The clinical diagnosis of Parkinson's disease (PD) is difficult because its signs and symptoms overlap with other forms of parkinsonism, its progression can vary substantially among patients, and as yet there is no robust ante mortem biomarker validated and widely accepted. Furthermore, there is the need to predict the progression to cognitive impairment and dementia in these parkinsonisms.

There are validated cerebrospinal fluid (CSF) biomarkers of Alzheimer disease (AD) pathology - Aβ1-42, total tau and phosphorylated tau - that have been consistently demonstrated to reliably predict the conversion to dementia in the pre-clinical stage of disease. As putative components of the underlying pathology in Parkinson's Disease-Dementia complex (PDD) and dementia with Lewy bodies (DLB), these biomarkers may improve the ability to predict the risk for cognitive impairment and PDD. Moreover, in CSF different tau forms, reliably reflecting the cerebral cortex forms, can be measured and their ratio has been shown to neatly separate progressive supranuclear palsy (PSP) from other parkinsonisms and tauopathies.

Recent data show that total and oligomeric α-synuclein (α-syn) can be measured in CSF and these determinations significantly contribute to the differential diagnosis between synucleinopathies and other neurodegenerative disorders. Interestingly, total α-syn is reduced in synucleinopathies (DLB>PD) as a result of widespreading of Lewy bodies in the brain, as opposite to the oligomeric form, which is increased in these conditions. Neurodegenerative disorders need to be diagnosed early in their course; in this light, combination of several CSF biomarkers seems to be the most promising approach.