

TRI-HETEROCYCLIC RING COMPOUNDS AS ALPHA-SYNUCLEIN LIGANDS

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A novel series of phenothiazine-derived molecules are useful for detecting Parkinson's disease using positron emission tomography (PET) imaging. The molecules bind with high affinity to the alpha-synuclein protein, which forms aggregates in the brain and is associated with the neurodegenerative disease. Once the molecules are labeled with positron-emitting isotopes, the PET images can be used to assess the level of alpha-synuclein aggregation in the brain. This information could be beneficial for the early diagnosis of Parkinson's disease and related diseases such as dementia with Lewy bodies and multiple system atrophy. The molecules also can be used to monitor disease progression and response to therapy. In addition, the high affinity alpha-synuclein molecules have the potential to be therapeutic drugs for treating Parkinson's disease and its associated diseases by reducing the accumulation of aggregated alpha-synuclein in the brain. The use of novel series of molecules in PET imaging will greatly improve both the diagnosis and monitoring of Parkinson's disease.