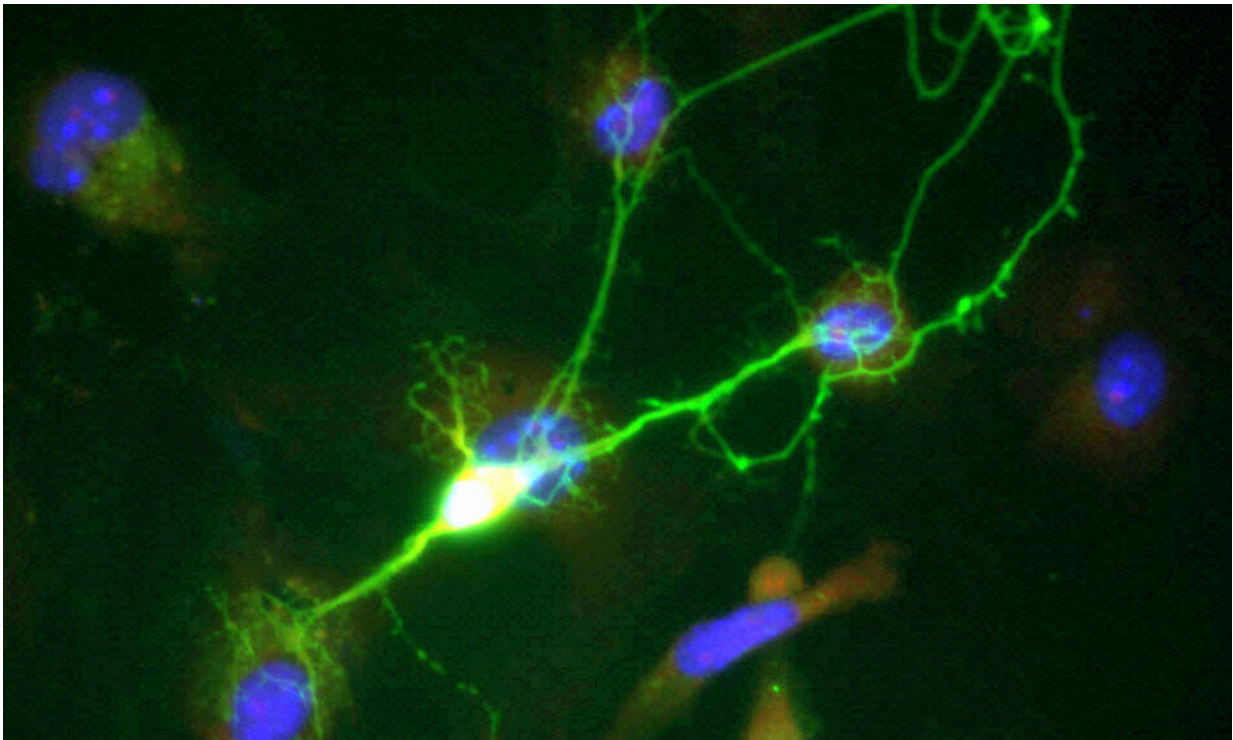


# Bacterial meningitis and dementia: Different diseases with common aspects

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Researchers at Karolinska Institutet describe the relationship between infectious agents and dementia in an article recently published in *Frontiers in Cellular Neuroscience*.

Bacterial infections of the brain and neurodegenerative diseases

represent two pathologies that are commonly considered far away from each other.

"The article sheds light on the relationship between [infectious diseases](#), in particular bacterial meningitis, and dementia. In fact, many molecular processes, like the injury of neuronal cells and the neuro-inflammation process, are common in both bacterial meningitis and neurodegenerative diseases," explains Federico Iovino, assistant professor at the Department of Neuroscience and one of three contributing authors of the article.

### **Preventing neuronal damage and neuronal cell death**

Neuronal injury and loss of neurons are pathological hallmarks in dementia. A major cause of neuronal damage is meningitis, caused by a bacterial infection of the brain.

"We have recently discovered the [molecular mechanisms](#) underlying bacterial interaction with neurons (Tabusi et al, 2021, PLOS Pathogens), and we believe that by protecting neurons from bacterial interaction, it is possible to prevent neuronal damage and neuronal cell death that, in the long run, increase the risks for dementia onset," Federico Iovino says.

### **How you performed the study?**

"Kristine Farnen, Ph.D. student, and Miguel Tofiño-Vian, postdoc at the Department of Neuroscience in the Iovino laboratory, have performed the literature study and the epidemiological investigation of clinical data to study the relationship between dementia and bacterial meningitis. This article is a state-of-the-art overview on the interplay between brain bacterial infections and [neurodegenerative diseases](#)."

### **What is the next step?**

"Our next step is to develop a novel therapeutic approach to block bacterial interaction with neurons in vivo, with the ultimate scope to reduce [neuronal damage](#) and neuronal cell death. In a parallel study we will also investigate to what degree [bacterial meningitis](#) can increase the risk for neurodegeneration in vivo. We are going to use our bacteremia-derived meningitis model and mouse models for Parkinson's disease from collaborators."

**More information:** Kristine Farmen et al, Neuronal Damage and Neuroinflammation, a Bridge Between Bacterial Meningitis and Neurodegenerative Diseases, *Frontiers in Cellular Neuroscience* (2021). [DOI: 10.3389/fncel.2021.680858](https://doi.org/10.3389/fncel.2021.680858)

Provided by Karolinska Institutet

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