# "HUMAN IMATINIB MESYLATE-RESISTANT LEUKEMIA CELL LINES" VCU #11-056

## Applications

- *In vitro* and *in vivo* studies on Acute Lymphoblastic Leukemia (ALL)
- *In vitro* and *in vivo* studies on Chronic Myelogenous Leukemia (CML)
- Research tool

## Advantages

- First human cell line completely resistant to imatinib
- Suitable for *in vivo* studies in immunocompromised mice
- Resistance levels remain stable in cultures without imatinib
- Potential to create resistant cell lines with other mutations


## Inventors

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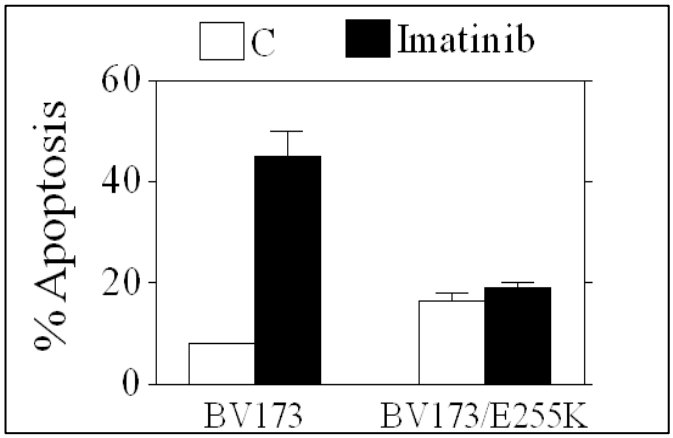
## Market Need

Imatinib mesylate (Gleevec®) is currently the first line therapy for newly diagnosed Chronic Myelogenous Leukemia (CML) and Acute Lymphoblastic Leukemia (Ph+ ALL). However acquired resistance of cells to imatinib mesylate represents a significant clinical problem, in particular, mutations in the kinase domain of *Bcr/Abl,* which prevent drug binding and inhibitory activity, have been identified as the leading cause of resistance. This mutation has increasingly become the focus of research on CML and ALL, but currently there are no immortalized human leukemia (or other) cell line expressing the Bcr/Abl E255K mutation. All available cells of murine origin do not precisely recapitulate either the genetics or biology of human ALL or CML cells, and are therefore not ideal for such research.

## Technology Summary

By altering a commonly used in *in vitro* studies human ALL cell line, named BV173, Dr. Grant and colleagues have generated an imatinib resistant cell line that contains the most frequently observed mutation (E255K) responsible for the drug resistance (see figure). This cell line is a unique resource in developing strategies capable of circumventing a clinically relevant and important form of the resistance to imatinib mesylate and potentially other tyrosine kinase (Bcr/Abl) inhibitors. In addition, it has been shown that this line is suitable for *in vivo* studies in immunocompromised mice, which adds to its value.




## Technology Status

*In vitro* and *in vivo* data available. For more information visit: Clin Cancer Res. 2011 May 15;17(10):3219-32. doi: 10.1158/1078-0432.CCR-11-0234. Epub 2011 Apr 7.

This technology is available for licensing to industry for use in medical research.