PROJECT INSPIRES CMU-Q ALUMNUS TO PURSUE CAREER IN CANCER RESEARCH

A team of researchers at Carnegie Mellon University in Qatar (CMU-Q) has discovered a new area of research that could lead to more effective cancer treatment with fewer side effects.

Ihab Younis, assistant professor of biological sciences, and Ettaib El Marabti, a 2017 graduate of CMU-Q’s Biological Sciences Program, have revealed that the cellular mechanism called minor intron splicing is different in cancer cells than in normal cells.

Younis’ research has focused on the role of introns for more than 10 years. The genes of many organisms have stretches of non-coding DNA that interrupt the sequences that code for protein. These non-coding sequences, which are called introns, must be removed, and the remaining sequences must be spliced back together to produce messenger RNA that is ready to be translated into protein.

“This research has been very much data-driven,” he said, noting that his initial work in the area focused on the role of introns in neurodegenerative disease. “It was noticed early on that minor introns, which make up only 0.4 percent of introns, are often inefficiently spliced. This is puzzling since the proteins encoded by genes containing minor introns perform important roles in the cell. Our results suggested that the splicing mechanism acted like a molecular switch that could help cells adapt to stress and other changes.”

Younis and El Marabti then compared the minor intron sequences of healthy cells and cancer cells. They found that

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cancer cells appear to have a faulty splicing mechanism. This finding, outlined in a paper titled “The cancer spliceome: Reprogramming of alternative splicing in cancer,” was published in *Frontiers in Molecular Biosciences*.

“We do not suggest the use of this type of therapy would replace traditional therapies,” Younis said. “Rather, targeting the cells in this way would work in combination for more effective treatment with fewer unfavorable side effects.”

“Every time I ask him to help, he has always been more than generous with his time,” Younis said. “He finishes his day at Weill Cornell and comes here to work on the computational parts of the project.”

CMU-Q offers undergraduate degree programs in biological sciences, business administration, computational biology, computer science and information systems. Students are encouraged to participate in research to hone their skills in creative problem-solving and scientific inquiry.