Improved Golgi Stain for Visualizing Neural Cells

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Technology description

We are offering a novel kit for staining neurons and glia. Our kit, a modification of standard Golgi-Cox kits, has several advantages, as described in the table below.
Golgi-Cox impregnation has been a crucial technique for studying the morphology of neurons as well as glia. Considering the rapidly expanding scope of neuroscience that ranges from the basic research on synaptic functions, to developments of therapeutics for Alzheimer’ s disease and other CNS disorders, we believe that there will be a rapidly growing demand for neuronal staining kits. Advances in computer-aided image analysis also enable use and study of the fine detail that Golgi-Cox staining provides (see images on next page). However, currently only two companies are marketing Golgi-Cox kits, and the staining procedure that these kits enable is time-consuming, limited to cortex staining, complicated, and often results in images with obvious over-staining and artifacts.

Advantages	Current Golgi-Cox Kits	New Kit
Processing time	14-21 days	10 to 14 days
Brain region	Good for cortex staining but not striatum and brainstem	Different solutions available for optimal staining of different brain regions
Impregnation Solution Preparation	Solution "A" and "B" must be mixed at least 12 hrs ahead	Kit comes with one solution that may be used immediately
Final Impregnation Solution Stability	Unstable, always forms precipitates, which cause staining artifacts	Stable, never precipitates, improving staining quality
Storage of impregnation solution	Kits can be stored at 4C for 3 months	Stable for at least 6 months at 4C
Development solution	Overstaining occurs within seconds of exposure in development solution (NH_4OH)	Rarely overstains, with correct timing
Artifacts	Unavoidable	Very minimal
Overstaining	Significant	rare

Figure 1. Comparison of standard Golgi-cox method and modified method.
Low power(4x) microscopic photograph shows difference between two methods, Standard method often cause over-crowded impregnated neurons especially in hippocampus, and over-stained neurons often cause difficulty of sampling by using Neurolucida or Camera Lucida. TH = Thalamus;
DG = Dentate Gyrus, CA = Corpus Ammonis; CTX = Cerebral Cortex.

