

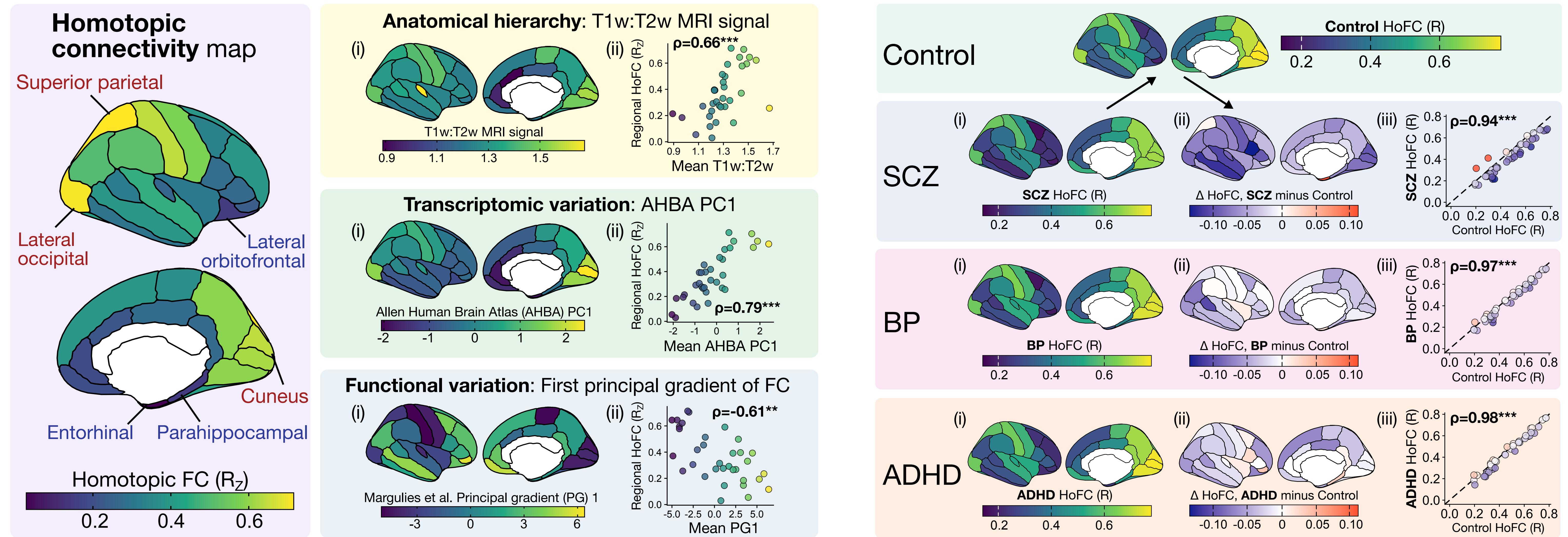
Mapping functional, structural, and molecular correlates of homotopic connectivity

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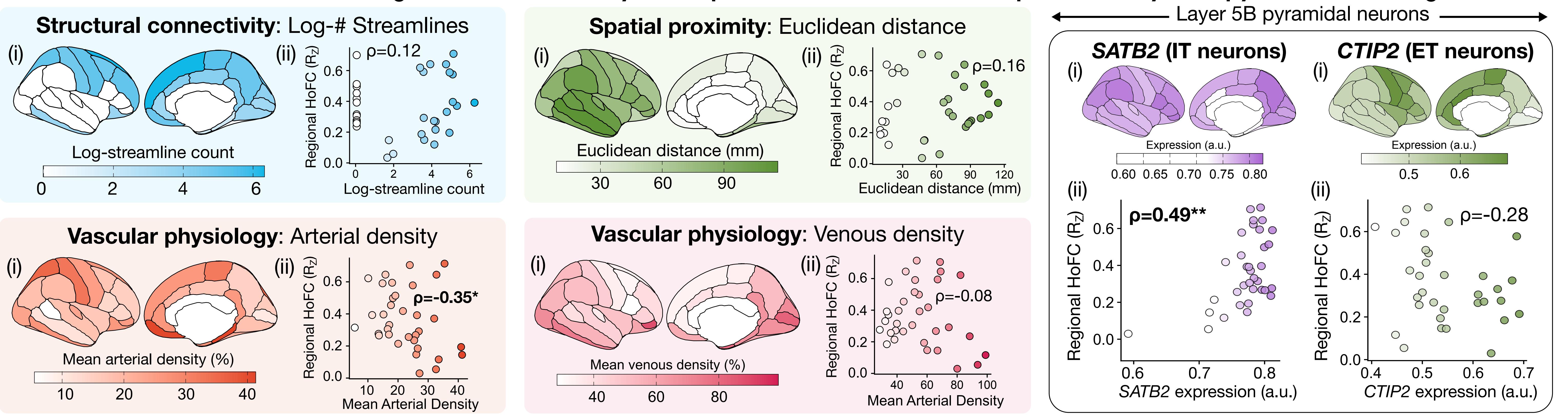
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Cortical HoFC displays a hierarchical spatial variation from transmodal to unimodal that is preserved across neuropsychiatric disorders



