ABSTRACT

USE OF A NEUROFILAMENT PEPTIDE FOR THE TREATMENT OF GLIOMA

The present invention provides a new drug to treat malignant glioma, which is the most prevalent type of primary tumor of the central nervous system (CNS). The present invention indeed shows that the isolated NFL-TBS40-63 peptide is highly specific for glioma cells, in which it triggers apoptosis. It is therefore presented here for use in a method for treating malignant glioma. The present invention further relates to the use of the NFL-TBS40-63 peptide for detecting specifically glioma cells either in vivo, or in vitro, or for addressing chemical compounds to said tumor cells.

I/We Claim:

1. An isolated amino acid sequence comprising the NFL-TBS_{40-63} peptide (SEQ ID NO 1) or a biologically active derivative thereof, for use in a method for treating malignant glioma.
2. The amino acid sequence according to claim 1, wherein said malignant glioma is a brain malignant glioma.
3. The amino acid sequence according to claim 2, wherein said brain malignant glioma is chosen among anaplastic astrocytoma (AA), glioblastoma multiform (GBM), anaplastic oligodendroglioma (AO) and anaplastic oligoastrocytoma (AOA).
4. The amino acid sequence according to claims 2 and 3, wherein said brain malignant glioma is a glioblastoma multiform (GBM).
5. The amino acid sequence according to claims 1 to 4, wherein it is administered to human beings at a dose that is comprised between about 0.07 and 0,7 millimole.
6. The amino acid sequence according to claims 1 to 5, wherein it consists of the NFL-TBS_{40-63} peptide (SEQ ID NO 1) or a biologically active derivative thereof.
7. Use of an amino acid sequence comprising the NFL-TBS_{40-63} peptide (SEQ ID NO 1) or a biologically active derivative thereof for detecting glioma cells.
8. The use according to claim 7, wherein said amino acid sequence is labeled, for example with a dye or a tag.
9. The use according to claims 7 and 8, wherein the glioma cells are glioblastoma cells.
10. The use according to claim 7 to 9, wherein said amino acid sequence consists of the NFL-TBS_{40-63} peptide (SEQ ID NO 1) or a biologically active derivative thereof.
11. A method for testing *in vitro* a biological sample for the presence or absence of malignant glioma cells, said method comprising:

a) Suspending the cells of the sample in an appropriate medium,

b) Mixing an amino acid sequence comprising the NFL-TBS_{40-63} peptide or a biologically active derivative thereof with the suspended cells of the sample,

c) Determining the percentage of cells containing said amino acid sequence,

wherein the percentage of cells containing said amino acid sequence corresponds to the percentage of glioma cells in the sample.

12. The method according to claim 11, wherein said amino acid sequence is labeled.

13. The method according to claim 11 and 12, wherein the determination of the percentage of cells containing said amino acid sequence is performed by flow cytometry.

14. The method according to claim 11 to 13, wherein said amino acid sequence consists of the NFL-TBS_{40-63} peptide or a biologically active derivative thereof.

15. Use of an amino acid sequence comprising the NFL-TBS_{40-63} peptide (SEQ ID NO 1) or a biologically active derivative thereof, for addressing or targeting a chemical compound to glioma cells *in vivo* or *in vitro*.

16. The use according to claim 15, wherein said chemical compound is a pharmaceutical compound or a labelling marker.

17. The use according to claim 15 or 16, wherein said chemical compound is encapsulated in nanocapsules which are coupled to said peptide.

Date: **11 June 2012**

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To,
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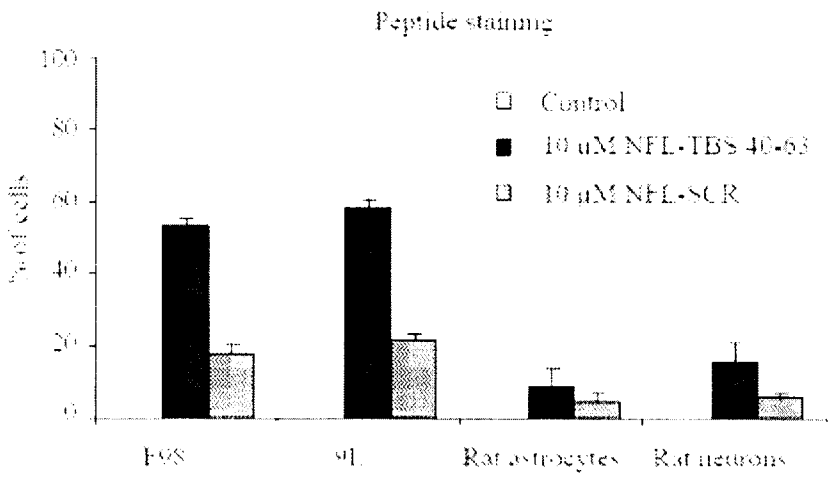
The Patent Office at **New Delhi**

Figure 1

1 A



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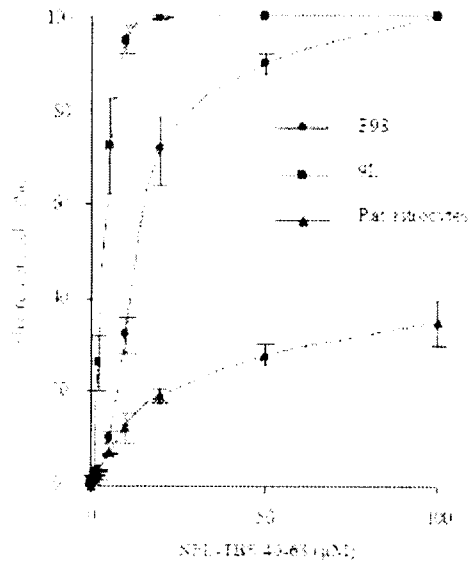