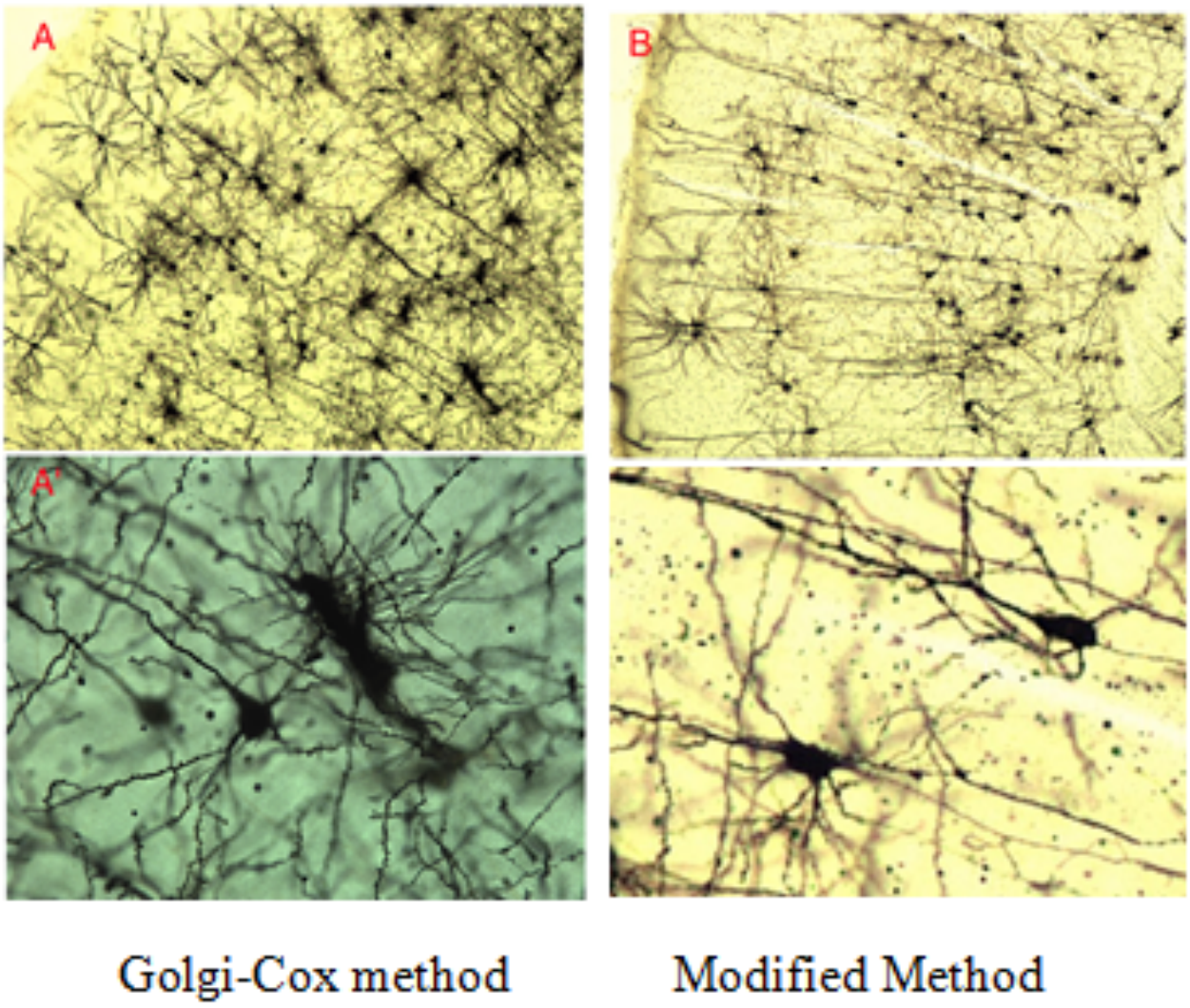

Figure 2. Standard Golgi-Cox method leads to overstaining

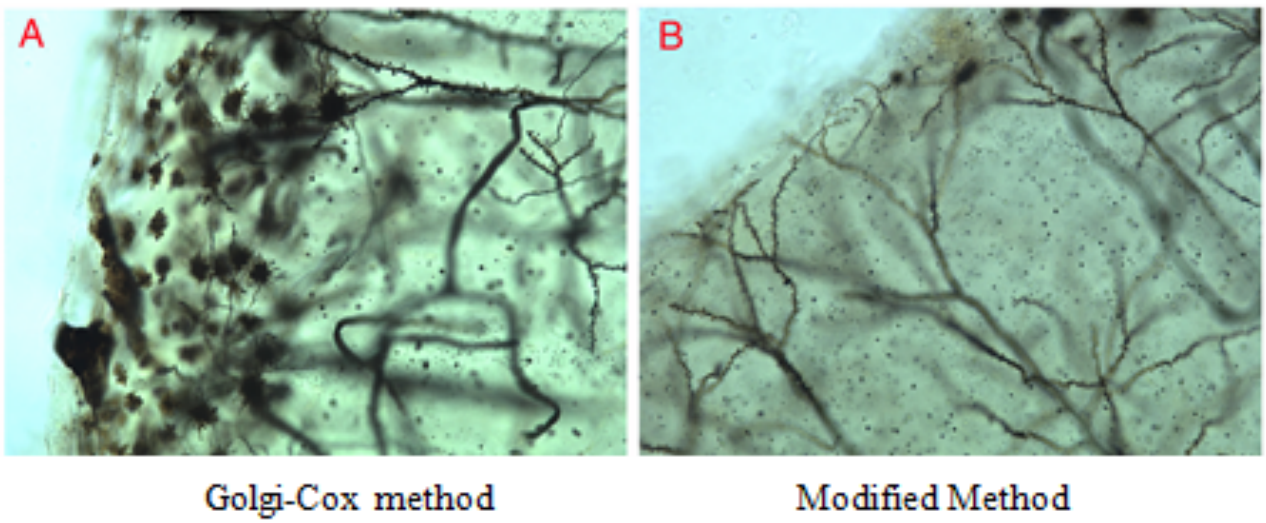

Figure 3 Standard Golgi-Cox method leads to staining artifacts

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