Healthcare Innovations How practice has changed

HERSTON HEALTH PRECINCT SYMPOSIUM 2021

DISC-0015

6 - 10 September 2021 **Education Centre** RBWH

fAD iBEC

New human blood-brain barrier cell culture approach for improved modelling of brain drug delivery



Joanna Wasielewska¹, Lotta Oikari¹ Juliana Chaves¹, Liyu Chen², Jae Song², Wendy Lee², Juergen Goetz², Paul Donnelly³, Anthony R. White¹. ¹QIMR Berghofer Medical Research Institute. ²Queensland Brain Institute, University of Queensland. ³Bio21 Institute, The University of Melbourne.



Human induced brain endothelial cells (iBECs)





QIMR Berghofer edical Research Institute THE FUTURE OF HEALTH





Copper-drug penetration across the BBB in Alzheimer's iBECs

THE UNIVERSITY

OF OUEENSLAND

AUSTRALIA

CREATE CHANGE

QUT

pathology

queensland

(PSEN1-mutation: patient asymptomatic) 1.5 **** CTRL) **** 5 TEER change t (fold CuATSM TNFα,IFN_γ (10ng/ml, 15ng/ml TNFα,IFNγ (20ng/ml, 30ng/ml)

Copper-drug effect on inflammatory damage to BBB

Conclusions: Our model provides a unique opportunity to greatly improve the accuracy of testing for brain penetration of potential therapeutics. Testing drug penetration across human healthy and/or disease iBECs provides a more robust measure of drug delivery, and therefore potentially greatly improved clinical translation in patients.

> Acknowledgments: NHMRC. MRFF. The University of Eastern Finland







