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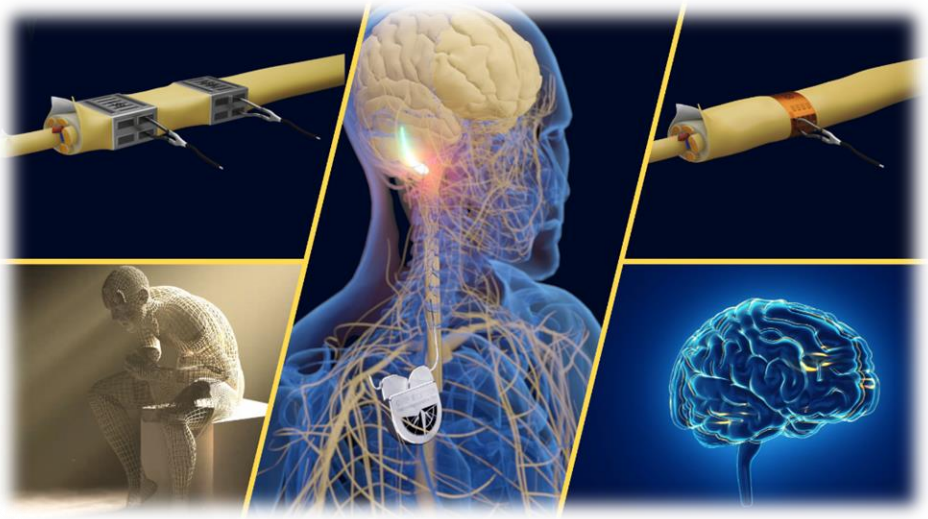
Blocking Parkinson's Tremors Without Brain Surgery



PZF with Dual Nerve Cuffs is patented

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The Problem

Parkinson's disease (PD) is a progressive neurodegenerative disease, characterized by a disturbed signal transfer between the brain cells, the nerve bundles and the muscles, which causes problems with controlling and making the movements of the muscles manageable.

As a result, 80% of the Parkinson's patients experience many motor complaints, such as uncontrollable muscle movements of the arms and hands and general movement poverty. Due to this, these patients experience a daily burden leading to a considerably loss of quality of life.

Current neurodegenerative treatments do not achieve significant tremor reduction in a large part of the patients. Only a small group of patients may be eligible for a very expensive, high-risk brain operation (Deep Brain Stimulation). Besides this, they are at risk for blurred vision, slurred speech or other brain complications. This treatment can also have a negative influence on cognitive functions (emotion).

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The solution

The PZF System with Dual Nerve Cuffs is the first and only system that offers the possibility to filter and block the involuntary signals, which are sent from the brain to the muscles and vice versa, while allowing the passage of normal voluntary signals for muscle movement. The difference between the Deep Brain Stimulation and PZF System with Dual Nerve Cuffs is that Deep Brain Stimulation is focusing on stimulation of the brain signals, whereas the PZF System with Dual Nerve Cuffs technology does not stimulate the brain signals but is filtering and blocking the involuntary signals through the peripheral nervous system. Instead of implanting the electrodes into the brain, the electrodes of the PZF are implanted directly inside the nerves of the arm(s).

Advantages of PZF technology are:

- No surgery of the central nervous system
- Less radical and burdensome
- Surgery can be performed on outpatient basis
- Fewer risks (no chance of blurry vision, slurred speech or other brain complications)
- Much lower surgery & healthcare costs

