For Immediate Release

AUB medical team develops targeted therapy treatment for a rare type of cancer

Beirut, Lebanon- 18/03/2011 - An AUB team of medical researchers has developed a promising treatment for a rare type of cancer that attacks the immune system.

Led by Dr. Ali Bazarbachi, AUB professor of internal medicine, the team from the American University of Beirut's Medical Center has succeeded in developing targeted therapy to fight Adult T-cell Leukemia and Lymphoma (ATL), a rare cancer that affects the human immune system's T-cells which are central to battling diseases.

Targeted therapy is an alternative method of treatment to conventional chemotherapy because, unlike the latter, it selectively kills cancerous cells without harming normal ones.

"[In any case] ATL is resistant to chemotherapy with the average survival of patients who undergo such treatment being just six to 12 months: Most of the patients die and no one is cured," said Bazarbachi, who joined AUB in 1996 and became the associate dean for basic research at AUBMC in 2009.

The newly-developed targeted therapy uses three drugs, AZT, interferon, and arsenic, to target the two known causes of ATL: a virus called Human T-cell Lymphotropic Virus 1 (HTLV-1) and a Tax protein that transforms normal cells into cancer cells.
HTLV-1, a cousin of the more infamous Human Immunodeficiency Virus (HIV), as Dr. Bazarbachi puts it, was discovered as a cause of ATL in the early 1980s. HTLV1 currently infects around 15 to 20 million people worldwide.
By the mid-1980s, Tax protein was also found to be an accomplice in crime.

Since then groups have been studying how Tax changes normal cells to cancer cells; but it wasn't before 2010 that an AUB team, led by Bazarbachi, could identify one important mechanism by which Tax transforms normal cells into cancer cells.
A major breakthrough.

Tax is what causes cells to destabilize, transforming them into cancer cells that resist chemotherapy, explains Bazarbachi.
Since Tax exists in cancer cells, not normal cells, researchers believed that by targeting the protein, they would selectively kill the cancer cells, leaving normal cells intact.

Eventually, the researchers found that a double-drug combination was highly effective in killing ATL cells without affecting normal cells.

Dr. Bazarbachi, in an earlier research study dating back to 1995, had helped develop and test a two-drug targeted therapy (composed of interferon and AZT) that targets the replication of the HTLV-1 virus that causes the cancer.

Indeed, between 1995 and 2005, dozens of two-drug therapies targeting the HTLV-1 virus on individual patients worldwide yielded positive results, prompting Dr. Bazarbachi and his AUBMC team to compile all these patient charts and analyze them. Between 2006 and 2008 some 250 individual patient charts were analyzed and the global study showed that the five-year survival rate of patients increased from 10 percent with chemotherapy to 50 percent when cancer patients were treated with the two-drug combination. The treatment is now the standard method of care for ATL worldwide.

“But that two-drug treatment [against the virus] only offers disease control, not a cure. Patients would have to stay on the drug therapy throughout their lives to keep the cancer at bay,” said Bazarbachi.

When the AUB team zeroed in on Tax with another two-drug therapy, using interferon and arsenic, the results were successful in lab and animal tests. The leukemia stem cells were killed. The two drugs claimed their target.

Another breakthrough in 2010.

“But we set our sights higher. We wanted to look for a cure,” Dr. Bazarbachi said.

Currently, his AUB team is testing a three-drug treatment (composed of AZT, interferon, and arsenic) that is expected to offer a real cure, without relapse, to ATL cancer patients. This targeted therapy is expected to stop viral replication and destroy Tax.

In an early study on 10 patients, AUBMC and its global partners have observed that after using a triple-drug combination, patients who had stopped treatment were not relapsing.

With some $900,000 in recent funding from the Qatar National Research Fund, AUBMC and its partners are continuing their research in order to finally close the books on Tax-induced ATL as well as translating their work into fighting other types of leukemia and lymphoma.

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Note to Editors

About AUB

Founded in 1866, the American University of Beirut bases its educational philosophy, standards, and practices on the American liberal arts model of higher education. A teaching-centered research university, AUB has more than 600 full-time faculty members and a student body of more than 7,000 students. AUB currently offers more than 100 programs leading to the bachelor's, master's, MD, and PhD degrees. It provides medical education and training to students from throughout the region at its Medical Center that includes a full service 420-bed hospital.

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