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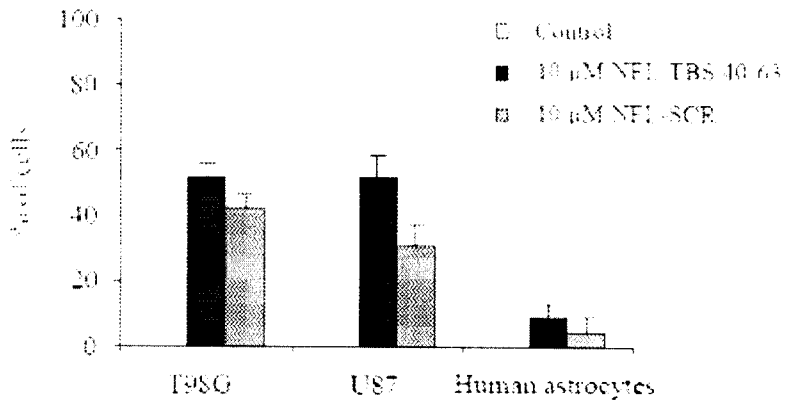
Figure 2

2 A



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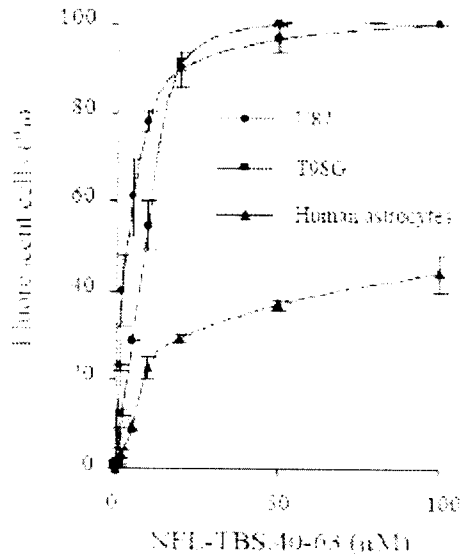

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Figure 3

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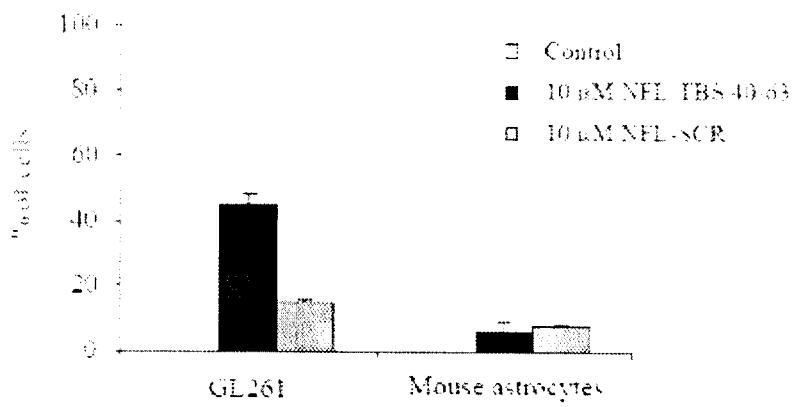

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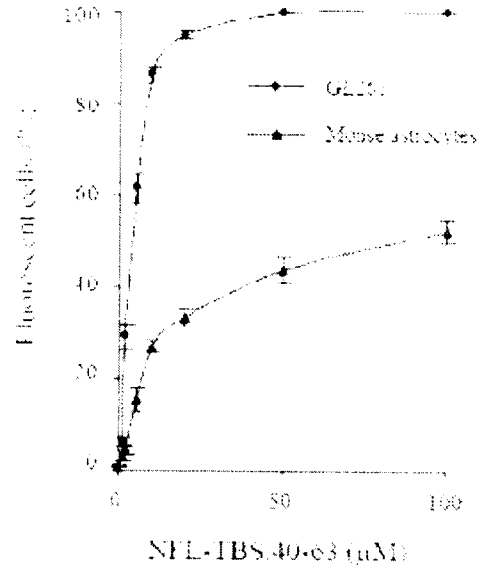

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Figure 4

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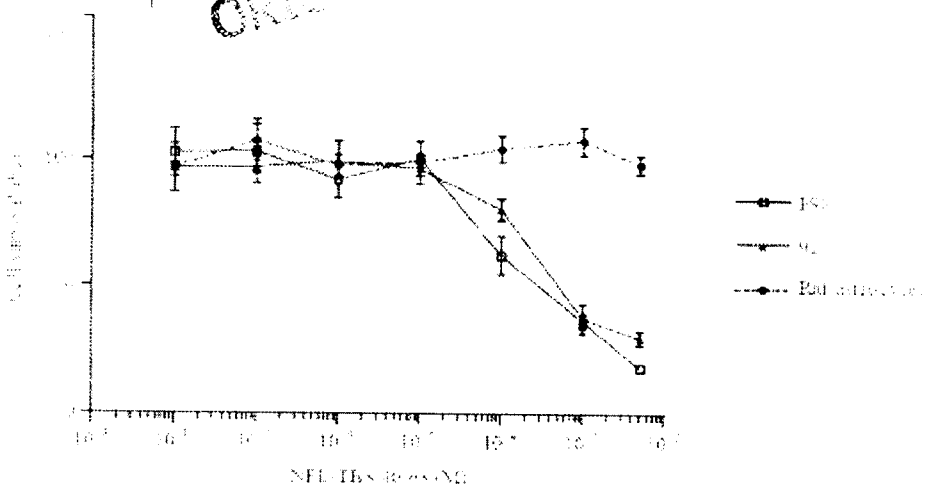

