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Author: Claire Huang

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Global pharma firms interested in local startup's new glaucoma treatment

By Claire Huang

huangjy@sph.com.sg

@ClaireHuangBT

Singapore

"FIRST you have my interest, now you have my attention."

And that is what local biotech startup Peregrine Ophthalmic managed to do, in the words of associate professor Tina Wong, who was describing how a new glaucoma drug delivery solution developed by her 15-month-old startup has attracted inquiries from the world's top five pharmaceutical companies.

Not a bad start for the company founded by Prof Wong and two others from the Nanyang Technological University (NTU) – deputy president and provost Freddy Boey, and chair of the school of materials science and engineering, Subbu Venkatraman.

The Peregrine team has developed the world's first sustained release nanomedicine product in ophthalmology known as liposomal latanoprost, that can be used to treat glaucoma which is a leading cause of irreversible blindness in the world.

The sustained drug delivery solution which is completely biodegradable, uses an off-patent drug – latanoprost – which has been used to treat glaucoma for the past 20 years. All that is required is a painless injection for the new technology to send the drug to the patient's eye via the nanoliposome delivery platform. What has set the ophthalmology scene abuzz is how this new Peregrine drug delivery solution looks promising in solving compliance issues that have plagued glaucoma treatment for years.

As Prof Wong explains, glaucoma affects mainly the working crowd in their 40s to 60s and the majority of patients have to apply eyedrops on a daily basis for life. This is to keep their eye pressure from rising and damaging their nerves, but only about 20 per cent of patients use the eyedrops regularly.

So about six years ago, the 44-year-old, who heads the ocular therapeutics and drug delivery research group at the Singapore Eye Research Institute (Seri), started a collaboration with NTU to look into ways to load eyedrop drugs into various materials and see if they could time-release the drugs over a period of four months. Clinical appointments are usually fixed on a four to six-monthly basis.

Prof Wong said that the aim was to improve patients' experience and to lower the cost of healthcare by reducing the number of clinical visits and amount of eyedrops used. For two to three years, the team conducted extensive tests on animals. Last January, the team conducted a six-month clinical trial on the safety efficacy of the new drug delivery system on humans. The results showed that the patients' eye pressure remained stable for more than three months, paving the way for the team to take the tests further.

They are now planning for a 2015 multi-centre trial on at least 300 other patients – the requirement for a new drug application. "Why not try and kill two birds with one stone and get the trial done in the United States, which is the gold standard, after which any trial outside of the US will be smoother because they will look at where your data came from," said Prof Wong.

Echoing similar sentiments is Peregrine chairman Lu Yoh-Chie, 63, who described the move as "a natural step" that is part of a wider plan to get the US Food and Drug Administration's (FDA) approval, which is expected to accelerate the path to commercialisation. The FDA approval will probably take about three years as Peregrine is using a known drug in a new way, said Prof Wong.

And the trend of repackaging known drugs for new uses is growing as it reduces risks exponentially, noted Mr Lu, who added that it is encouraging for Peregrine "to have passed some degree of scrutiny" from the big pharma companies. He added that Peregrine now has the capability to raise up to US\$7 million to fund its activities.

The global ophthalmology drugs market is estimated to be US\$10.8 billion in 2014, with glaucoma taking up about US\$4.3 billion, signalling the immense potential in this field.

Peregrine's three founders were handed the President's Technology Award in November for their contributions to Singapore's research and development landscape. In the words of Mr Lu, "stay tuned" to the coming out of the Peregrine team.

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