

GlaxoSmithKline PLC

GSK kicks off trials of pioneering 'bioelectronic' disease treatment

The first patient has been given an implant to control rheumatoid arthritis by modifying nerve signals to the spleen

HANNAH KUCHLER – LONDON

GlaxoSmithKline has treated the first patient with a bioelectronic implant that modifies nerve signals to organs in the body's core, as part of a joint venture to treat chronic diseases with Google sister company Verily.

The UK drugmaker and US life sciences company formed Galvani Bioelectronics in 2016 to create implants that can precisely target nerves to specific organs and can stay inside a patient for the rest of their life.

A Scottish patient was the first to receive an implant as part of two early stage trials to treat rheumatoid arthritis in the UK and the US. In keyhole surgery lasting just under an hour, a small device was placed in the torso via the navel.

The device is attached to the inside of the body wall, where it can be controlled wirelessly by an app.

It treats rheumatoid arthritis by stimulating a nerve to the spleen to reprogramme immune cells as they circulate through the organ. The aim is to switch the cells from a state where they cause inflammation to one where they resolve it. This could reduce the inflammation and pain in the joints that is characteristic of the disease.

René van der Merwe, Galvani's chief medical

officer, said many rheumatoid arthritis patients do not respond well to existing drugs. "I think there is a huge unmet need for patients. There are so many treatments out there, very few of them achieve remission or a very low disease state," she said.

Kristoffer Famm, president of Galvani, who has been working on bioelectronics at GSK since 2013, said implanting the device in the first patient is a "huge milestone".

If it works well, Famm said: "It is feasible that in four or five years this could be in the marketplace."

Scientists have long been intrigued by the possibility of modifying electric currents in the body to treat disease. Bioelectronics are already used in the brain for patients with Parkinson's and epilepsy, and to stimulate nerves in the spinal cord to treat pain.

But this is the first time the technique has been used to target a visceral organ – in the main body cavity – using technology that can be adapted to treat other conditions.

"The Galvani bioelectronics platform potentially brings a new way to shift the balance from disease to healthy states in a range of immune-mediated and other diseases," Famm said.