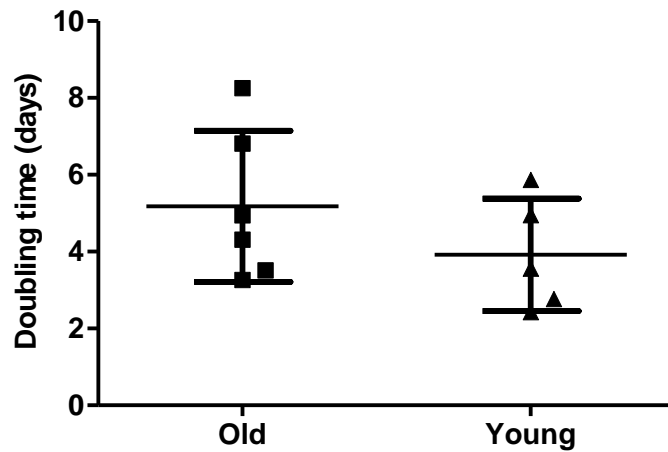


## Supplemental material

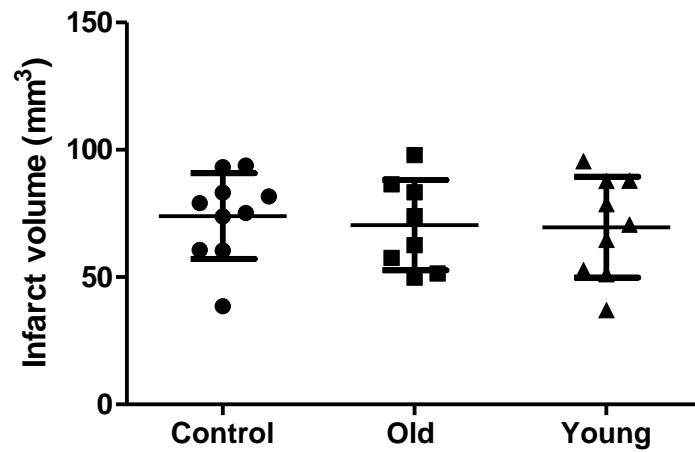
### Supplemental Figure 1

There were no significant differences in doubling time between the young and old hMSCs.



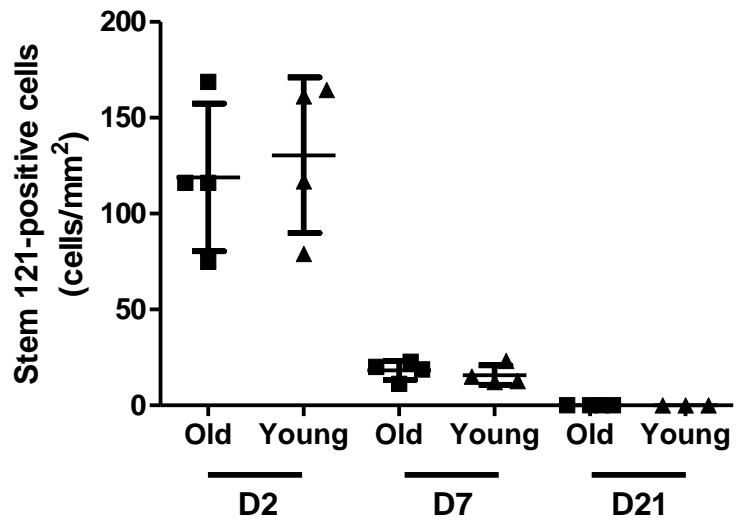
### Supplemental Figure 2

There were no significant differences in infarct volume between the three groups at D21.



### Supplemental Figure 3

There were no significant differences in the number of STEM 121-positive hMSCs between the old (n=4) and young hMSC (n=4) groups at the peri-infarct cortex at D2 and D7. Stem 121 positive hMSCs were not observed at D21 in both groups.



### Supplementary Table 1

Rats with cerebral infarction	Total number	
1) Eligible mNSS from 6 to 9 points at 24 h post-stroke	70	
2) Ineligible mNSS outside 6 to 9 points at 24 h post-stroke	16	
Total number of rats	86	
Control group	Total number	Death number
1) Functional examination and histological analysis at D21	12	2
2) Analysis of trophic and chemotactic factors by Luminex and ELISA	7	3
Total number of rats	19	5
Old hMSC group	Total number	Death number
1) Functional examination and histological analysis at D21	12	4
2) Analysis of trophic and chemotactic factors by Luminex and ELISA	4	0
3) Immunohistochemistry for Stem 121 at D2 and D7	9	1
Total number of rats	25	5
Young hMSC group	Total number	Death number
1) Functional examination and histological analysis at D21	11	2
Exclusion due to postoperative cervical hematoma	1	
2) Analysis of trophic and chemotactic factors by Luminex and ELISA	4	0
3) Immunohistochemistry for Stem 121 at D2 and D7	10	2
Total number of rats	26	4

hMSC, human mesenchymal stem cells; mNSS, modified Neurological Severity Score; ELISA, enzyme-linked immunosorbent assay

## Supplementary Table 2

### Modified Neurological Severity Score Points

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Motor tests	
Raising rat by tail	3
Flexion of forelimb	1
Flexion of hindlimb	1
Head moved > 10° to vertical axis within 30 s	1
Placing rat on floor (normal=0; maximum=3)	3
Normal walk	0
Inability to walk straight	1
Circling toward paretic side	2
Falls down to paretic side	3
Sensory tests	2
Placing test (visual and tactile test)	1
Proprioceptive test (deep sensation, pushing paw against table edge to stimulate limb muscles)	1
Beam balance tests (normal=0; maximum=6)	6
Balances with steady posture	0
Grasps side of beam	1
Hugs beam and 1 limb falls down from beam	2
Hugs beam and 2 limb fall down from beam, or spins on beam (>60 s)	3
Attempts to balance on beam but falls off (>40 s)	4
Attempts to balance on beam but falls off (>20 s)	5
Falls off; no attempt to balance or hang on to beam (<20 s)	6
Reflex absence and abnormal movements	4
Pinna reflex (head shake when auditory meatus is touched)	1
Corneal reflex (eye blink when cornea is lightly touched with cotton)	1
Startle reflex (motor response to a brief noise from snapping a clipboard paper)	1
Seizures, myoclonus, myodystony	1
Maximum points	18

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One point is awarded for inability to perform the tasks or for lack of a tested reflex: 13-18, severe injury; 7-12, moderate injury; 1-6, mild injury.

(Reference)

Chen J, Sanberg PR, Li Y, et al. Intravenous administration of human umbilical cord blood reduces behavioral deficits after stroke in rats. *Stroke*. 2001; 32: 2682-8.