

Ca²⁺ influx through TRPC channels is regulated by homocysteine-copper complexes

Gui-Lan Chen¹, Bo Zeng¹, Hongni Jiang¹, Nikoleta Daskoulidou¹, Rahul Saurabh¹, Rumbidzai J Chitando¹ and Shang-Zhong Xu^{1,2*}

1 Centre for Atherothrombosis and Metabolic Disease, Hull York Medical School, University of Hull, Hull, UK

2 Diabetes, Endocrinology and Metabolism, Hull York Medical School, University of Hull, Hull, UK

* Correspondence: sam.xu@hyms.ac.uk; Tel.: (44) 1482 465372

Supplementary materials

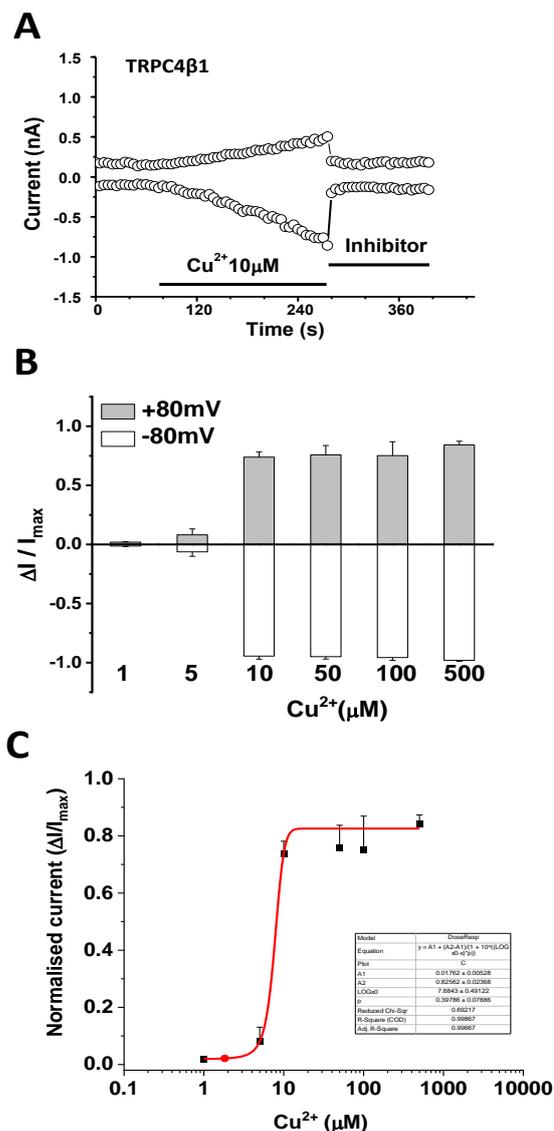


Figure S1. Activation of TRPC4β1 by Cu²⁺ and the dose-response of Cu²⁺ on TRPC4α. **A**, Example for the effect of Cu²⁺ on TRPCβ1 current. **B**, Dose-dependent inhibitory effect on TRPC4α. **C**, The fitted dose-response curve showing an EC₅₀ of 7.1 μM measured at -80 mV (not shown) and 7.7 μM measured at +80 mV.

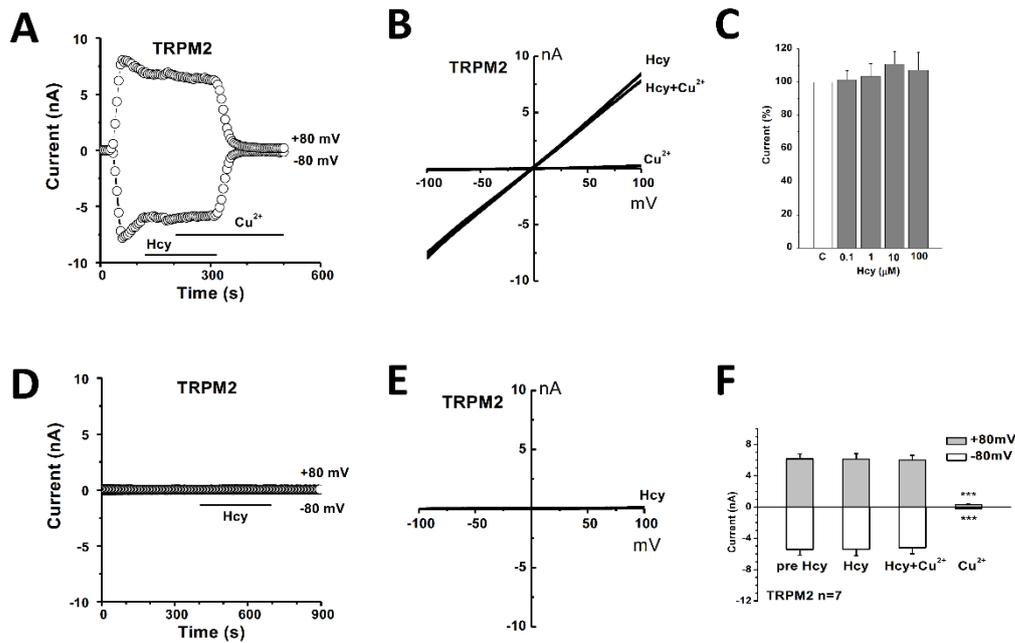


Figure S2. Effect of Hcy and copper on TRPM2 current. Whole cell current of TRPM2 was recorded using a pipette containing ADP-ribose. **A**, An example of time course of TRPM2 current. **B**, IV curves for (A). **C**, Mean data for the effect of Hcy and Cu²⁺. **D-E**, Pipette without the activator ADP-ribose, the TRPM2 current was absent (no activation) and endogenous current in the non-induced cells was very small. **F**, Mean data for the effect on TRPM2 current. *** P<0.001.

