

ABOUT STARPHARMA

Starpharma Holdings Limited is a world leader in the development of nanotechnology products for pharmaceutical, life-science and other applications.

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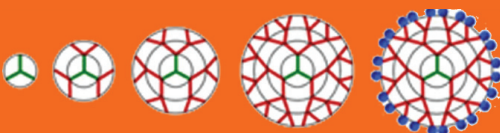
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Building a dendrimer

Nanotechnology at work

Nanotechnology is an emerging scientific field creating materials, devices, and systems at the molecular level. By being able to work at this ultra-small scale, nanotechnology is being used to deliver innovations in industries including clean energy, environment, health and personal care, electronics, transport, construction, telecommunications, manufacturing and mining.

Fighting disease with nanotech

With sexually transmitted infections (STIs) reaching epidemic proportions worldwide, Australian company Starpharma is using its proprietary nanoscale dendrimers to develop VivaGel®, a vaginal microbicide gel used to prevent the transmission of STIs such as genital herpes and HIV.

VivaGel® is the only microbicide in clinical development for genital herpes. It is under development both as a stand-alone gel and as a condom coating. Starpharma has an agreement with SSL International PLC, recently acquired by Reckitt Benckiser and makers of the world's leading condom brand Durex®, to develop the VivaGel®-coated condom. Starpharma also recently added the treatment of bacterial vaginosis (the most common vaginal infection worldwide) to the development portfolio of VivaGel®. This is the first application of VivaGel® as a treatment, rather than a preventative measure for spreading disease.

The development of VivaGel® is based on Starpharma's nanotechnology platform. The company has a number of products and platforms under development using dendrimer technology, which are precisely defined, synthetic macromolecules on the nanoscale (nanoscale is normally defined as 1-100 nanometres).

Traditionally, 'well defined' complex macromolecules such as proteins were mostly found in nature. However, using Starpharma's dendrimer technology, it is possible to create precisely-defined synthetic complex macromolecules that are applicable to a wide range of medical uses. When making dendrimers, chemists can control their physical and chemical properties. The synthesis of dendrimers involves a core molecule with branching groups to which other branching molecules are added in layers (see diagram at left). Each new layer is called a generation. The final generation can incorporate additional active groups that give the particular functionality to the dendrimer.

The selection of core, branching and surface molecules determine the properties of the different dendrimers required for medical, electronic, chemical and materials applications. In the wider pharmaceutical field, Starpharma has specific programs in the areas of Drug Delivery and Drug Optimisation technologies (using dendrimers to control where and when drugs go when introduced to the body) and has announced a number of partnerships in this area with well known pharmaceutical companies including Lilly, Elanco and GSK's Stiefel.

Using its unique nanotechnology approach, Starpharma already has other products on the market incorporated into medical diagnostic devices and laboratory reagents, and is developing treatments in a range of other medical areas such as skin disorders and cancer. The company is also exploring dendrimer opportunities in applications as diverse as agrochemicals, adhesives, lubricants and water remediation.