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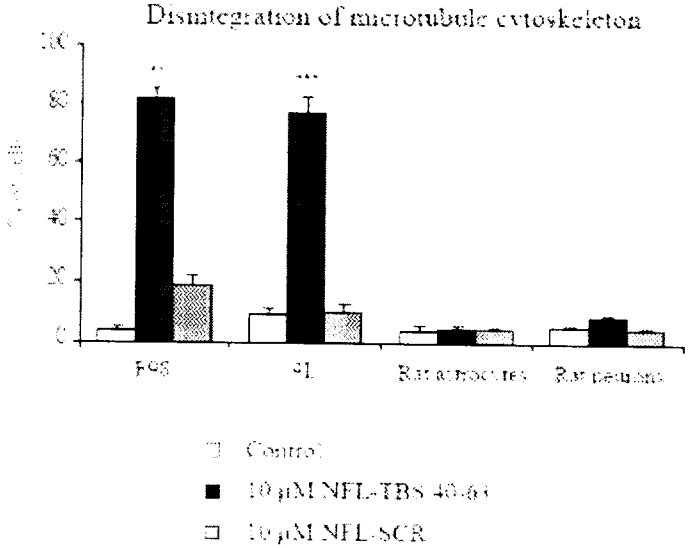

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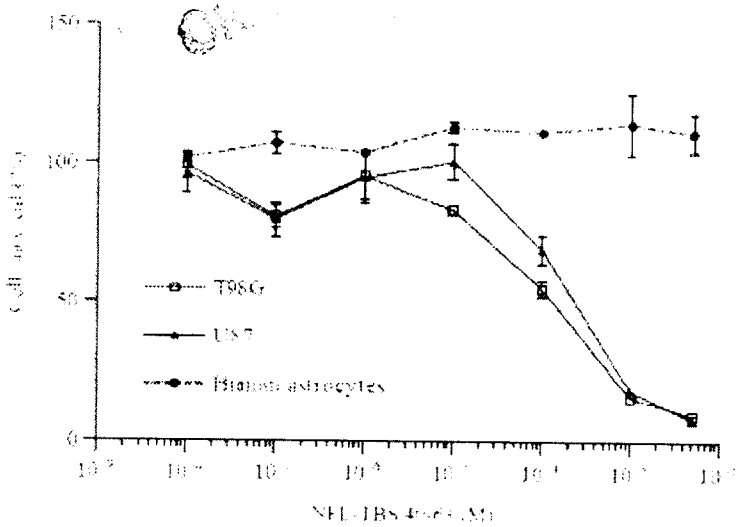
Figure 5

5A



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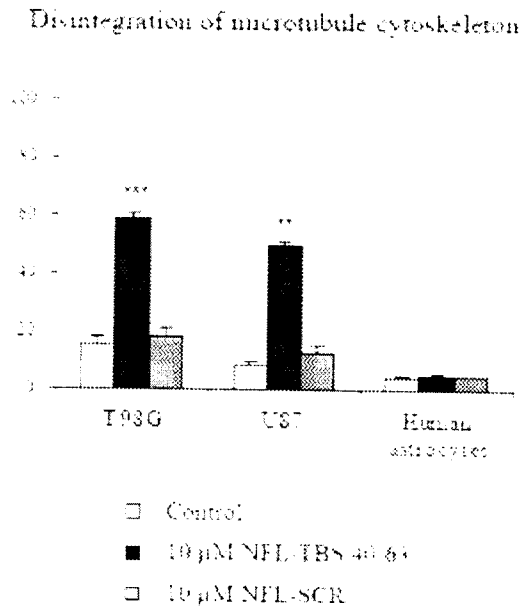

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Figure 6

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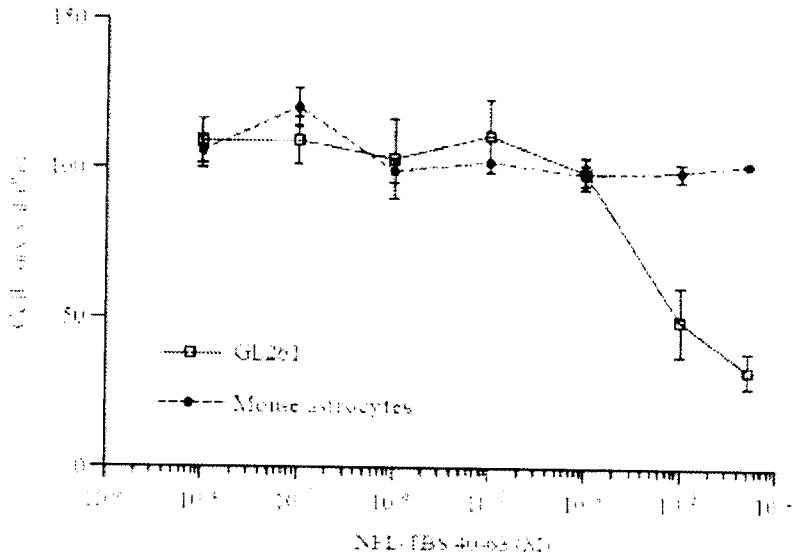
6A



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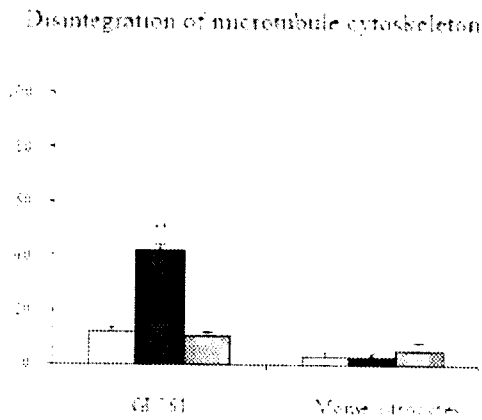

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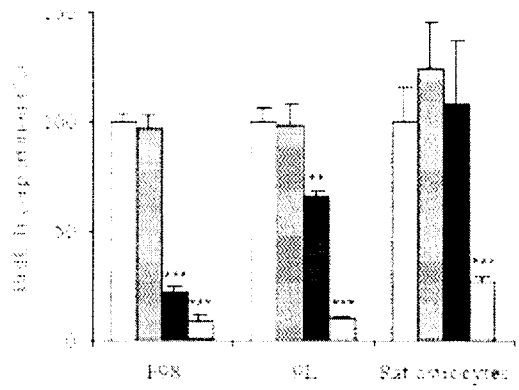
Figure 7

