Toll-like receptors, or TLRs, are part of the innate immune system, and defend organisms from infections by detecting various types of pathogens specific to each TLR.

The interaction between astrocytes, (a neural cell that, among other roles, is a component of the blood-brain barrier) and TLRs is involved in the neuroinflammation associated with HAND.

However, little is known about TLR expression on human astrocytes and what the consequences of external stimuli may have on their levels of expression.

Learning which TLRs are expressed on resting primary astrocytes and what stimulates this expression is important to gaining a better understanding of the root cause of HAND. The effects of prolonged exposure to IL-1β, a pro-inflammatory cytokine produced by macrophages, is also unknown and may be associated with TLR expression in resting primary astrocytes.