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Waters laboratory dedicated to researching proteins

Northeastern welcomed several representatives from Waters Corp. for a ribbon-cutting ceremony to celebrate the opening of the new Waters Mass Spectrometry Laboratory within the renowned Barnett Institute of Chemical and Biological Analysis. The new lab is dedicated to studying protein shapes and characteristics to provide pharmaceutical and biotechnology innovators with the tools necessary to develop treatment options for some of the world's deadliest diseases.

New graduate program focuses on health informatics

Northeastern has launched a graduate program to address a critical shortage of workers in New England who can integrate technology and data into health care, with the goal of improving outcomes for patients.

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With a career that spans a co-op at department store Filenes to CEO of two major retail chains, business mogul Ted English '76 is most proud of his role as mentor.

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Waters laboratory dedicated to researching proteins



Northeastern President Joseph Aoun and Waters CEO Douglas Berthiaume rededicate the Waters Facility at the Barnett Institute.

Photo by Craig Bailey

By Laura Shea

Northeastern University welcomed several representatives from Waters Corp. for a ribbon-cutting ceremony to celebrate the opening of the new Waters Mass Spectrometry Laboratory within the renowned Barnett Institute of Chemical and Biological Analysis.

The new laboratory, led by associate professor John R. Engen, is dedicated to studying protein shapes and characteristics to provide pharmaceutical and biotechnology innovators with the tools necessary to develop treatment options for some of the world's deadliest diseases, such as AIDS and cancer.

Institute Director Barry Karger and university President Joseph Aoun were on hand to welcome the delegation from Waters led by CEO Douglas A. Berthiaume, Executive Vice President Art Caputo, and James L. Waters, founder of Waters Corp. — which develops mass spectrometry equipment — and a longtime supporter of Northeastern and the institute.

"Meaningful partnerships like this one are good for industry and good for the university," said Karger.

Studying proteins

Engen, a new Faculty Fellow at the Barnett Institute, said in an earlier interview that he thinks a lot about proteins —specifically, about how better understanding their changing shapes and what happens when they mutate could help treatment options and strategies for a number of devastating diseases, including AIDS and cancer.

Engen and his colleagues use sophisticated tools to measure the molecular weight of proteins to the Dalton (1 Dalton = 1 trillionth of a trillionth of a gram). They do this by weighing them with a mass spectrometer, an instrument that can measure the masses and relative concentrations of atoms and molecules.

Labeling them with a substance called deuterium during the analysis enables the researchers to get a sense of the, shape, size and other features of the proteins, even though they are thousands of times smaller than what you can see with a microscope.

Engen came to Northeastern in September from the University of New Mexico. He brought along his strong ties to researchers at the University of Pittsburgh School of Medicine, and since being jointly appointed in Northeastern's Department of Chemistry and Chemical Biology and the Barnett Institute, has partnered with a number of local institutions also conducting groundbreaking research in the field, including Harvard Medical School and the Dana Farber Cancer Institute.

"Two of the primary reasons I came to Northeastern were the Barnett Institute and Boston," said Engen. "When it comes to the work that I do and the people and institutions on the cutting edge, many of them are in or near Boston. This is where I felt I could really advance my work."

Shining a light

Engen speaks fast and with the enthusiasm of an investigator hot on the trail of a suspect when he describes the work that his lab is doing. One current project involves the investigation of a protein called Nef, which is important for HIV/AIDS.

"We're trying to gather more information and determine why the Nef in some people is deadly but a slightly different form of Nef in other people is harmless," said Engen. "It has to do with the shape, and we've got to figure this out."

"I think of our research like this: when you've dropped your keys at night and you're trying to find them on the ground in a dark parking lot, the first place you look is under the streetlight," he said. "We're just hoping to shine a light on the pavement – the proteins – to try and see what's happening. One of our streetlights is mass spectrometry."

"There are people all over the world working on all different aspects of this kind of research," he said. "What I hope we're doing in my lab is adding a piece to the puzzle that will help researchers, scientists and doctors better understand these diseases and ultimately, treat and cure them."