7 A



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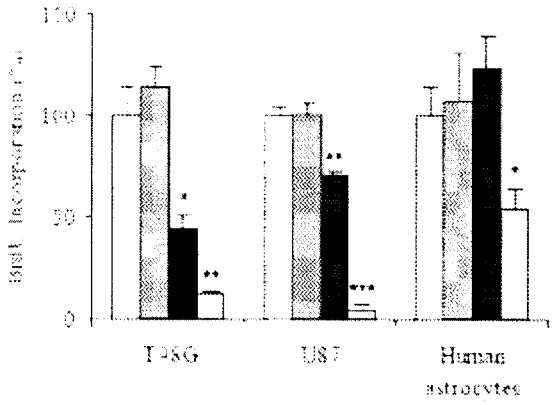

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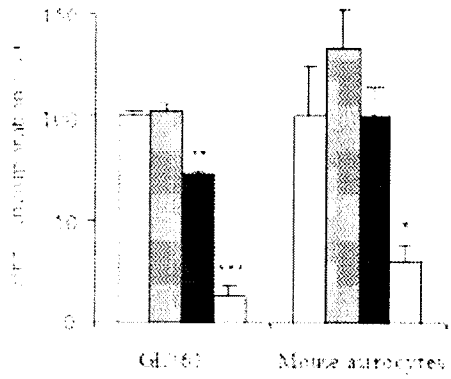

