Regional vulnerability of mesencephalic dopaminergic neurons prone to degenerate in Parkinson's disease: a post-mortem study in human control subjects.

Parkinson's disease (PD) is characterized by loss of dopaminergic (DA) neurons in the human midbrain, which varies greatly among mesencephalic subregions. The genetic expression profiles of mesencephalic DA neurons particularly prone to degenerate during PD (nigrosome 1 within the substantia nigra pars compacta-SNpc) and those particularly resistant in the disease course (central grey substance-CGS) were compared in five control subjects by immuno-laser capture microdissection followed by RNA arbitrarily primed PCR. 8 ESTs of interest were selected for analysis by real time quantitative reverse transcription PCR. DA neurons in the CGS preferentially expressed implicated in cell survival (7 out of 8 genes selected), whereas SNpc DA neurons preferentially expressed one gene making them potentially susceptible to undergo cell death in PD. We propose that factors making CGS DA neurons more resistant may be helpful in protecting SNpc DA neurons against a pathological insult.