

# METHOD OF INCREASING CHEMOTHERAPY SENSITIVITY IN LEUKEMIA USING BET INHIBITOR

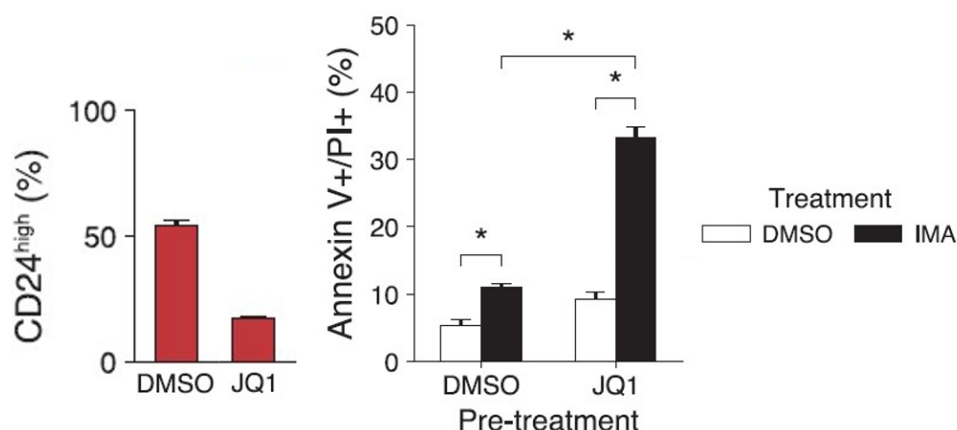
[Mitra, Robi](#), [Moudgil, Arnav](#), [Wilkinson, Michael Nathaniel](#)

[Richards, Jennifer](#)

T-019486

## Technology Description

Researchers in Robi Mitra's lab at Washington University in St. Louis have developed a method to increase the sensitivity of leukemias to chemotherapy by pre-treatment with a BET inhibitor. BET inhibitors convert stem-like leukemia cells to a more differentiated state that is more susceptible to standard chemotherapeutics like imatinib. As the persistence of these stem-like leukemia cells frequently drives chemotherapy resistance, pre-treatment with BET inhibitors would increase the efficacy of overall treatment.



**Pre-treatment with JQ1 (BET inhibitor) decreases fraction of CD24<sup>hi</sup> and increases efficacy of imatinib treatment**

## Stage of Research

The inventors showed that pre-treatment of leukemia cells *in vitro* with a BET inhibitor (JQ1) reduced the number of cells in a stem-like state (CD24<sup>hi</sup>) and increased the potency of standard chemotherapeutic drugs like imatinib. They are following up on the initial proof-of-concept work with *in vivo* mouse studies.

## Publications

- Moudgil A, Wilkinson MN, Chen X, He J, ... & Mitra RD. (2020). [Self-reporting transposons enable simultaneous readout of gene expression and transcription factor binding in single cells](#). *Cell*, 182:1-17.
- Cammack AJ, Moudgil A, Chen J, Vasek MJ, ... & Dougherty JD. (2020). [A viral toolkit for recording transcription factor-DNA interactions in live mouse tissue](#). *PNAS*, 117(18): 10004-10014.

## Applications

- Treatment of leukemias in children and adults
- Potentially applicable to other cancers where the stem-like cell state is more resistant to chemotherapeutics

### **Key Advantages**

- Increased efficacy of chemotherapies
- Utilizes existing drug classes

**Patents:** Pending

**Related Web Links:** Mitra [Profile](#) & [Lab](#)