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Figure 8

8 A

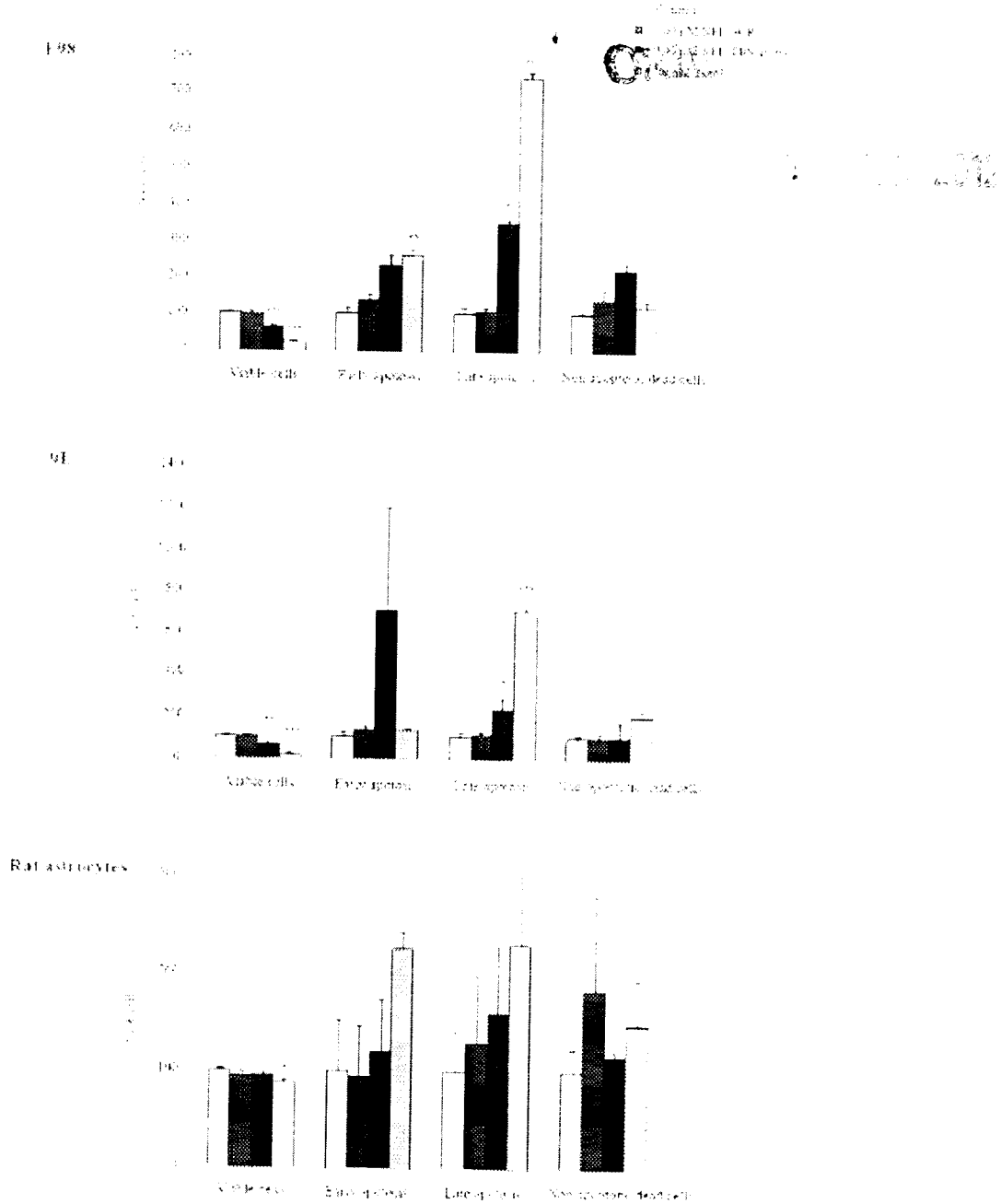

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Figure 8

8 B

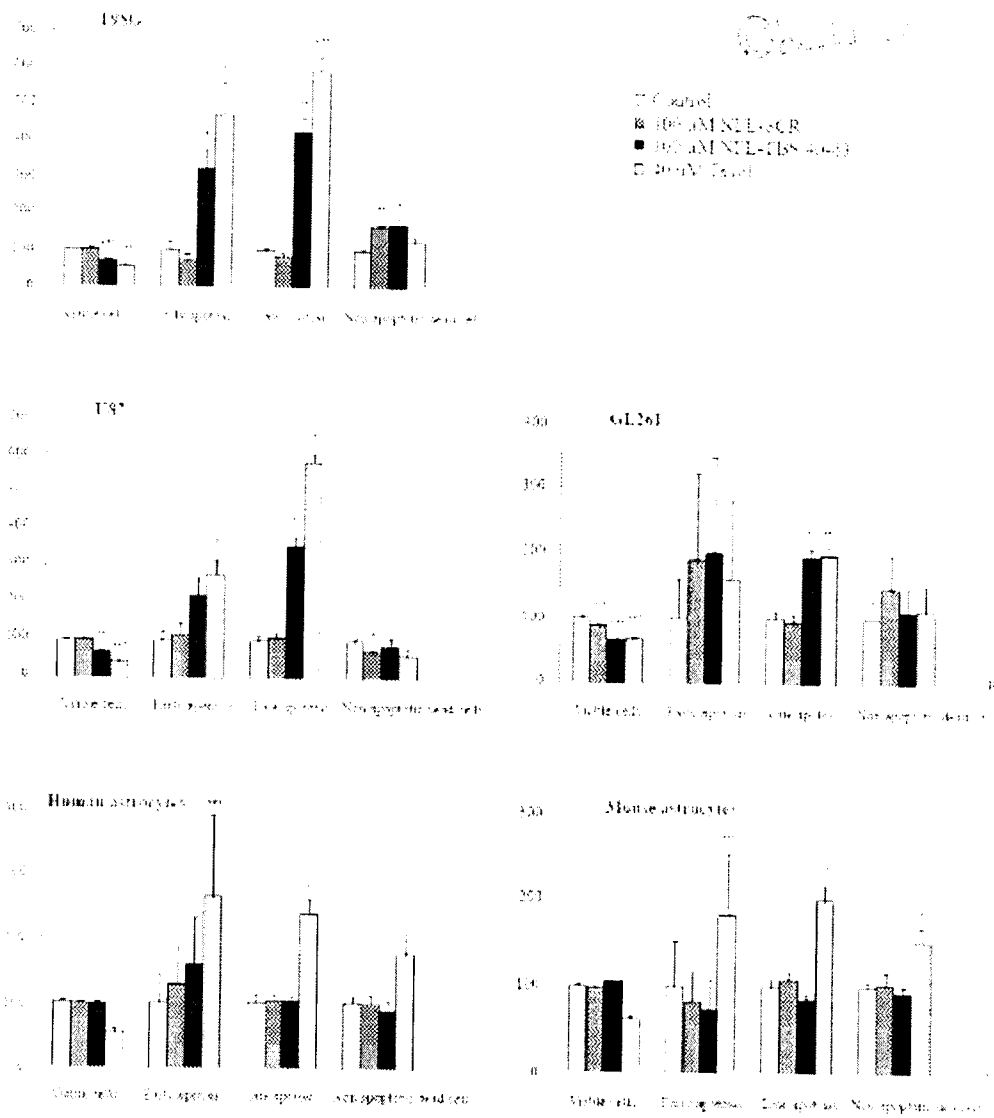

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Figure 9

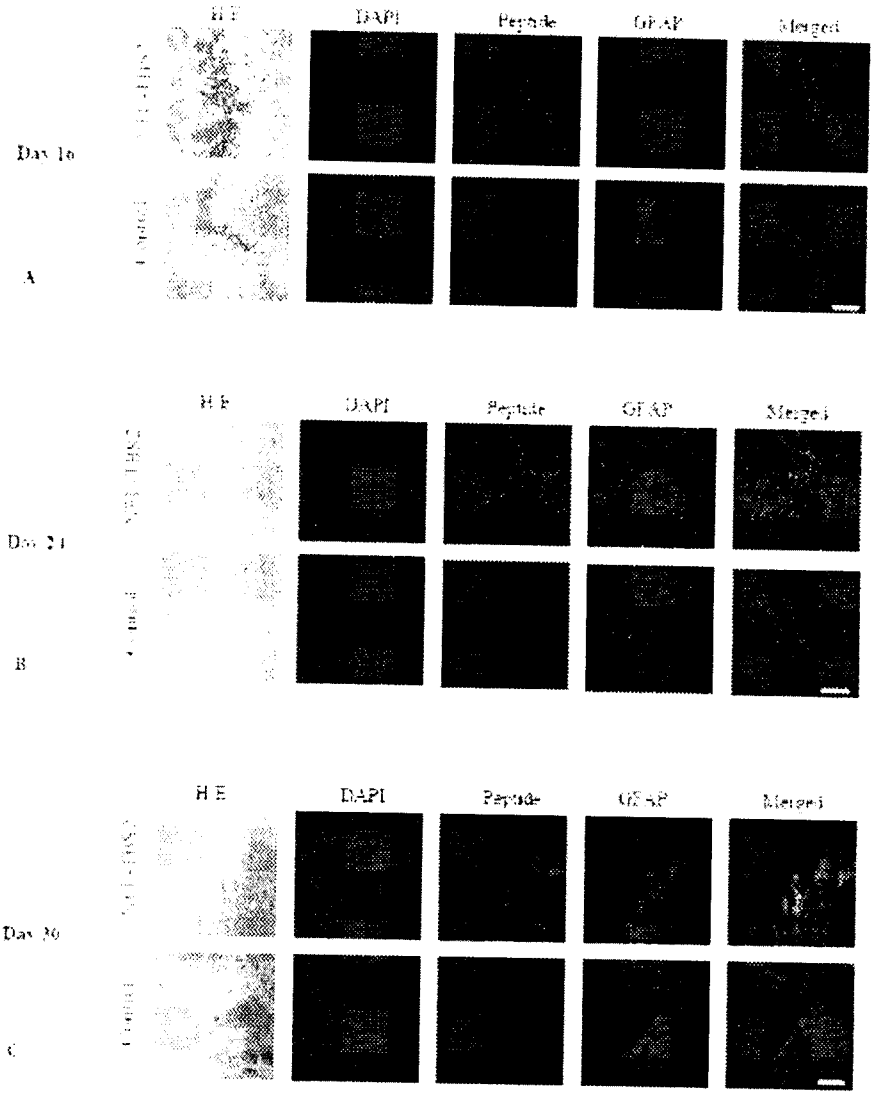

