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Age modulates the injury-induced metallomic profile in the brain.

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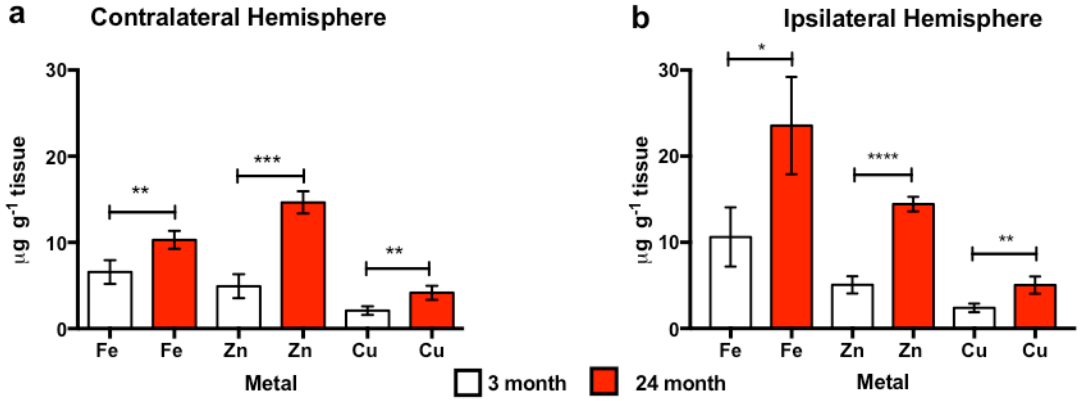

Fig. 1 Fe, Zn & Cu all increase in the entire uninjured contralateral cortex with ageing. Two-tailed *t*-test revealed a significant (**p*>0.0050) 56% increase in Fe, a significant (**p*>0.0002) 190% increase in Zn, and a significant (**p*>0.0050) 99% increase in Cu (a). Similarly, Fe, Zn & Cu all increase in the entire lesioned ipsilateral hemisphere with ageing. Two-tailed *t*-test revealed a significant (**p*>0.0276) 121% increase in Fe, a significant (**p*>0.0001) 113% increase in Zn, and a significant (**p*>0.0033) 109% increase in Cu. The Aged comparison presented in this figure and the following supplementary figures employs data from this study combined with previously published work in which identical scientific methods and time course paradigm were observed.[1]

