Table S2. Method of scoping review.

Category	Method
Eligibility criteria	For each candidate study, each individual experiment was assessed for three criteria: I. Chemogenetic system(s) was applied II. Model(s) of neurological disease and disorder was used, and the rationale of using such model(s) was provided, and III. A rescue of disease-associated deficits was shown. Inclusion of the study was contingent upon at least one experiment satisfying all three criteria.
Information sources	Results from an initial search of PUBMED with keywords [("gene therapy" OR "gene transfer" OR viral-vector OR Chemogenetics OR Pharmaco-genetic OR DREADD OR hM3D OR hM4D OR PSAM OR PSEM) AND (model)] for original articles published before May 2021 were combined with author contributions.
Data charting process	References of search results and author contributions were uploaded to Covidence for subsequent screening and arbitration.
Selection of sources of evidence	Two authors independently screened study titles and abstracts to determine relevance, where a candidate study was deemed relevant if it satisfied at least one of the three eligibility criteria. Then, two authors independently assessed the full text of each relevant article to determine eligibility, which required satisfaction of all three eligibility criteria. All differences were arbitrated by a third author.
Data items	For all eligibility experiments within the included studies, the following were extracted: Title; Journal; DOI; Category of disease of the model; Species of disease model; Chemogenetic receptor; Chemogenetic modulator (CM); CM Route of Administration; Method of receptor delivery; Promoter of transgene; Additional regulation of transgene expression; Cell-type specificity; Cre dependency; Therapeutic strategy; Ligand off-targeted effects.