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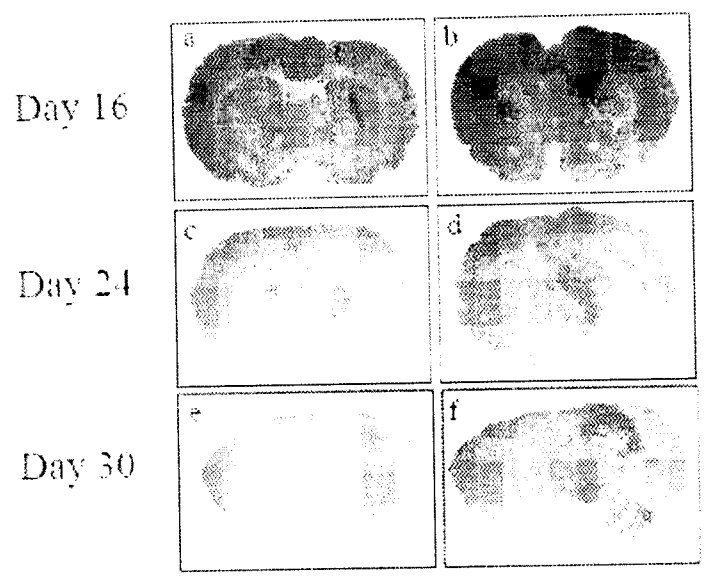
Figure 10

10 A



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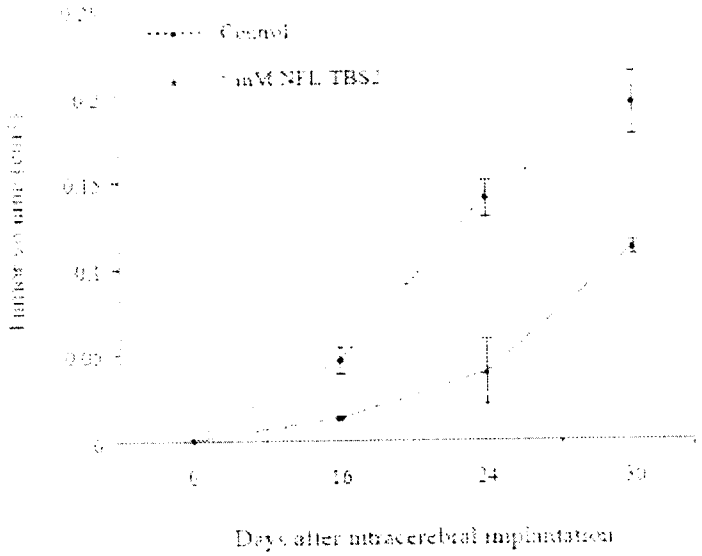

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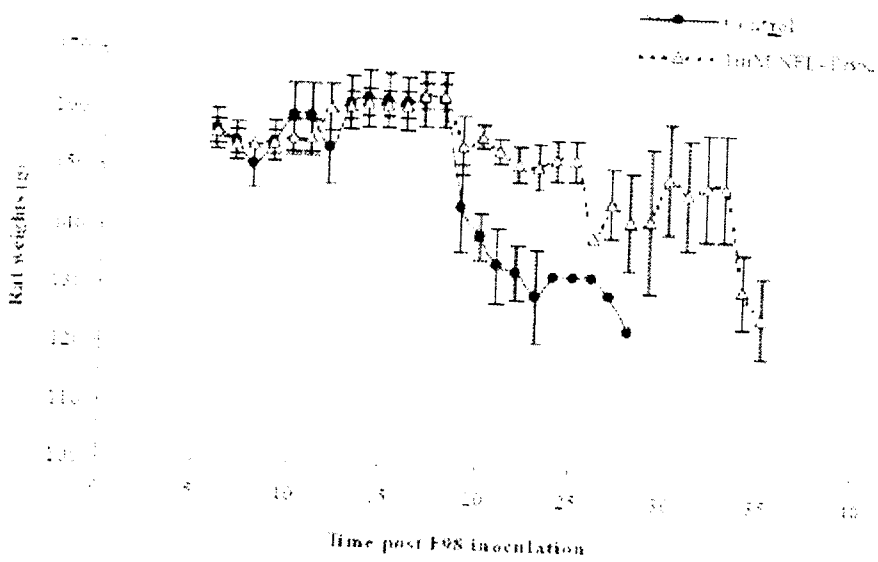
Figure 11



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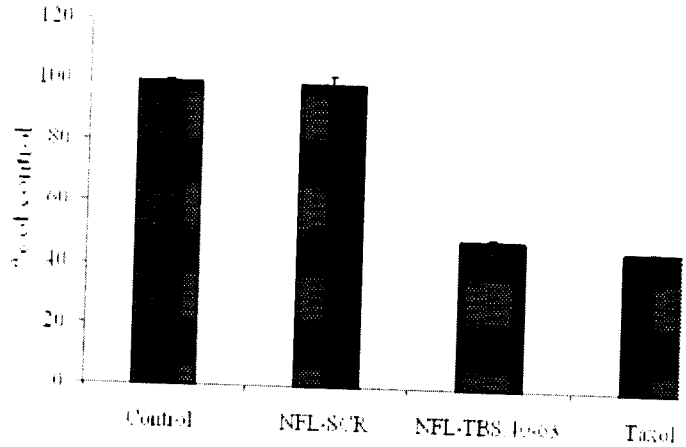

