

## Yissum Introduces a Breakthrough Computational Method for Superfast Drug Discovery

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Drug discovery and development is a highly risky process, with only one in 10,000 initial candidate compounds reaching the market. When taking into account the aborted candidates, the cost of developing one successful drug may even reach \$1 billion, and the development process may take as long as 15-20 years. Therefore, integration of computational methods in the early stages of drug discovery has been one of the key trends in the pharmaceutical industry. Starting with high quality drug candidates should ultimately minimize clinical attrition rates and give rise to higher success rates.

Yissum, Research Development Company Ltd., the technology transfer arm of the Hebrew University of Jerusalem, introduces Dralgo, a novel computational platform for accelerated discovery of promising drug candidates. The new technology will be presented by its inventor, Professor Amiram Goldblum from the Institute of Drug Research at the Hebrew University of Jerusalem, on Tuesday, June 15 at the Technology Transfer Session II of the ILSI Biomed Israel 2010 conference, to be held at the David Intercontinental Hotel, Tel Aviv, Israel.

The novel method is based on a proprietary algorithm for superfast identification and design of molecules with the highest probabilities for displaying specific biological activities. Dralgo has a unique generic ability to find both the optimal solution and a large set of best solutions or alternatives, which is applied to the production of focused libraries of drug candidates with optimized drug-like properties based on a specific activity of a set of compounds. It can also provide bioactivity indexes of molecules for their interaction with specific targets or their effect on specific disease conditions. Such indexes are especially useful for decision making on priorities for purchasing or synthesizing molecules. Most recently, this novel technology has been directed to discover small molecules that are active at multiple targets, for treating disease conditions that are multi-factorial.

The novel platform achieves an enrichment factor of up to 5,000 for biologically active

molecules, and was validated both *in silico* and *in vitro*. In one validation trial, it was tested on a database of 2.5 million small molecules in search for inhibitors of the enzyme acetylcholinesterase as potential anti-alzheimer drugs. Dralgo was able to pinpoint 10 molecules which were predicted to have the desired biological activity. Of these, 5 candidates were tested for biological activity, and 3 indeed exhibited the desired activity. None of the three has ever been patented or mentioned in the literature. In another trial, Dralgo helped in designing a protein drug for treating Chronic Myeloid Leukemia (CML). Out of a database of  $10^{80}$  protein sequences, a mere 10 were selected for *in vitro* studies, and 6 of those inhibited CML cell proliferation.

"The powerful predictive technology of Dralgo will help shorten the preclinical phase of drug design from 3-4 years to 2-3 months," said Yaacov Michlin, CEO of Yisum. "In fact, a 10% improvement in prediction product failure in clinical trials could save \$100 million in development costs per drug. This amazing potential of the Dralgo algorithm was recognized by a leading pharmaceutical company who declared Dralgo the best computational enrichment technology compared to top technologies in the market."

### **About Yisum**

Yisum Research Development Company of the Hebrew University of Jerusalem Ltd. was founded in 1964 to protect and commercialize the Hebrew University's intellectual property. Ranked among the top technology transfer companies in the world, Yisum has registered over 6,100 patents covering 1,750 inventions; has licensed out 480 technologies and has spun-off 65 companies. Yisum's business partners span the globe and include companies such as Novartis, Johnson & Johnson, Roche, Merck, Teva, Intel, IBM, Phillips, Syngenta, Vilmorin, Monsanto and many more. For further information please visit [www.yisum.co.il](http://www.yisum.co.il).

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