Dr. Frey inside the HealthPartners Neuroscience Center

Discovering new ways to treat and prevent brain disorders

William Frey, II, PhD, has helped lead our organization's neuroscience research efforts for 46 years, and the innovations he and his colleagues have developed have energized scientific efforts worldwide.

His recent role as the caregiver of a person with a dementing illness has renewed his appreciation for the complexity of brain disorders, both in the challenges they present to families and the things that can remain the same.

"I'm amazed at the really funny jokes my partner makes, the intelligent things she says, and the way she responds to other people, letting them know how much she appreciates them," Dr. Frey said. "It's not something I would have thought a person who had Alzheimer's would necessarily be capable of after several years with the disease."

Dr. Frey's extensive family history with brain disorders certainly increased his interest in their biochemistry. His father died of Parkinson's and dementia and his grandmother on his mother's side was one of nine siblings who died with dementia; the tenth died of a stroke.

"Not only have I watched this happen to my relatives, but naturally I'm concerned about the future health of myself, my children, my siblings and the community at large," Dr. Frey said.

In 1977, Dr. Frey founded what eventually became the research arm of the HealthPartners Center for Memory and Aging. The team's research is wide ranging, with a goal of better identifying, treating and preventing neurological, psychiatric and behavioral disorders.

Dr. Frey credits generous donors for much of his team's success over the years. "This is especially true because the successful scientific approach we developed was out of the mainstream," he said.

Perhaps Dr. Frey's most significant accomplishment has been his development of the intranasal delivery method, which uses nasal sprays to effectively deliver medicines to the brain while avoiding the side effects of treatments made via injections, oral medications and other, more invasive methods. It does this by getting around the blood-brain barrier, an anatomical network that protects the brain but also prevents many medicines from reaching it. Scientists across the globe are now using this method in their own research.

Armed with this delivery method, the neuroscience research team has introduced a host of promising treatments.

- In multiple clinical trials, intranasal insulin has improved the memory, attention and functioning of normal adults and patients with mild cognitive impairment or Alzheimer's. We have expanded this work into other neurological conditions such as Parkinson's disease, and we recently began studying the use of intranasal insulin as a treatment for concussion and traumatic brain injury (TBI). We are raising money for a Phase 2 clinical trial with those who have experienced a recent concussion or TBI.
- We developed intranasal deferoxamine (DFO), which has improved memory and functioning in animal models of Alzheimer's, Parkinson's, stroke and even normal aging. We are currently planning the first trial to show that intranasal DFO can reach the cerebrospinal fluid in humans. We would then raise money for a Phase 1 clinical trial to test the treatment's safety.
- Intranasal stem cell treatment, discovered in collaboration with German researchers, has been shown to safely and effectively treat animal models of a number of brain diseases. We are currently studying the use of intranasal stem cells in an animal model of memory loss.

In 2016, Dr. Frey joined the board of Regions Hospital Foundation and played a large role in its HealthPartners Neuroscience Research Campaign, which raised $13 million. As part of this effort, funds allowed the research program to move into the HealthPartners Neuroscience Center, which opened in 2017. The St. Paul facility is the largest free-standing neuroscience center in the Upper Midwest and brings together all our neuroscience programs.

Joining the foundation board also allowed Dr. Frey to further explore his interest in cancer research, mental health, emergency care and other hospital programs. Throughout it all, he has continued a steady stream of generous financial contributions.

Dr. Frey shows no signs of letting up on his quest to find new ways to treat and prevent brain disorders. "These are not incurable diseases. Rather they are diseases for which we have not yet developed effective treatments. Together, we are working hard to develop them!"

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