

Neurogranin as an important regulator in swimming training to improve the spatial memory dysfunction of mice with chronic cerebral hypoperfusion

Huawei Lin^{1, #}, Jiayong Zhang^{1, #}, Yaling Dai¹, Huanhuan Liu¹, Xiaojun He¹, Lewen Chen¹, Jing Tao², Chaohui Li³, Weilin Liu^{2, *}

1 College of Rehabilitation Medicine, Fujian University of Traditional Chinese Medicine, Fuzhou, Fujian 350122, China.

2 Rehabilitation Industry Institute, Fujian University of Traditional Chinese Medicine, Fuzhou, Fujian 350122, China.

3 General surgery, Anxi General Hospital of Traditional Chinese Medicine, Quanzhou, Fujian 362400, China.

[#] These two authors contributed equally to this article.

^{*} Corresponding author.

Email: liuweilin12@fjtcn.edu.cn.

Running head: Ng as a regulator in swimming to improve memory.

Supplementary materials

Supplementary Table 1. The primer sequences of Ng and Nestin-cre.

Gene	Sequence
Ng gene of forward primer	CTGGGAGACAGTAGGAACTAGCA
Ng gene of reverse primer	GAGTTGAGTCTGGAAGAGCAAAGG
Nestin-Cre gene of forward primer	GCAGGCAAATTTTGGTGTACGGTCA
Nestin-Cre gene of reverse primer	GGTGTCTGGCTGTATCTCAAGATTCT

Abbreviations: Ng = neurogranin.

Supplementary Table 2. The component of amplification reaction system.

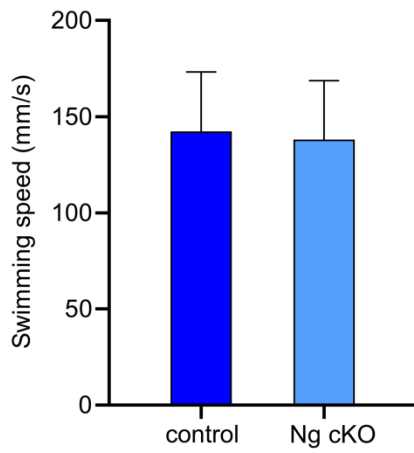
Reaction component	Volume
2 × Taq Master Mix (Dye Plus)	12.5 ul
ddH ₂ O	9.5 ul
Forward primer	1 ul
Reverse primer	1 ul
Template	1 ul

Supplementary Table 3. The procedure of PCR amplification reaction.

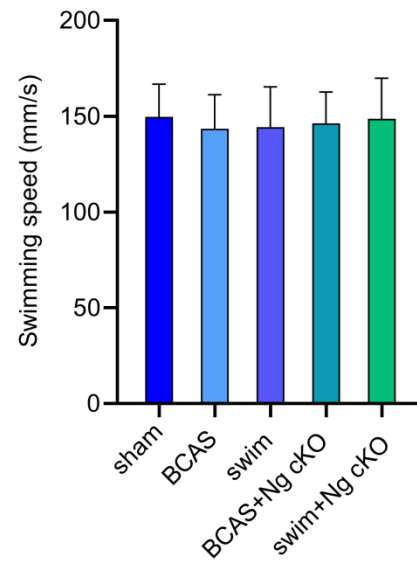
Step	Temp	Time	Cycle	± Temp/cycle
1	95 °C	5 min		
2	98 °C	30 s		
3	65 °C	30 s		- 0.5
4	72 °C	45 s	2 - 4, 20×	
5	98 °C	30 s		
6	55 °C	30 s		
7	72 °C	45 s	5 - 7, 20×	
8	72 °C	5 min		
9	10 °C	Hold		

Abbreviations: PCR = polymerase chain reaction; Temp = temperature.

A



B



Supplementary Fig. 1. The swimming speeds of all groups in the orientation navigation experiment of MWM. (A) The quantification of swimming speed in control and Ng conditional knockout mice from Experiment 1 ($n = 9$ per group); (B) The quantification of swimming speed in five groups from Experiment 2 ($n = 12$ per group). BCAS = bilateral common carotid artery stenosis; MWM = Morris water maze; Ng = neurogranin; Ng cKO = neurogranin conditional knockout.