoral, Traumatic Brain Injury, University of Southampton, United Kingdom

PROFESSIONAL EXPERIENCE

- 1994: Teaching Assistant, Department of Bioengineering, University of Pennsylvania
- 1994-99: Research Fellow, Department of Bioengineering, University of Pennsylvania
- 1998: Teaching Assistant, Department of Bioengineering, University of Pennsylvania
- 1999-2000: Postdoctoral Fellow, Department of Neurosurgery, University of Pennsylvania
- 2000-2002: Postdoctoral Fellow, Division of Clinical Neurosciences, University of Southampton
- 2003- : Assistant Professor, Department of Biomedical Engineering, Columbia University

HONORS

- 1993-97: Ashton Fellowship, University of Pennsylvania
- 1999: The S.R. Pollack Award for Excellence in Graduate Bioengineering Research, University of Pennsylvania
- 1999: Biomedical Engineering Society Graduate Student Research Award
- 1999: First Place, National Neurotrauma Society Student Competition
- 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
- 2004: John Paul Stapp Best Paper Award in the *Stapp Car Crash Journal* for 2003
- 2006: The Kim Award for Student-Faculty Involvement, Fu Foundation School of Engineering and Applied Science, Columbia University

PROFESSIONAL ACTIVITIES

1. 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. Engineering Conferences International, Advisory Board Member, 2006-present
4. 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)
5. IASTED International Conference on Biomechanics (BioMech 2007), Honolulu, HI, Program Committee Member
6. Material Research Society, Spring 2008, San Francisco: Materials and Technology for Fully Elastic Electronic Applications with Stephanie Lacour (Cambridge University) and Takao Someya (University of Tokyo)

2. Session chair

1. 5th World Congress of 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
3. *Ad hoc* reviewer for *Ann.Biomed.Eng.*, *BiophysicalJ.*, *Comp.Meth.Biomech.*, *Biomed.Eng.*, *J.Biomech.*, *J.Biomech.Eng.*, *J.Neurotrauma*, *Mech.Chem.Biosystems*, *Neurobiology of Disease*
4. Abstract reviewer for the 1st Joint Symposium of the National and International Neurotrauma Societies
5. Abstract reviewer for the 2007 ASME Summer BED Conference Ph.D. student competition

6. Memberships: Biomedical Engineering Society (BMES), Engineering in Medicine and Biology Society (IEEE EMBS), National Neurotrauma Society, Society for Neuroscience

FULL-LENGTH MANUSCRIPTS

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.* 26: 381-390, 1998

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* 15: 911-928, 1998

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* 25: 566-568, 1998

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.* 96: 131-139, 2000

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.* 122: 224-230, 2000

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, *Br.J.Pharmacol.* 137: 1255-1268, 2002

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.* 368: 216-224, 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 Journal* 47: 93-105, 2003

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.* 87: 1381-1390, 2003

Sundstrom, L., Morrison III, B., Bradley, M., and Pringle, A., Organotypic cultures as tools for functional screening in the CNS, *Drug Discov Today* 10: 993-1000, 2005

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.Biomechanics* 39: 2810-2818, 2006

Morrison III, B., Cater, H. L., Benham, C. D., and Sundstrom, L. E., An in vitro model of traumatic brain injury utilizing two-dimensional stretch of organotypic hippocampal slice cultures, *J.Neurosci.Methods* 150: 192-201, 2006

Cater, H. L., Gitterman, D. P., Davis, S. M., Benham, C. D., Morrison III, B., and Sundstrom, L. E., Pharmacological characterisation of two-dimensional stretch injury in organotypic rat hippocampal slice cultures, *J.Neurochem.* 2007 (in

press)

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* (in press): 2007

ABSTRACTS

Morrison III, B., Meaney, D. F., and McIntosh, T. K., Introduction of an in vitro device to mechanically injure organotypic brain cultures, *J.Neurotrauma* 13: 608, 1996 (Abstract)

O'Dell, D. M., Morrison III, B., Crino, P. B., Eberwine, J. H., and McIntosh, T. K., Gene expression in individual hippocampal hilar cells following lateral fluid percussion brain injury, *J.Neurotrauma* 13: 619, 1996 (Abstract)

Morrison III, B., Eberwine, J. H., Meaney, D. F., and McIntosh, T. K., Alteration of gene expression in organotypic brain cultures in response to mechanical injury, *Ann.Biomed.Eng.* 25: S-49, 1997 (Abstract)

Morrison III, B. and McIntosh, T. K., Differential genomic expression after in vitro mechanical injury of organotypic brain slice cultures, *Ann.Biomed.Eng.*, 1999 (Abstract)

Morrison III, B., Meaney, D. F., and McIntosh, T. K., Cell death genes are differentially regulated after mechanical injury of organotypic brain slice cultures, *J.Neurotrauma* 16: 1005, 1999 (Abstract)

