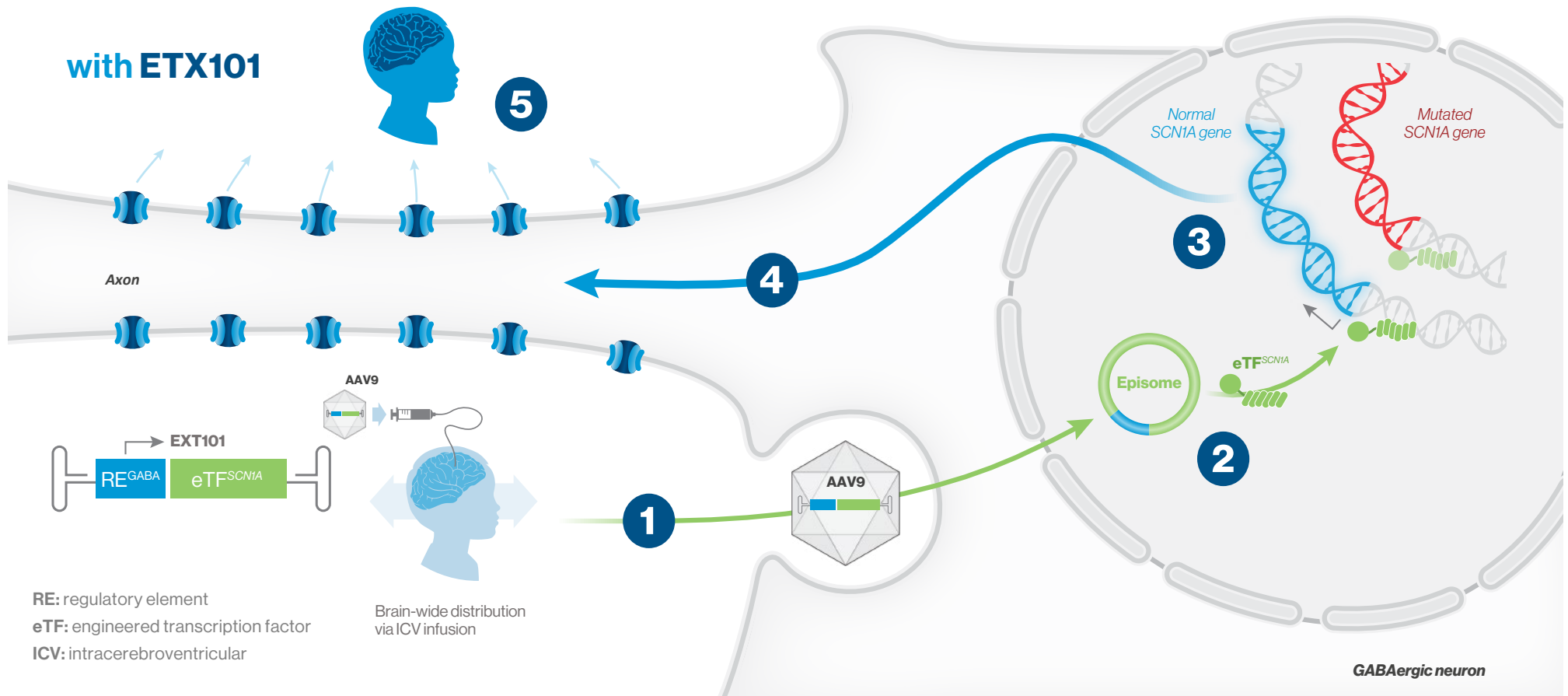


1 Mutation in a single copy of the 6kb *SCN1A* gene, which codes for the voltage-gated sodium channel $Na_v1.1$ (haploinsufficiency).

2 Decreased expression of $Na_v1.1$ leads to lower sodium channel activity and reduced GABA release.

3 GABAergic inhibitory neuron dysfunction causes uninhibited cortical excitation, leading to epileptic seizures and affecting cognition.



1 AAV vector recognized by cell surface receptors and taken into neurons via endosome.

2 Non-integrating therapeutic DNA delivered, forming double-stranded circular episome and initiating transcription under the regulation of the RE^{GABA} promoter to produce eTF^{SCN1A} in GABAergic neurons only.

3 eTF binds to a specific sequence upstream of the transcription start site, resulting in increased SCN1A expression.

4 Increased SCN1A translation leads to increased density of Na_v1.1 sodium channels.

5 Potential to address full range of disease manifestations by precise upregulation of SCN1A expression within GABAergic inhibitory interneurons.