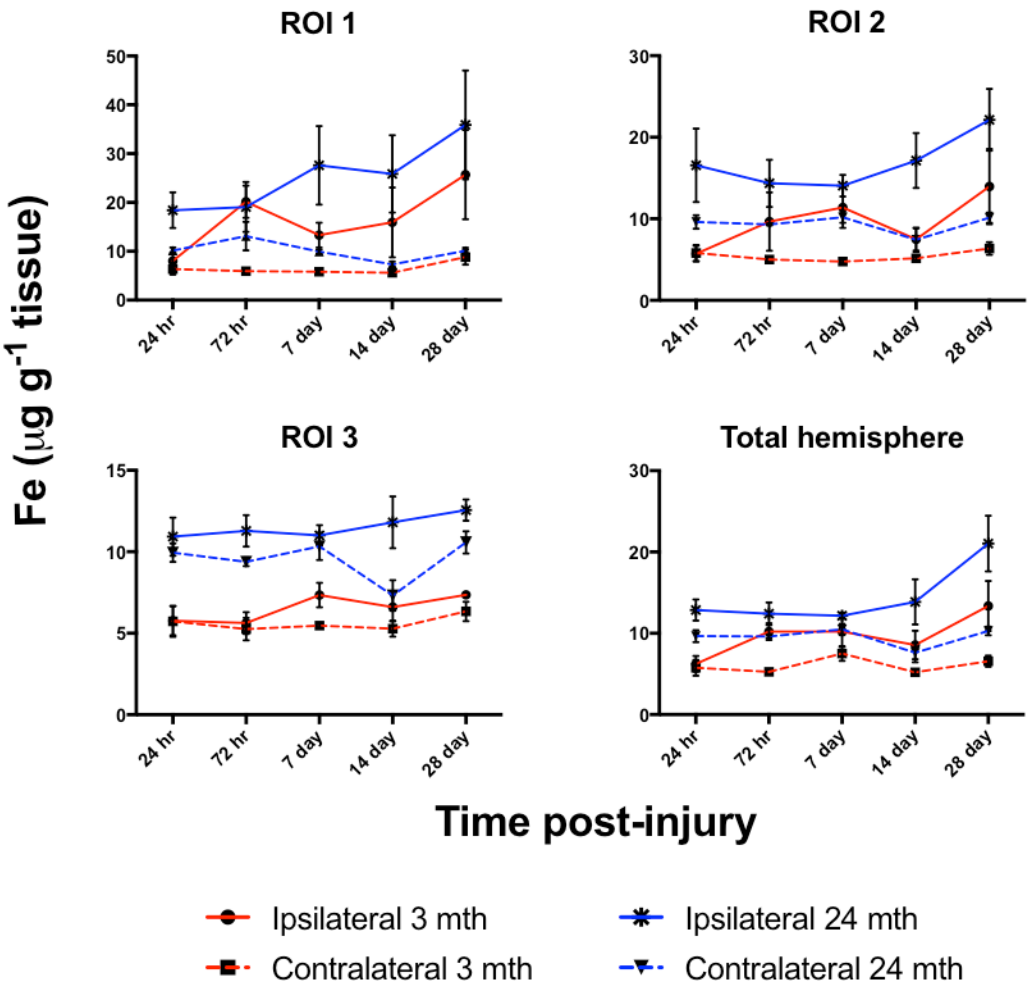

Fig. 2 Fe comparison of ROI's in the ipsilateral and contralateral hemispheres between 3 and 24 month old mice post-TBI. Fe is elevated in the uninjured contralateral hemisphere in 24 month old mice in each ROI. When comparing ipsilateral and contralateral hemispheres for both age groups, each ROI shows a proportionally larger ipsilateral increase in the concentration of Fe for the 24 month old mice when compared to the 3mth old mice from day 7 to day 28.