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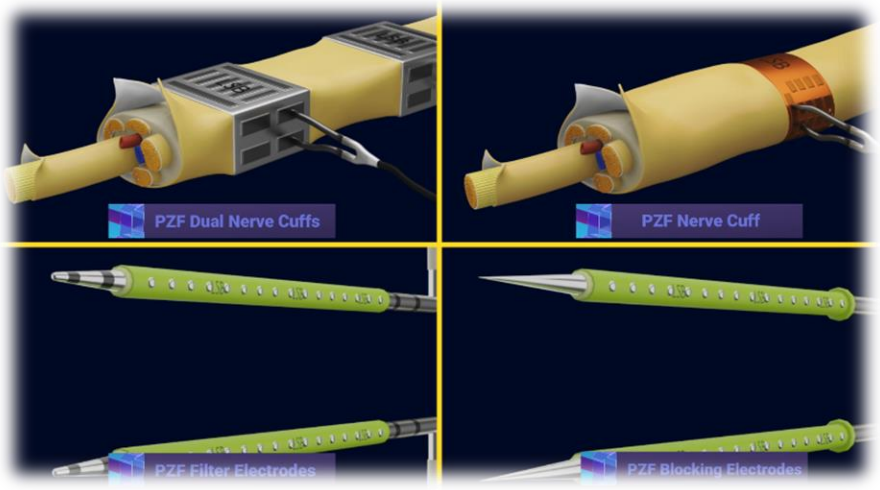
The solution *(continued)*

The Dual Nerve Cuffs have innovative closure mechanisms and can reject noise from extra neural sources and distinguish signals from different nerve fibers. PZF Dual Nerve Cuffs and PZF Electrodes are designed based on among others Material Properties, Biocompatibility and Effectiveness. Thanks to the PZF Dual Nerve Cuffs and innovative Electrodes, the PZF system is able to recognize, trace, locate, record, filter and block involuntary signals through peripheral nervous system.



Instead of implanting the electrodes into the brain, the Dual Nerve cuffs and the innovative electrodes of the PZF system are implanted directly on and inside the peripheral nervous system.

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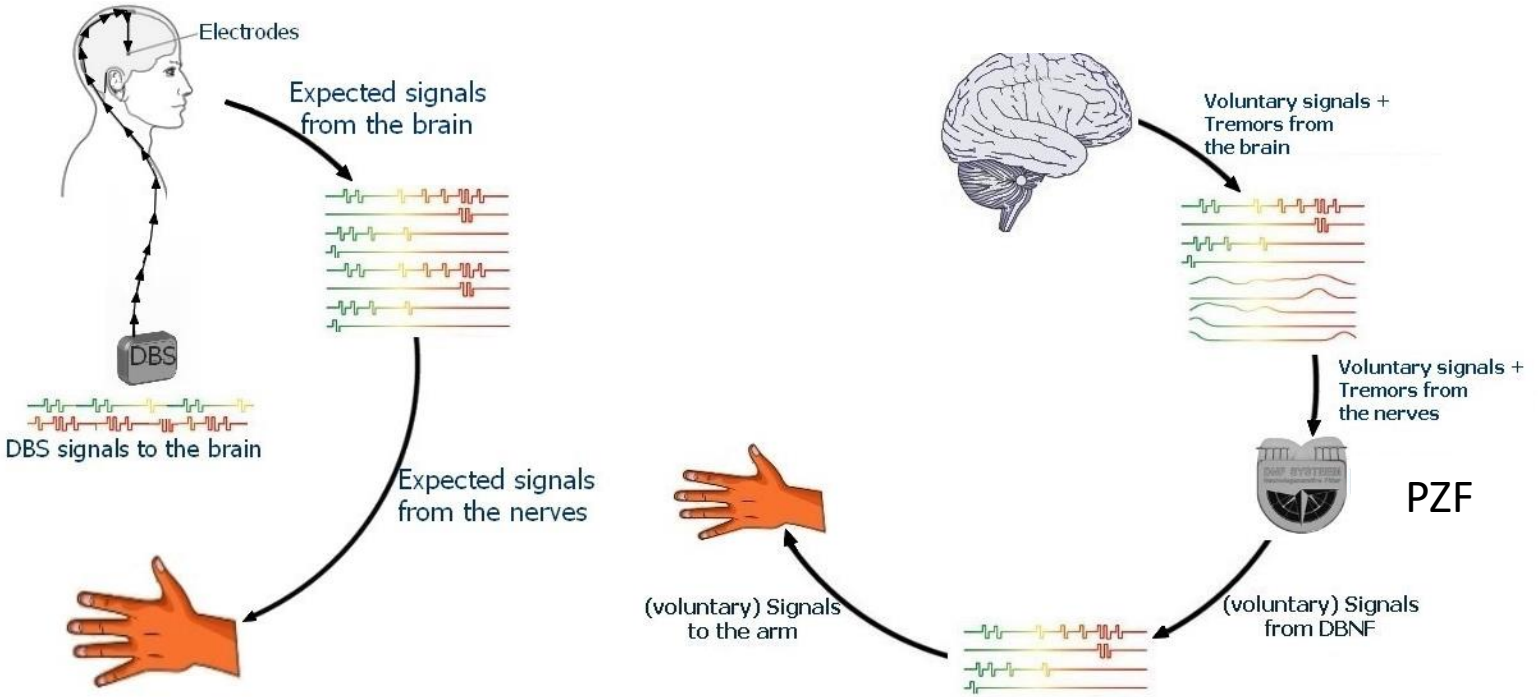
Tremors Big Databank

