

# Health & Biotechnology



The skills of chemical engineers are uniquely suited to developing next-generation solutions to persistent health challenges. UW ChemE boasts strong cross-disciplinary collaborations with medical researchers in the design of smarter therapeutics, targeted drug delivery systems, and improved diagnostics. Our faculty also conduct research in systems and synthetic biology, as well as metabolic, biomolecular, and protein engineering.

Above: A Euclidean distance transform of a confocal microscopy image of microglia cells taken in a rat organotypic brain slice model.  
Created by Chad Curtis

## Featured research clusters

### Biomaterials

With several field-defining visionaries in the biomedical sciences having cultivated their careers in UW ChemE, our department holds one of the longest and richest histories in biomaterial innovation. With creativity more fervent than ever, we employ current tools to engineer functional tissue, guide immune responses to medical implants, and probe stem cell fate in 4D.

### Synthetic biology

Deciphering, retooling, and reinventing the tricks of basic biology, our faculty engineer versatile approaches to synthesize industrially and medically important chemicals and materials at scale. These efforts are complemented with advanced computational modeling to shed light on the inner workings of cellular bioprocesses.

### Advanced therapeutic delivery

From coercing nanoparticles past the blood-brain barrier, to identifying and treating disease with ultrasound theranostics, to confining therapeutic payload delivery to tissue-barcode bodily locations, the University of Washington is developing real-world solutions to advance medical treatment. Studies are performed in close collaboration with field-leading partners in UW Medicine, Fred Hutch Cancer Research Center, and Seattle Children's Hospital.



More at

[www.cheme.washington.edu/research/areas](http://www.cheme.washington.edu/research/areas)



Neda  
Bagheri



François  
Baneyx



David  
Beck



James  
Carothers



Cole  
DeForest



Mary  
Lidstrom



Elizabeth  
Nance



Jim  
Pfaendtner



Jonathan  
Posner



Lilo  
Pozzo



Buddy  
Ratner



Eric  
Stuve

## Campus opportunities



UW Center for  
Synthetic Biology



Molecular Engineering  
& Sciences Institute



INSTITUTE FOR  
NANO-ENGINEERED SYSTEMS



INSTITUTE FOR  
Protein Design