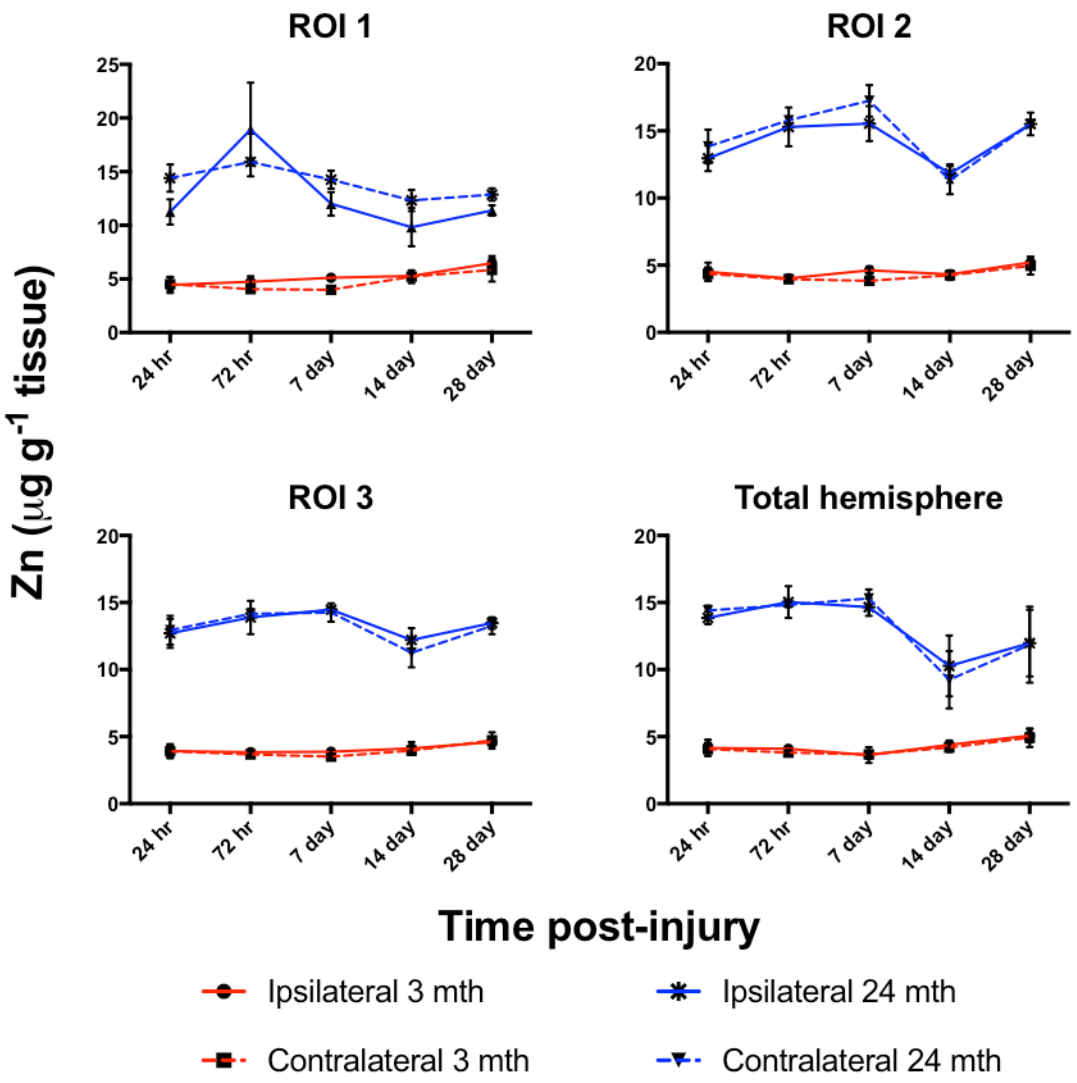

Fig. 3 Zn comparison of ROI's in the ipsilateral and contralateral hemispheres between 3 and 24 month old mice post-TBI. Ipsilateral and contralateral regions of each ROI show a proportionally larger increase in concentration of Zn for the 24 month old mice when compared to the 3mth old mice. In 24 month old mice ROI1, ROI2, ROI3 and total hemisphere shows a reduction in Zn in both ipsilateral and contralateral hemispheres from day 7 onwards, representing a whole-brain zinc reduction from 7 – 28 days post TBI that is not evident in the three month old mice.