The information from the 24-hour / 365-day tremor registration system can help with the creation of a global database for science and treatment improvement. Thanks to the built-in data registration system of PZF, all pulse data (voluntary and involuntary signals) plus some other essential data can be recorded. This data is stored in the Cloud via WiFi and a secure line. As a result, we have a Tremor Database, which scientists and possibly doctors can use.

Schematic overview of signal transfer in Parkinson's patients with DBS or with PZF



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Target market

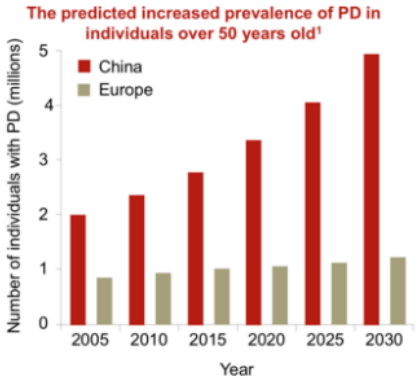
In 2021 globally more than 11 million patients were estimated to be affected by Parkinson's disease.

The **prevalence** of the disease ranges from 43 people per 100,000 in the fourth decade of life to more than 2,000 people per 100,000 among those who are 80 and older.

The total care costs in the US were estimated to be USD 27 billion (in 2019) and in the Netherlands and Europe 250 million Euro and 15,9 billion Euro, respectively (in 2019).

Predictions of the increase in Parkinson's disease prevalence

- Based on an analysis of epidemiological data in Western Europe's 5 most and the world's 10 most populous nations,[a] it was estimated that the prevalence of PD in individuals over 50 years of age would rise from 4.1 million people in 2005, to 8.7 million people by 2030[1]
- The burden of PD is expected to grow substantially, and to become increasingly concentrated outside the Western world[1]



[a]Europe: Germany, France, UK, Italy and Spain
The world: China, India, USA, Indonesia, Brazil, Pakistan, Bangladesh, Russia, Nigeria, Japan

1. Dorsey et al. Neurology 2007;68(5):384–386

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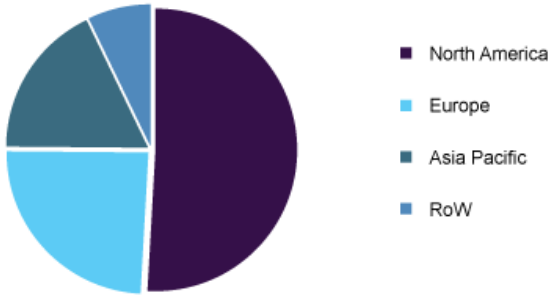
Target market *(continued)*

The global market for DBS is expected to reach USD 3,740.81 million by the year 2026, in terms of value at a CAGR of 15.9%.

In addition, almost comparable figures are mentioned for prescribing drugs (i.e. pharmaceutical companies).

The diagrams below indicate the geographical classification and growth of the DBS market.

Deep Brain Stimulation devices market from 2014-2025 (USD Million)



Global Deep Brain Stimulation devices market share 2016 (%)