



## The carbocyanine dye DiD labels in vitro and in vivo neural stem cells of the subventricular zone as well as myelinated structures following in vivo injection in the lateral ventricle

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Carbocyanines are fluorescent lipophilic cationic dyes used since the early 1980s as neuronal tracers. Several applications of these compounds have been developed thanks to their low cell toxicity, lateral diffusion within the cellular membranes, and good photostability. 1,1'-Dioctadecyl-3,3',3'-tetramethylindodicarbocyanine 4-chlorobenzenesulfonate (DiD) is an interesting component of this family because, in addition to the classic carbocyanine properties, it has a longer wavelength compared with its analogues. That makes DiD an excellent carbocyanine for labeling cells and tissues with significant intrinsic fluorescence. Drug encapsulation, drug delivery, and cellular transplantation are also fields using DiD-based systems where having detailed knowledge about its behavior as a single entity is important. Recently, promising studies concerned neural stem cells from the subventricular zone of the lateral ventricle in the brain (their natural niche) and their potential therapeutic use. Here, we show that DiD is able to label these stem cells in vitro and present basilar information concerning its pharmacokinetics, concentrations, and microscope protocols. Moreover, when DiD is injected in vivo in the cerebrospinal fluid present in the lateral ventricle of rat, it also labels stem cells as well as myelinated structures of the caudoputamen. This analysis provides a database to consult when planning experiments concerning DiD and neural stem cells from the subventricular zone.

Résumé en anglais

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## Liens

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