



## Media Release

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# Cytopia proves efficacy of new drug class

Medica's subsidiary Cytopia today announced that it has demonstrated potent efficacy of a new class of molecules in an animal model of lymphoma.

The new molecules specifically inhibit a critical member of a large group of enzymes known as kinases which are necessary for the growth and function of most cells in the immune system and certain cancers.

Cytopia CEO Dr Kevin Healey said, "These results, in a lymphoma model, demonstrate that our highly specific JAK3 kinase inhibitors are active *in vivo*, although our main therapeutic targets are for immune diseases such as asthma, chronic obstructive pulmonary disease (COPD), eczema and dermatitis".

"We now intend to evaluate the molecules in animal models of these diseases and in addition, they will be assessed for their ability to prevent the rejection of organ transplants" he said.

"These animal models will take between 3 and 6 months and if successful, we expect to be able to commence preclinical testing to demonstrate that our lead candidate may be safe to take in human clinical trials," Dr Healey said.

"This success also marks an important milestone in our AusIndustry Start Grant-funded project to develop drug candidates to treat COPD," he added.

Dr Healey said the program had attracted the attention of pharmaceutical companies that have requested material to evaluate in their own animal models on a non-exclusive and confidential basis.

Dr Andrew Wilks, Cytopia's Chief Scientific Officer said, "This breakthrough is a tribute to the strong synergies between our structural biology and medicinal chemistry teams

"Our approach in designing our JAK3 inhibitor used our proprietary software tool ChemaPhore, to design lead molecules, just as keys are designed to fit locks," he said.

"We are in a highly competitive area and our approach greatly accelerates the discovery of drug leads giving us a major advantage over our competitors in time, cost, and above all in specificity," Dr Wilks said.



Dr Wilks also said that for kinase inhibitors, specificity was the key to reducing potential side effects.

“This breakthrough adds weight to Medica’s decision to move to 100% ownership of Cytopia,” said Dr Healey.

“Cytopia is continuing to demonstrate its ability to build a pipeline of drug candidates,” he concluded.

## **JAK3 Kinase as a drug target**

The JAK kinases (JAK1, JAK2, JAK3 and Tyk2) are a highly structurally-related sub-family of the over 500 kinases in the human body. The JAK kinases act as molecular switches in the immune system and are over-activated by cytokines in many immune diseases such as atopic diseases. Whilst JAK1 and JAK2 occur in many cell types, JAK3 appears to be restricted to the lymphoid system and patients lacking expression of functional JAK3 exhibit severe immune deficiency. On the basis of the critical but selective role for JAK3 in lymphocyte biology, inhibitors of this enzyme appear to be good candidates for diseases including asthma, COPD, eczema and dermatitis, as well as novel immunosuppressants.

## **Cytopia Pty Ltd**

Cytopia is a Melbourne-based drug discovery company focused on the treatment of immune diseases and cancer. It is an 81%-owned subsidiary of Medica Holdings Limited (ASX: MCA).

Cytopia specialises in discovering new drugs that can inhibit enzymes known as kinases, an exciting new class of drugs.

Cytopia holds a worldwide exclusive license from the Ludwig Institute for Cancer Research to a number of these enzymes known as JAK1 and JAK2 kinases which play a crucial role in activating cells of the immune system and some cancers. These JAK kinases, which were discovered by Dr Andrew Wilks, are well-validated drug targets and Cytopia is building a portfolio of patent applications to protect inhibitors with therapeutic potential.

Cytopia has developed the “*Chemaphore*” proprietary computer software platform to test how well molecules bind to the proteins involved in causing diseases. The “*Chemaphore*” platform consists of a series of software modules developed by Cytopia that collectively enable the design of focused chemical libraries, high-throughput *in silico* screening, and the refinement of drug leads into drug candidates. *In silico* or virtual screening, allows many hundreds of thousands of molecules to be rapidly screened by computer without the need to take the time and expense of physically making a single compound. The time and cost saving can be as much as 100 times the usual approach of random screening.



Cytopia combines this *in silico* technology with smart medicinal chemistry and a broad screening capability that includes high-throughput screening of over 20 different kinases and a large range of cell-based validation assays.

Apart from its kinase program Cytopia is in the preclinical testing phase for a novel broad acting anticancer drug candidate.

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## About Medica Holdings Limited

Medica is an ASX-listed Pooled Development Fund that invests in the biotechnology sector. It established Cytopia and owns approximately 81% of the company. Medica recently announced that it had reached agreement enabling it to move to 100% ownership of Cytopia subject to various shareholder approvals.

It also owns 14.4% of Alchemia, which is developing carbohydrate-based drugs. Alchemia listed on the ASX in December 2003 (ASX:ACL). Medica also holds approximately 25% of Xenome, which is developing new drugs derived from venoms for the treatment of neurological disorders. Xenome lodged an Investigational New Drug Application with the FDA in April 2004 to treat severe pain with Xen2174.

Under the PDF Scheme, Medica's shareholders are generally exempt from tax on profits or capital gains from the sale of shares and, if they elect, on dividends.

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