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(54) Abstract Title: **Heterodimers and methods of using them**

(57) Novel heterodimers of tetrahydroacridines and tetrahydroquinolinones are disclosed. The heterodimers are capable of acting as both acetylcholinesterase inhibitors and N-methyl-D-aspartate (NMDA) receptor antagonists. The heterodimers may be used to improve cognitive defects via treatment or prevention in both humans and non-humans.

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