



Dr Zuner Bortolotto
Ph.D.(SaoPaulo)

Senior Lecturer

Area of research

Synaptic plasticity and epilepsy

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Summary

Understanding the mechanisms underlying basic functions of the brain, such as synaptic transmission and plasticity. These represent fundamental functions and abilities of the brain that affect its output activities. These also forms the molecular basis of the brain activity which are involved in neurological conditions affecting learning and memory and/or implicated in Alzheimer's disease and epilepsy. We are investigating the roles different receptor systems in the control of synaptic plasticity and epileptiform activity in the hippocampus.

Activities / Findings

- GluK1-containing KARs are important for regulating synaptic facilitation and LTP induction at hippocampal mossy fiber synapses [Read more >](#)
- Activation of mGluRs can induce long-term alterations in synchronised network activity in the absence of chemical synaptic transmission
- Setting of the molecular switch is dependent on the activation of mGlu5 receptors [Read more >](#)

Teaching

- Neurosciences: Techniques in Neuroscience (Unit organiser plus PBL sessions, lab practical and lectures)
- Anatomical Sciences: year III - Lectures (Pathophysiology of epilepsy and EEG)
- BVSc - 2nd Year Vets - Neuroanatomy (Element lecturer)

Keywords

- Glutamate receptors
- Synaptic plasticity
- acetyl choline
- Epileptic activity
- LTP
- LTD

Skills

- Epilepsy
- Alzheimer's disease

Processes and functions

- Synaptic transmission
- Learning and memory
- development
- behaviour

Methodologies

- Electrophysiological recording techniques
- whole cell patch clamp

Memberships

Organisations

[School of Physiology, Pharmacology & Neuroscience](#)

[MRC Centre for Synaptic Plasticity](#)

Other sites

- [Neuroscience](#)
- [Synaptic](#)

Research Areas

- [Synaptic plasticity](#)

Links

-  [home page](#)

Selected publications

- Ceolin, L, Kantamneni, S, Barker, GRI, Hanna, L, Murray, L, Warburton, EC, Robinson, ESJ, Monn, JA, Fitzjohn, SM, Collingridge, GL, Bortolotto, ZA & Lodge, D, 2011, '[Study of novel selective mGlu2 agonist in the temporo-ammonic input to CA1 neurons reveals reduced mGlu2 receptor expression in a Wistar substrain with an anxiety-like phenotype](#)'. *Journal of Neuroscience*, vol 31., pp. 6721 - 6731
- Bortolotto, Z & Collingridge, G, 1992, '[Activation of glutamate metabotropic receptors induces long-term potentiation](#)'. *European Journal of Pharmacology*, vol 214., pp. 297 - 298
- Peineau, S, Nicolas, C, Bortolotto, Z, Bhat, R, Ryves, W, Harwood, A, Dournaud, P, Fitzjohn, S & Collingridge, G, 2009, '[A systematic investigation of the protein kinases involved in NMDA receptor-dependent LTD: evidence for a role of GSK-3 but not other serine/threonine kinases](#)'. *Molecular Brain*, vol 2., pp. 1-10
- Piccinin, S, Thuault, S, Doherty, A, Brown, J, Randall, A, Davies, C, Bortolotto, Z & Collingridge, G, 2008, '[The induction of long-term plasticity of non-synaptic, synchronized activity by the activation of group I mGluRs](#)'. *Neuropharmacology*, vol 55(4)., pp. 459 - 463

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Recent publications

- Wallach, J, Colestock, T, Agramunt, J, Claydon, M, Dybek, M, Filemban, N, Chatha, M, Halberstadt, AL, Halberstadt, AL, Brandt, S, Lodge, D, Bortolotto, ZA & Adejare, A, 2019, '[Pharmacological characterizations of the 'legal high' fluorolintane and isomers](#)'. *European Journal of Pharmacology*, vol 857.
- Lodge, D, Watkins, JC, Bortolotto, Z, Jane, D & Volianskis, A, 2019, '[The 1980s: d-AP5, LTP and a Decade of NMDA Receptor Discoveries](#)'. *Neurochemical Research*, vol 44., pp. 516-530
- Park, P, Sanderson, TM, Bortolotto, ZA, Georgiou, J, Zhuo, M, Kaang, BK & Collingridge, GL, 2019, '[Differential sensitivity of three forms of hippocampal synaptic potentiation to depotentiation](#)'. *Molecular Brain*, vol 12.
- Park, P, Kang, H, Sanderson, T, Bortolotto, Z, Georgiou, J, Zhuo, M, Collingridge, G & Kaang, B-K, 2019, '[On the role of calcium-permeable AMPARs in long-term potentiation and synaptic tagging in the rodent hippocampus](#)'. *Frontiers in Synaptic Neuroscience*, vol 11.
- Leal, RB, Lopes, MW, Formolo, DA, Carvalho, CRd, Hoeller, AA, Latini, A, Sousa, DS, Wolf, P, Prediger, RD, Bortolotto, ZA, Linhares, MN, Lin, K & Walz, R, 2018, '[Amygdala levels of the GluA1 subunit of glutamate receptors and its phosphorylation state at serine 845 in the anterior hippocampus are biomarkers of ictal fear but not anxiety](#)'. *Molecular Psychiatry*.
- Ingram, R, Kang, H, Lightman, S, Jane, D, Bortolotto, Z, Collingridge, G, Lodge, D & Volianskis, A, 2018, '[Some distorted thoughts about ketamine as a psychedelic and a novel hypothesis based on NMDA receptor-mediated synaptic plasticity](#)'. *Neuropharmacology*.

[View complete publications list](#) in the University of Bristol publications system

Networks & contacts

- Professor David E Jane
- Professor Graham Collingridge
- Professor David Lodge (Eli Lilly)