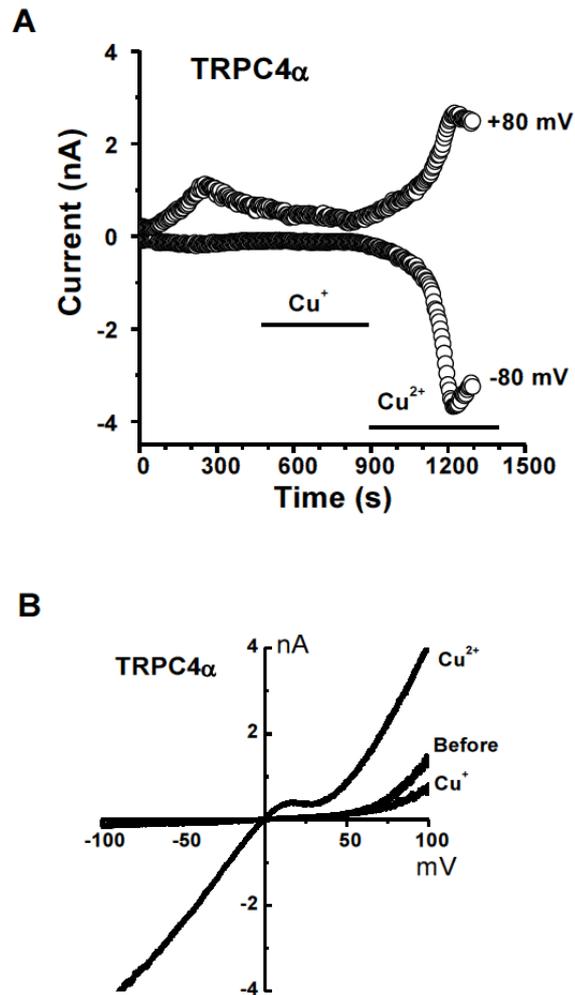


Figure S3. Example of monovalent copper (I) 1-butanethiolate on TRPC4 α current. No effect was seen for monovalent Cu⁺ 1-butanethiolate on TRPC4 current (n = 5). Copper (I) tetrakis(acetonitrile) copper(I) tetrafluoroborate) also has no effect on TRPC4 α current (not shown). **A**, Time course of TRPC4 α current and the perfusion with 10 μ M monovalent Cu⁺ 1-butanethiolate followed by 10 μ M Cu²⁺. **B**, I-V curves for (A).

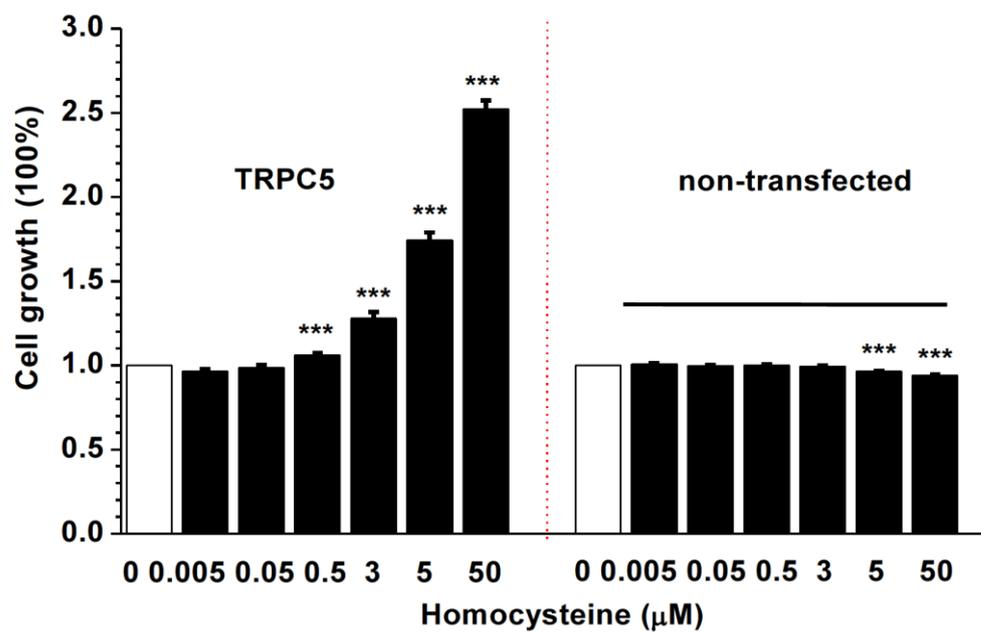


Figure S4. Hcy increased cell proliferation of T-Rex cells overexpressing TRPC5 (n=8 for each group). *** P<0.001.