

## Applications

- Multiple myeloma
- Hematopoietic cancers

## Advantages

- Enhanced potency and higher anti-cancer activity
- Reduced risk of developing drug resistance
- Reduced toxic effects compared to the administration of multiple agents
- Reduced cost and improved patient compliance

## Inventors

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## Market Need

Multiple myeloma (MM), an incurable plasma cell malignancy, is the second most common hematopoietic cancer and approximately 20% of patients affected by this disease die each year. Treatment for MM is focused on therapies that decrease the clonal plasma cell population and consequently decrease the signs and symptoms of disease. With the advances in understanding the molecular mechanisms of multiple myeloma, novel agents have been developed, including immunomodulatory drugs such as thalidomide. Unfortunately thalidomide has to be used in combination with other drugs, which increases the risk of toxicity and side effects. Recently, the “hybrid molecules” strategy, which incorporates structural features that are essential to the biological activities of different drug structures into one single molecule, has seen increased attention in drug development.

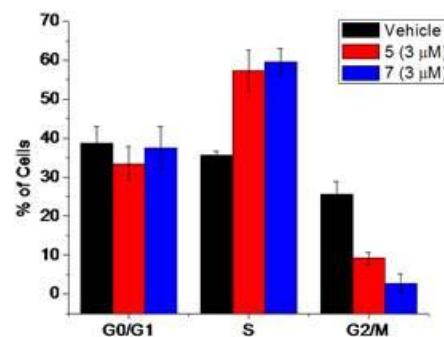
## Technology Summary

Using this “hybrid molecule” strategy, Dr. Zhang has designed and synthesized a series of hybrid compounds of curcumin and thalidomide as potential treatment agents for MM. Both, *in vitro* and *in vivo* studies using multiple myeloma models have shown that these hybrid compounds exhibited superior cytotoxic effects and induced significant apoptosis of cancer cells in comparison to the “original” compounds. Compared to the combination of multiple drugs, these hybrid compounds show enhanced potency, reduced risk of developing drug resistance and liver toxicity, and provide a great treatment option for multiple myeloma and other hematopoietic cancers.

## Technology Status

*In vitro* and *in vivo* data available.

Patent pending: U.S. and foreign rights available.



Cell cycle arrest by hybrid compounds 5 and 7.

This technology is available for licensing to industry for further development and commercialization.