



## ASX ANNOUNCEMENT

### **VivaGel active against Zika virus**

**Melbourne, Australia; 5 May 2016:** Starpharma Holdings Ltd (ASX: SPL, OTCQX: SPHRY) today announced that the VivaGel<sup>®</sup> active, astodimer sodium (SPL7013), has been shown to have potent antiviral activity against the Zika virus in laboratory studies. The studies showed near complete antiviral protection at SPL7013 concentrations significantly below that used in the VivaGel<sup>®</sup> condom.

In February 2016, the World Health Organization (WHO) declared the Zika virus outbreak a global emergency. It now affects more than 40 countries in total - 20 countries in the Americas, most of the Caribbean and several in the Pacific. The most significant outbreak, and resulting effects on babies, has been reported in Brazil, where an estimated one million people have already been infected with Zika.

Although Zika is a mosquito-borne virus, it is now also confirmed to be a sexually transmitted infection (STI). The US Centers for Disease Control and Prevention (CDC) has reported more than 425 travel-associated cases of Zika virus and there are now a growing number of people infected through sexual transmission by travelers returning from affected areas. Many cases of sexual transmission of Zika virus have now been reported in other countries.

Zika virus infection is of particular concern during pregnancy. The CDC recently confirmed that there is now enough evidence to conclude that Zika virus infection during pregnancy is a cause of microcephaly and other severe foetal brain defects, and has been linked to problems in infants, including eye defects, hearing loss and impaired growth.

Due to the implications for effects during pregnancy, particularly concerning are cases where Zika virus has been transmitted from an infected male to a female sexual partner. The CDC advises that the virus can be spread during sex regardless of whether the man has symptoms or not. CDC guidelines recommend that if a male is infected, non-pregnant couples should use a condom every time they have sex to prevent possible infection or abstain from sex for at least six months. For pregnant couples, this recommendation also applies but for the duration of the pregnancy.

The VivaGel<sup>®</sup> condom, marketed in Australia as the Dual Protect™ condom by Ansell, contains the antiviral VivaGel<sup>®</sup> active. The physical barrier of the condom provides primary protection against sexually transmitted infections (STIs), while VivaGel<sup>®</sup> is included in the condom lubricant as an antiviral agent that has been proven, in laboratory studies only, to inactivate HIV, HSV and HPV, which are viruses that cause STIs. In view of the potent antiviral activity identified for the VivaGel<sup>®</sup> active against Zika virus, Starpharma is now investigating the inclusion of Zika in the list of viruses inactivated for the VivaGel<sup>®</sup> condom.

Given the outbreak in Brazil, the host nation for the 2016 Olympic Games, health authorities, including the CDC, are issuing guidelines for their athletes, spectators and officials traveling to the Olympics in Rio. It has been reported that Olympic teams, including the Australian and US teams, are carefully monitoring the situation and considering all available preventive measures for their athletes.

Starpharma CEO, Dr Jackie Fairley, commented, "There is currently no vaccine or therapy available for Zika virus. Given sexually transmitted infection is of increasing importance, the potent activity of the VivaGel<sup>®</sup> active against Zika virus could prove very important from a public health standpoint and a significant commercial opportunity."

Scientists continue to study the full range of other potential health problems that Zika virus infection during pregnancy may cause. While Zika virus disease in adults is rarely fatal, there continue to be reports that the neurological effects of Zika, including cases of Guillain-Barré syndrome, could be even worse than first thought.

## ABOUT STARPHARMA

Starpharma Holdings Limited (ASX: SPL, OTCQX:SPHRY), located in Melbourne Australia, is an ASX 300 company and is a world leader in the development of dendrimer products for pharmaceutical, life science and other applications.

Starpharma's underlying technology is built around dendrimers – a type of synthetic nanoscale polymer that is highly regular in size and structure and well suited to pharmaceutical and medical uses. Starpharma has three core development programs: VivaGel<sup>®</sup> portfolio, DEP<sup>™</sup> drug delivery, and agrochemicals with the Company developing a number of products internally and others via commercial partnerships.

Starpharma's lead products are based on VivaGel<sup>®</sup> (SPL7013, astodimer sodium), a proprietary dendrimer which has antimicrobial properties. VivaGel<sup>®</sup> formulated as a water based gel and delivered vaginally now has EU regulatory approval for topical treatment and rapid relief of bacterial vaginosis (BV) and is under clinical development for the prevention of recurrent BV. Starpharma has signed a license agreement with Aspen Pharmacare Australia Pty Ltd for the sales and marketing of VivaGel<sup>®</sup> BV in Australia and New Zealand. Starpharma has also signed separate licence agreements with Ansell Limited (ASX:ANN) and Okamoto Industries, Inc., (TSE: JP3192800005) to market a value-added, VivaGel<sup>®</sup> condom. The VivaGel<sup>®</sup> condom is available for purchase in Australia under Ansell's Lifestyles<sup>®</sup> Dual Protect<sup>™</sup> brand. Ansell manufactures and sells leading condom brands worldwide, including LifeStyles<sup>®</sup>, ZERO<sup>®</sup> and SKYN<sup>®</sup>. Okamoto is the market leader for condoms sold in Japan, which is the world's second largest condom market.

In the wider pharmaceutical field, Starpharma has both partnered and internal programs in Drug Delivery. A number of dendrimer-enhanced, or DEP<sup>®</sup> versions of existing drugs are under development. The most advanced of these is DEP<sup>®</sup> docetaxel, a dendrimer-enhanced version of docetaxel (Taxotere<sup>®</sup>), which is in clinical development in patients with solid tumours. In preclinical studies DEP<sup>®</sup> docetaxel has shown significant tumour-targeting and superior anti-cancer effects across a range of important cancer types including breast, prostate, lung and ovarian tumour, when compared to Taxotere<sup>®</sup> (docetaxel). AstraZeneca has signed a licensing agreement with Starpharma for the use of its DEP<sup>®</sup> drug delivery platform in the development and commercialisation of an AstraZeneca oncology compound, with potential for follow on compounds directed at a defined family of targets.

In agrochemicals Starpharma has a series of partnerships with leading industry players including global leader Adama (formerly Makhteshim Agan) as well as internal programs including an enhanced version of glyphosate (the active ingredient in Roundup<sup>®</sup>).

For more information please visit: [www.starpharma.com](http://www.starpharma.com)

## FOR FURTHER INFORMATION

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### Forward Looking Statements

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