Neisseria meningitidis

- Troubled Times, Changing Tides: A Seroprevalence Study on Meningococcal Immunity in France Between 2016 and 2024
- Emergence of Neisseria meningitidis Causing Both Urogenital Infection and Invasive Meningococcal Disease in China
- Ravulizumab-related meningococcal sepsis post rituximab
- Rapid diagnosis of bacterial meningitis using point-of-care PCR assay with negative cerebrospinal fluid culture
- Global, regional, and national burden of meningitis among children, 1990-2021: An analysis of the global burden of disease study 2021
- Structure of the virulence-associated Neisseria meningitidis filamentous bacteriophage MDAphi
- When Neisseria meningitidis Strikes an Immunocompetent Host and Purpura Fulminans Results
- Genomic surveillance of invasive Neisseria meningitidis isolates circulating in Paraguay, 2009-2021

Neisseria meningitidis, often referred to as meningococcus, is a Gram-negative bacterium that can cause meningitis and other forms of meningococcal disease such as meningococcemia, life-threatening sepsis. It has also been reported to be transmitted through oral sex and cause urethritis in men.

The host signaling pathways manipulated by Nm during central nervous system (CNS) entry are not completely understood. Data point towards a role of MAPK signaling during infection of the CP epithelium by Nm, which is strongly influenced by capsule expression, and affects infection rates as well as the host cell response [1)]

Neisseria meningitidis is known to specifically enrich the central nervous system through the guidance of an outer membrane invasion protein named Opca. By loading chemotherapeutic drug methotrexate (MTX) in the hollow manganese dioxide (MnO2) nanoparticles with surface modification of Opca protein of Neisseria meningitidis, a bionic nanotherapeutic system (MTX@MnO2 -Opca) is demonstrated to effectively overcome the BBB. The presence of Opca protein enables the drug to cross the BBB and penetrate into tumor tissues. After accumulating in glioblastoma, the nanotherapeutic system catalyzes the decomposition of excess H2 O2 in the tumor tissue and thereby generates O2, which alleviates tumor hypoxia and enhances the effect of chemotherapy in the treatment of glioblastoma. This bionic nanotherapeutic system may exhibit great potential in the treatment of glioblastoma [2)].

1)

Herold R, Scholtysik R, Moroniak S, Weiss C, Ishikawa H, Schroten H, Schwerk C. Capsule-dependent impact of MAPK signalling on host cell invasion and immune response during infection of the choroid plexus epithelium by Neisseria meningitidis. Fluids Barriers CNS. 2021 Dec 4;18(1):53. doi: 10.1186/s12987-021-00288-7. PMID: 34863201; PMCID: PMC8643193.

2)

Dong CY, Huang QX, Cheng H, Zheng DW, Hong S, Yan Y, Niu MT, Xu JG, Zhang XZ. Neisseria Meningitidis Opca Protein/MnO2 Hybrid Nanoparticles for Overcoming Blood Brain Barrier to Treat Glioblastoma. Adv Mater. 2022 Jan 7:e2109213. doi: 10.1002/adma.202109213. Epub ahead of print. PMID: 34995395.