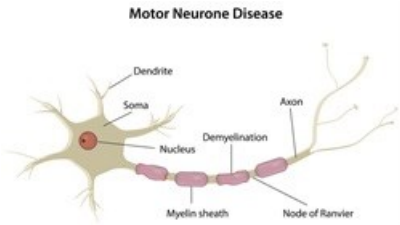
Wits profs will use new method to treat neuron diseases

Two University of the Witwatersrand researchers will use nanotechnology to improve drug delivery for patients suffering from neuro-degenerative illnesses such as Parkinson's, Alzheimer's and motor neuron disease...

Prof Viness Pillay, a pharmaceutical scientist and specialist in nanomedicine, and Prof Girish Modi, a neurologist and scientist, have combined their expertise to create a scientific programme they say will move research from "the bench to the bedside".



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Modi said about 10% of people over 65 suffered from Alzheimer's.

He said 40-million people were suffering disease at present. This figure, he added, would soar to 75-million people by 2030 and 140-million by 2050.

There is no known cause for neurodegenerative diseases but studies have shown that genetics, environmental toxins and age contribute to their onset.

Nanomedicine refers to materials that measure between 1nm and 100nm. A strand of hair is 100,000nm.

Pillay said the main challenge was getting drugs across the bloodbrain barrier, a cluster of vessels around the brain, which the researchers hoped to temporarily disrupt.

Current drug delivery to targeted sites has not been specific enough, so patients on neurotherapy often suffer severe side effects.

"Once drug molecules are in the brain, we can't have them indiscriminately floating around otherwise it will cause chaos," Pillay said.

"We need to get them to very specific biomarkers and neurons."

Drugs will be attached to nanoparticles, which should be able to seek out specific targets.

They can be injected, administered orally or strategically placed using surgical techniques.

The researchers are trying to improve conventional treatments.

The loss of dopamine in the brain caused by Parkinson's is not significantly improved by current drug therapy, in which liver degradation and the blood-brain barrier prevent most drugs from reaching the brain.

"Our drug delivery will take dopamine to deficient places and get nerve cells working again," Modi said.

The researchers said about 100-million was spent every year on Alzheimer's research in the US. But there have been no ground-breaking discoveries.

Research is in the pre-clinical stages, which precede phase 1 trials. The duo have published about 40 papers on the topic, which they started researching in 2008.

They will present their vision at the 12th Prestigious Research Lecture of the Wits faculty of science at the School of Public Health Auditorium on Wednesday next week.

"Instead of drugs in capsules, we'll have drugs delivered through nanotechnology for neurotherapy," Modi said. "That is the future."

Source: The Times