



## Andrew Basilio, Ph.D.

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### PROFESSIONAL PROFILE

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Andrew Basilio is a consultant specializing in biomechanical engineering and vehicle accident reconstruction. He earned his Ph.D. in Biomedical Engineering from Columbia University, where his research in the Neurotrauma and Repair Laboratory focused on computational and experimental studies of traumatic brain injury resulting from vehicle-pedestrian collisions. He also holds an M.Phil. in Biomedical Engineering from Columbia University. Andrew received both his B.S. and M.S. in Bioengineering from the University of California, San Diego (UC San Diego). In addition, he is a Fellow in Technology Management and Entrepreneurship through UC San Diego's Institute of the Global Entrepreneur, a program jointly offered by the Jacobs School of Engineering and the Rady School of Management. His expertise includes biomechanics, injury biomechanics, accident reconstruction, traumatic brain injury, and computational modeling.

### POSITIONS

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#### **Brillouin Consulting** **Senior Manager**

**Orange County, CA**

July 2026 - Present

Specializes in biomechanical engineering and vehicle accident reconstruction, including injury analysis, occupant kinematics, accident reconstruction, EDR data analysis, and evaluation of vehicle damage and accident scenes.

#### **Rimkus**

**Irvine, CA**

#### **Biomechanical Consultant and Vehicle Accident Reconstructionist**

July 2024 - July 2026

Evaluate and analyzes human injury from vehicle accidents, slip/trips/falls and other accidental events. Analyzes human occupant motion and injury potential from vehicle accidents based on seatbelt use, occupant seating position, and effects of occupant interaction with vehicular structures and safety systems such as airbags. Performs vehicle accident reconstruction using analytical techniques and modeling to determine the forces arising from the accident and their injury potential. Downloads and analyzes EDR data from vehicles. Scans vehicle damage and accident sites.

#### **Semper Scientific**

**Mission Viejo, CA**

#### **Biomechanical Consultant**

Sept 2023 - July 2024

Reviewed and analyzed depositions, medical records, photos and videos, and other discoverable documents in human biomechanical assessments of work and recreational injuries. Assisted with injury site inspections by taking photographs, videos, and measurements. Scanned regions and objects of interest using 3D laser scanners and linked scan data using Cyclone Register 360 to model incident scenes. Performed injury consistency analyses in various events including, motor vehicle accident, workplace accidents, and recreational activities.

#### **Columbia University Neurotrauma and Repair Laboratory**

**New York, NY**

#### **Ph.D. Candidate**

Sept 2017 - July 2023

Leading product development efforts to design and construct a finite element computational model of traumatic brain injury using FEBio (febio.org) to predict delayed fatality following car accidents and assist Honda in automotive safety engineering research and development.

Published papers on simulation of post-traumatic brain swelling to predict delayed patient outcome following a car accident; presented at Eindhoven, Netherlands, June 2019 and New York, NY, August 2019

**UCSD Systems Biology Research Group**  
**Graduate Student Researcher**

**San Diego, CA**  
Mar 2016 - June 2016

Awarded MS degree for constructing a computational model of metabolism using in-house computational tools then used constructed model to conduct systems-level analysis.

**UCSD Institute of the Global Entrepreneur: Technology Management and Entrepreneurism**

**San Diego, CA**  
Mar 2016 - June 2016

**Fellow**

Awarded MS degree for constructing a computational model of metabolism using in-house computational tools then used constructed model to conduct systems-level analysis.

**Illumina**  
**Systems Integration Test Engineer**

**San Diego, CA**  
April 2015 - Aug 2016

Communicated across various departments (software engineering, mechanical engineering, electrical engineering, and chemistry) within R&D to troubleshoot potential mechanisms of instrument failure.

## ACADEMIC CREDENTIALS

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**Columbia University**

Doctor of Philosophy (PhD)

**New York, NY**  
2023

**Columbia University**

Master of Philosophy (MPhil)

**New York, NY**  
2023

**University of California, San Diego (UCSD)**

Master of Science (MS)

**San Diego, CA**  
2016

**University of California, San Diego (UCSD)**

Bachelor of Science (BS)

**San Diego, CA**  
2013

## CONTINUING EDUCATION

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- Institute of Police Technology and Management (IPTM)
- At-Scene Traffic Crash / Traffic Homicide Investigation, Online-Accelerated (2024)
- Bosch CDR Tool Technician Training, Online (2024)
- Advanced Traffic Crash Investigation, Online (2024)
- Traffic Crash Reconstruction – Level 2, Online (2025)

## PRESENTATIONS

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- Simulating Cerebral Edema and Delayed Fatality After Traumatic Brain Injury Using Triphasic Swelling Biomechanics, Enhanced Safety of Vehicles (ESV), Eindhoven, Netherlands, June 10-13, 2019.
- Simulating Cerebral Edema and Delayed Fatality After Traumatic Brain Injury Using Triphasic Swelling Biomechanics, Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), New York, New York, August 14-16, 2019.
- Human Biomechanics in Low-Speed Vehicle Collisions, Pleasanton, California, November 22, 2024.

## PUBLICATIONS

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- Basilio A.V., P. Xu, Y. Takahashi, T. Yanaoka, H. Sugaya, G.A. Ateshian, B. Morrison III, (2019), "Simulating Cerebral Edema and Delayed Fatality After Traumatic Brain Injury Using Triphasic Swelling Biomechanics", Traffic Injury Prevention, Volume 20, Issue 8, Pages 820-825.
- Basilio A.V., D. Zeng., L.A. Pichay, S.A. Maas, S.N. Sundaresh, J.D. Finan, B.S. Elkin, G.M. McKhann, G.A. Ateshian, B. Morrison III, (2024). "Region-Dependent Mechanical Properties of Human Brain Tissue Under Large Deformations Using Inverse Finite Element Modeling", Annals of Biomedical Engineering, Volume 52, Issue 3, pages 600-610.

## PUBLICATIONS CONTINUED

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- Basilio A.V., D. Zeng, L.A. Pichay, G.A. Ateshian, P. Xu, S.A. Maas, B. Morrison III, (2024). "Simulating Cerebral Edema and Ischemia After Traumatic Acute Subdural Hematoma Using Triphasic Swelling Biomechanics", *Annals of Biomedical Engineering*, 52(10), 2818-2830.
- Basilio A.V., D. Zeng, L.A. Pichay, G.A. Ateshian, O.S. Hansen, A. Romanov, B. Morrison III, (2025). "Experimental Measurement and Mathematical Quantification of Fixed-Charge Density in Rat and Pig Brain Tissue", *Annals of Biomedical Engineering*, 53(4). 813-824.
- Takahashi, Y., T. Yanaoka, H. Sugaya, A.V. Basilio, P. Xu, G. Ateshian, B. Morrison III, (2019). "Prediction of Probability of Fatality Due to Brain Injury in Traffic Accidents", *Traffic Injury Prevention*, Volume 20, Issue sup1, Pages S27-S31.
- Sundaresh S.N., J.D. Finan, B.S. Elkin, A.V. Basilio, G.M. McKhann, B. Morrison III, (2022). "Region-Dependent Viscoelastic Properties of Human Brain Tissue Under Large Deformations", *Annals of Biomedical Engineering*, Volume 50, Issue 11, pages 1452-1460.
- Zeng, D., Basilio, A.V., Yanaoka, T., Pichay, L.A., Ateshian, G.A., Maas, S.A., Morrison III, B. (2025). "Computational Modeling of Bridging Vein Rupture and Acute Subdural Hematoma Growth", *Annals of Biomedical Engineering*, 53(12), 3329-3344.