Morrison III, B., Meaney, D. F., Raghupathi, R., Saatman, K. E., and McIntosh, T. K., Differential gene expression after mechanical injury of organotypic brain slice cultures, *J.Neurosci.*, 1999 (Abstract)

DeRidder, M. N., Grosvenor, A. E., Morrison III, B., and Meaney, D. F., Mechanical deformation of organotypic cultures induces cell death via both apoptosis and necrosis pathways, *ASME (BED)*, 2001 (Abstract)

Morrison III, B., Pringle, A. K., Bradley, M., and Sundstrom, L. E., A novel synthetic polyamine derivative, arginyl spermidine, is neuroprotective in models of hypoxia and excitotoxicity, *J.Neurosci.*, 2001 (Abstract)

Cater, H. L., Gitterman, D., Sundstrom, L. E., and Morrison III, B., Development of an in vitro model for the study of traumatic brain injury, Cambridge Centre for Brain Repair, 2003 (Abstract)

Morrison III, B., Cater, H. L., Wang, C. B., Hung, C. T., and Ateshian, G. A., Post-traumatic cell death in the hippocampus is dependent on tissue strain and strain rate, *J.Neurotrauma* 20: 1079, 2003 (Abstract)

Gitterman, D. P., Morrison III, B., Sundstrom, L. E., and Benham, C. D., An in vitro model of electrophysiological sequelae of traumatic brain injury, *J.Neurotrauma* 20: 1081, 2003 (Abstract)

Davis, S. M., Cater, H. L., Morrison III, B., and Sundstrom, L. E., Immunohistological characterisation of sequelae of traumatic brain injury in an in vitro model, *Eur.J.Neurosci.*, 2004 (Abstract)

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Cater, H. L., Davis, S. M., Morrison III, B., and Sundstrom, L. E., Immunohistological characterisation of neuronal process damage in a novel in vitro model of traumatic brain injury, *J.Neurotrauma* 21: 1300, 2004 (Abstract)

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Morrison III, B., Cater, H. L., Davis, S., Lennon, J., Ateshian, G. A., Hung, C. T.,

and Sundstrom, L. E., A detailed mechanical tolerance criterion for living brain at the tissue level, *BMES*, 2004 (Abstract)

Fan, C., Ho, W., Chao, P., Hung, C. T., and Morrison III, B., Osmotic loading of astrocytes: implications for post-traumatic edema, *BMES*, 2004 (Abstract)

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Morrison III, B., Lacour, S. P., and Wagner, S., Stretchable 2x2 micro-electrode array for in vitro traumatic brain injury studies, NIH Neural Interfaces Workshop, 2004 (Abstract)

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Tsay, C., Lacour, S. P., Wagner, S., and Morrison III, B., Architecture, fabrication, and properties of stretchable microelectrode arrays, *IEEE Sensors*, 2005 (Abstract)

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Tsay, C., Lacour, S. P., Wagner, S., Yu, Z., and Morrison III, B., Stretchable dielectric material for conformable bioelectronic devices, *MRS Proceedings*, 2006 (Abstract)

Yu, Z., Tsay, C., Lacour, S. P., Wagner, S., and Morrison III, B., Monitoring of traumatically injured organotypic hippocampal cultures with stretchable microelectrode arrays, *MRS Proceedings*, 2006 (Abstract)

Adams, M. F., Papadopoulos, P., and Morrison III, B., Patient-specific finite element analysis of traumatic brain injury, 7th World Congress on Computational Mechanics, 2006 (Abstract)

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Tsay, C., Graudejus, O., Wagner, S., Lacour, S. P., and Morrison III, B., Morphology and stretchability of thin film metal conductors on elastomeric substrates, *MRS Proceedings*, 2007 (Abstract)

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Lacour, S. P., Morrison III, B., Wagner, S., Blamire, M., and Fawcett, J., Deformable thin-film electronics for biomedical prosthetics and diagnostic tools, *MRS Proceedings*, 2007 (Abstract)

Gao, S., Simon, M. J., Morrison III, B., and Banta, S., Directed evolution of targeted cell penetrating peptides for trans-BBB delivery, Society for Biological Engineering International Conference on Biomolecular Engineering, 2007 (Abstract)

Gao, S., Simon, M. J., Morrison III, B., and Banta, S., Directed evolution of cell penetrating peptides for therapeutic delivery across the blood brain barrier to specific cellular targets, 7th Packard Center for ALS Research Symposium, 2007 (Abstract)

Ericson, M. N., McKnight, T. E., Melechko, A., Britton, C., Simpson, M., Yu, Z., and Morrison III, B., Neuronal Interfacing Using Vertically Aligned Carbon Nanofiber Arrays, *MRS Proceedings*, 2007 (Abstract)

Mechanical injury of the central nervous system: 1) universal tissue tolerance criteria, 2) role of the cytoskeleton in injury, 3) application of genomic and proteomic technologies to mechanotransduction, 4) repair strategies using stem cells, 5) electrode design for neural engineering.