Table 3 | Predicted cellular composition of whale and elephant brains if they scaled according to rodent or primate cellular scaling rules.

	Predicted from rodent rules	Predicted from primate rules
FALSE KILLER WHALE, 3650 G		
Neurons, whole brain	21 billion	212 billion
Mass, cerebral cortex	3000 g	3655 g
Neurons, cerebral cortex	3 billion	55 billion
Neuronal density, cortex	1000 neurons/mg*	30–80,000 neurons/mg**
Mass, cerebellum	304 g	279 g
Neurons, cerebellum	19 billion	140 billion
Neuronal density, cerebellum	63,500 neurons/mg*	400–600,000 neurons/mg*
AFRICAN ELEPHANT, 4200 G		
Neurons, whole brain	23 billion	241 billion
Mass, cerebral cortex	3488 g	4245 g
Neurons, cerebral cortex	3 billion	62 billion
Neuronal density, cortex	960 neurons/mg*	30–80,000 neurons/mg***
Mass, cerebellum	347 g	318 g
Neurons, cerebellum	21 billion	159 billion
Neuronal density, cerebellum	61,200 neurons/mg*	400–600,000 neurons/mg*

Neuronal densities (*) predicted from the rodent scaling rules apply to the whole structures, including white matter. Neuronal densities predicted from the primate scaling rules are the range observed in primate gray matter (**) (Herculano-Houzel et al., 2008), and in the primate cerebellum including white matter (***), since neuronal density does not covary with structure size in primates (Herculano-Houzel et al., 2007). Notice the difference in predicted numbers of neurons depending on the scaling rules applied. Given the low neuronal densities observed in the whale and elephant gray matter, of about 7000 neurons/mm^3 of gray matter, it is reasonable to speculate that the scaling rules that apply to whale and elephant brains are closer to the rules that apply to rodent brains than to the rules that apply to primate brains. Notice also that the actual size of the elephant cerebellum, at about 1 kg (Hakeem et al., 2005), is much larger than the predicted here.