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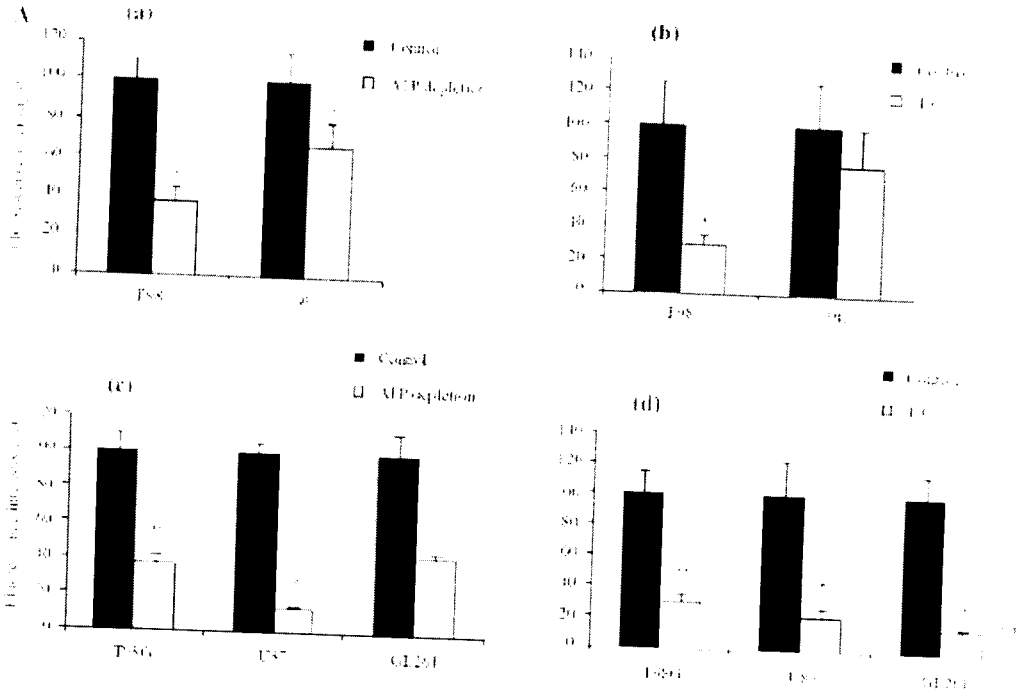
Figure 13



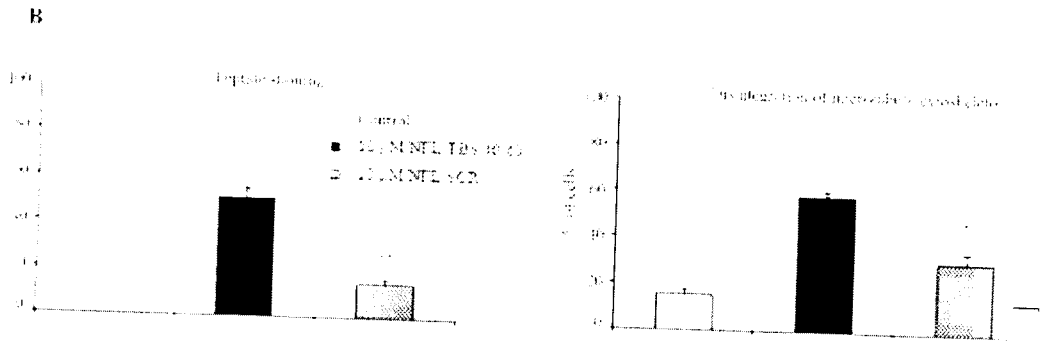


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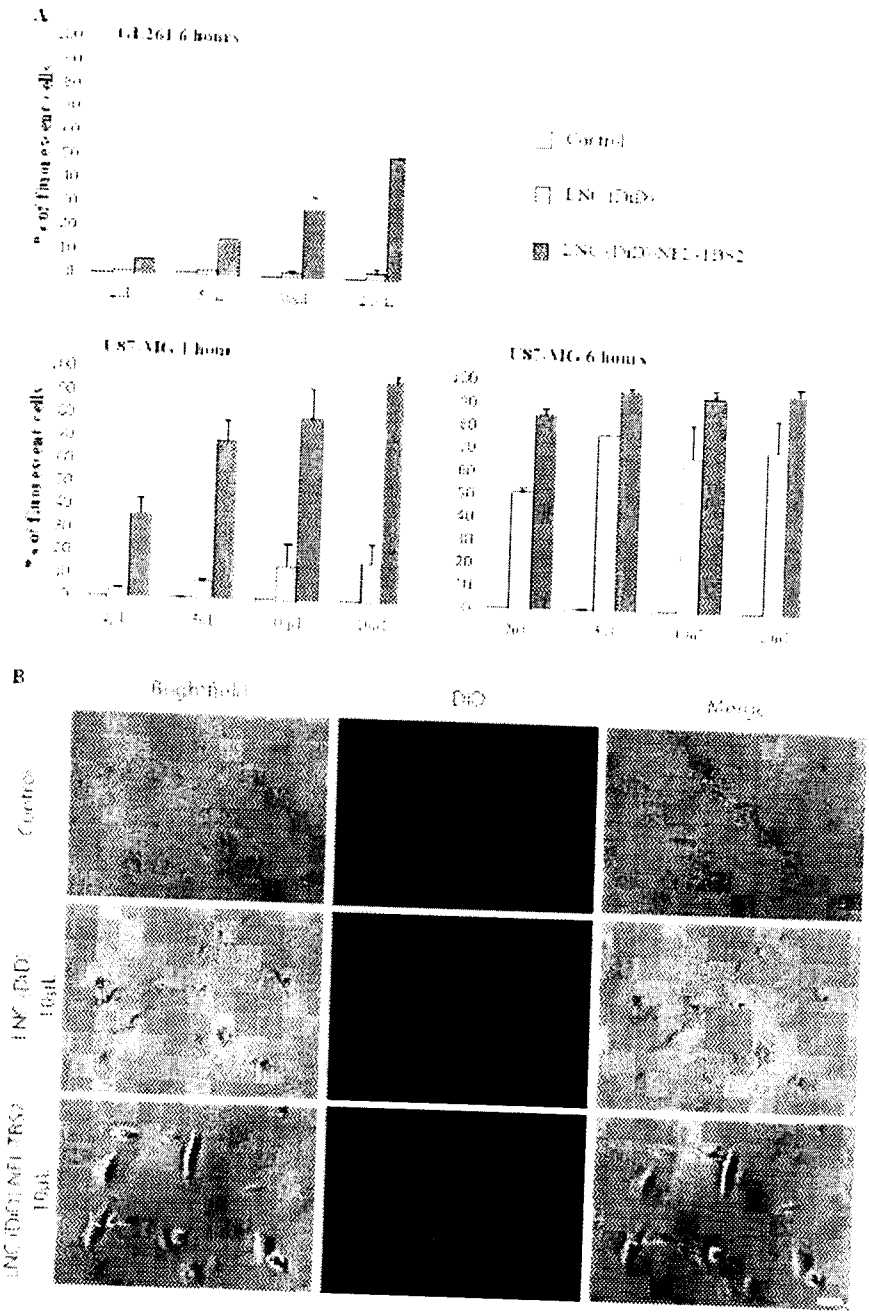
Figure 14