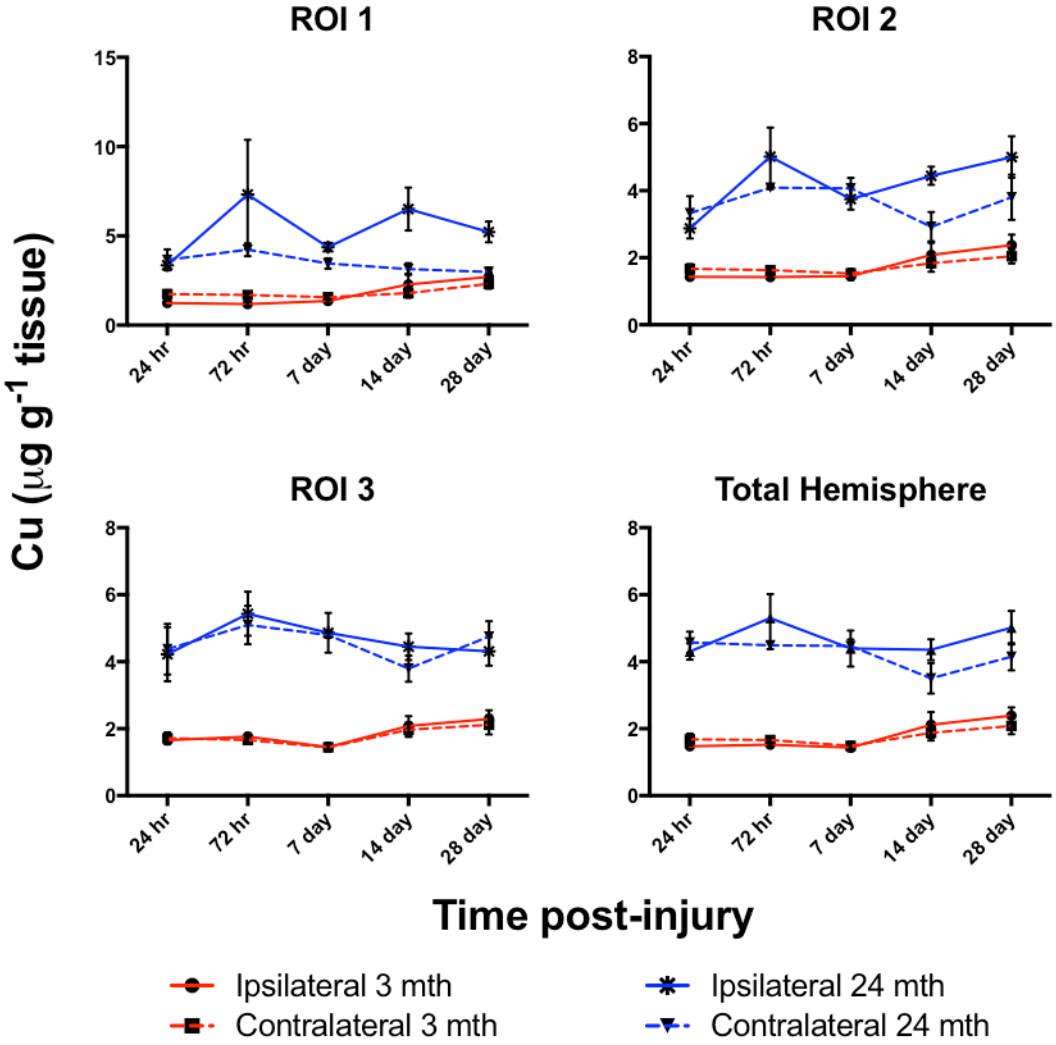

Fig. 4 Cu comparison of ROI's in the ipsilateral and contralateral hemispheres between 3 and 24 month old mice post-TBI. Ipsilateral and contralateral regions of each ROI show a proportionally larger increase in concentration of Cu for the 24-month-old mice when compared to the 3mth old mice. In 24-month-old mice ROI1 reveals a sustained increase in Cu concentration from 72 hours post TBI. ROI2, and total hemisphere of the 24-month-old mice reveals a proportionally larger increase in Cu in the ipsilateral hemisphere when compared to contralateral hemisphere from day 7 onwards that is not evident in the three-month-old mice.

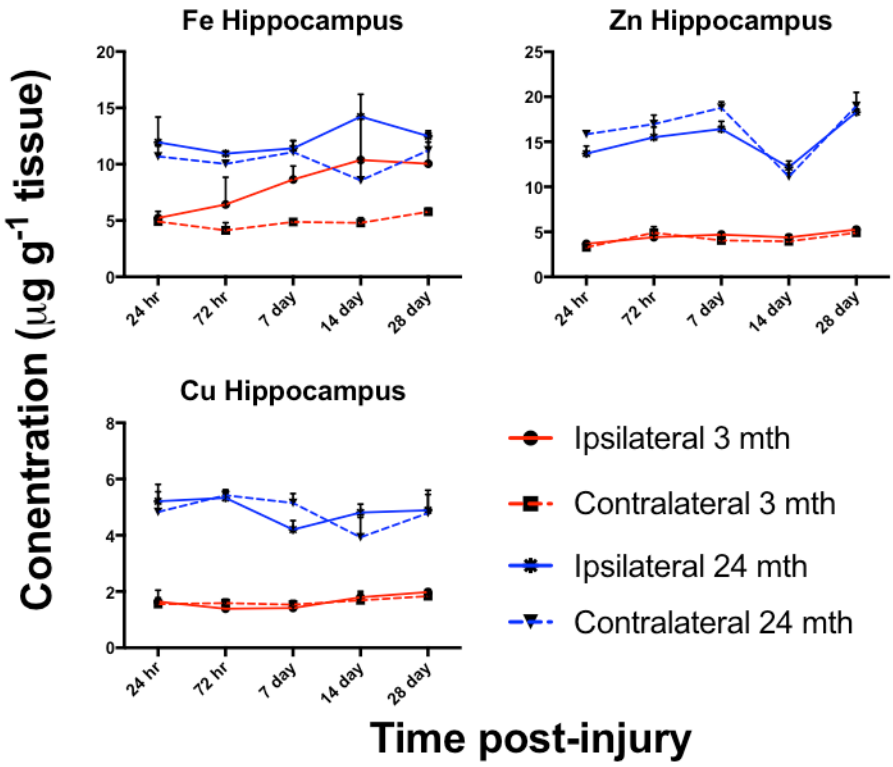

Fig. 5 Comparisons of Fe, Zn and Cu in the contralateral and ipsilateral hippocampus of 3 and 24 month old mice.

References:

1. S. D. Portbury, D. J. Hare, C. Sgambelloni, D. I. Finkelstein and P. A. Adlard, *Metallomics*, 2015, **8**, 193-200.