Homotopic functional connectivity (HoFC) is the **synchronous activity between homologous regions** of the left and right hemispheres. Using preprocessed structural and functional connectome data from N=207 participants in the Human Connectome Project, from [1], we show that the **spatial variation** in cortical HoFC is strongly correlated with **anatomical, transcriptomic, and functional variation** [2].

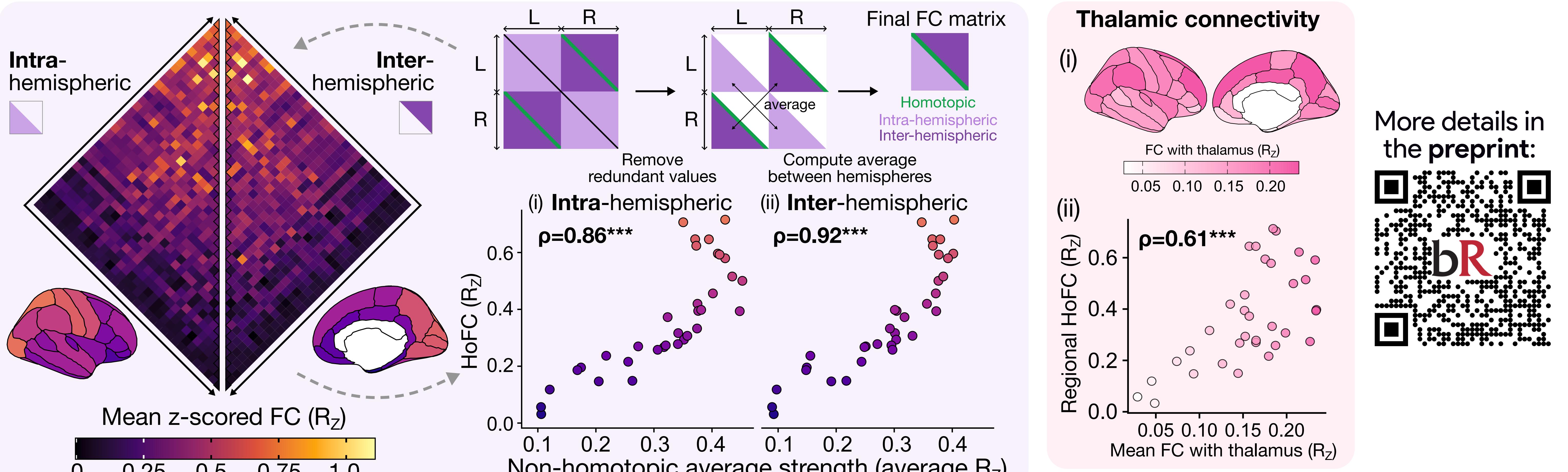
Cortical HoFC is associated with regional arterial density and expression of an intra-telencephalic (IT) layer 5B pyramidal neuron gene, SATB2



The HoFC gradient is **inversely associated** with arterial density estimated in [4], but it is **not associated** structural connectivity or spatial proximity estimated from the same dataset as the resting-state fMRI in [1]. This suggests that regional variation in HoFC strength arises from factors that are (at least partly) dissociable from direct structural connectivity or geometric embedding.

The HoFC spatial gradient is **positively associated** with regional expression of **SATB2**, a marker of **intra-telencephalic (IT) layer 5B pyramidal neurons** [5] estimated from data in [6].

Cortical HoFC is associated with strength of functional integration and bilateral thalamic connectivity in the resting-state brain



References

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Acknowledgments

We thank Joe Lizier, Josh Tan, Giulia Baracchini, Jayson Jenganathan, and Bella Orlando for great chats that helped shape this project.

This work was supported by the Australian Government Research Training Program, The University of Sydney Physics Foundation, and the American Australian Association Graduate Education Fund.



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