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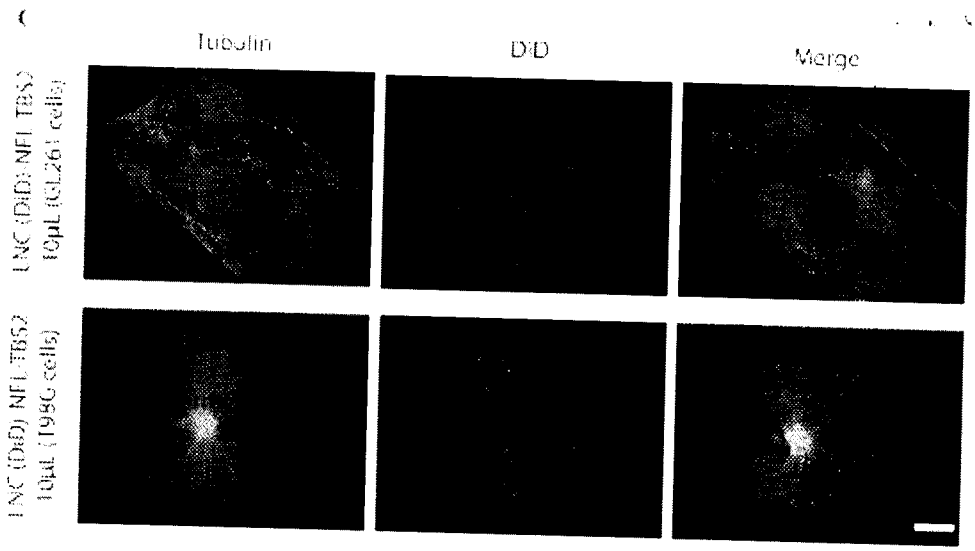

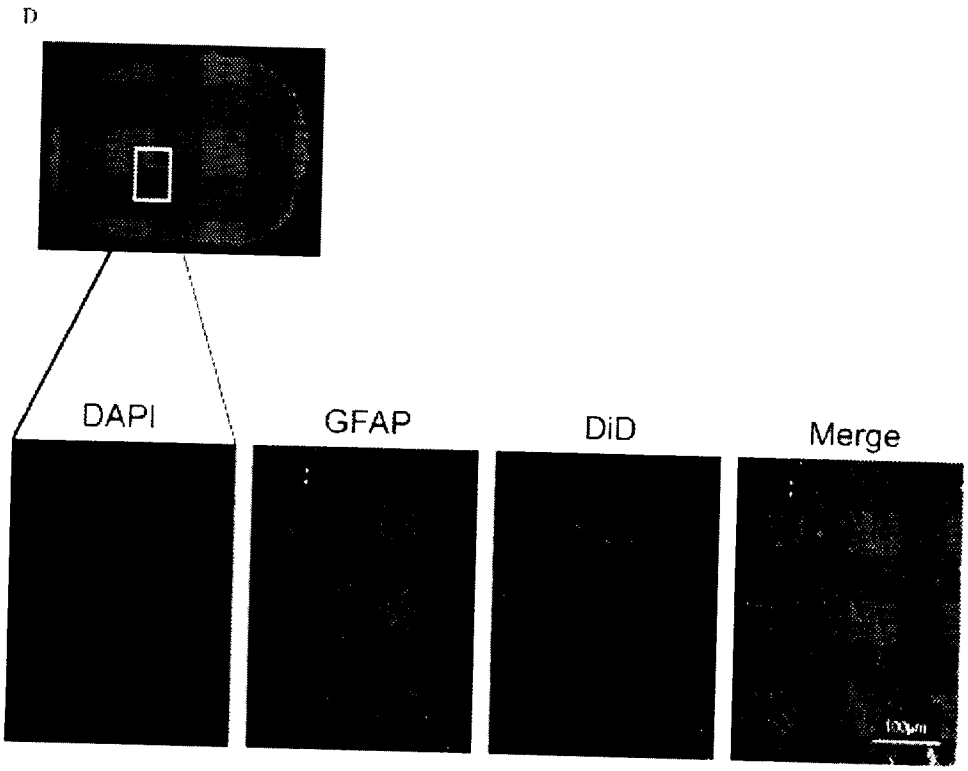

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