

PEER REVIEWED PUBLICATIONS

2025

Ria N, Eladly A, Masvidal E, Illa X, Guimerà A, Hills K, Garcia R, Flaherty S, Prokop M, **Wykes RC***, Kostarelos K*, Jose A. Garrido JA*. **Flexible graphene-based neurotechnology for high-precision deep brain mapping and neuromodulation in Parkinsonian rats.** Nature Communications, accepted in press 2025. *Corresponding authors

Tiurikov O, Kopach O, Zheng K, Rathore D, Codadu N, Wu SY, Shen Y, Campbell RE, **Wykes RC**, Volynski K, Savtchenko LP & Rusakov D (2025). **Astrocyte Kir4.1 expression level territorially control excitatory transmission in the brain.** Cell Reports. PMID 39951378.

2024

Zhang JE, Masvidal-Codina E, Nguyen D, Illa X, Dégardin J, Goulet R, Prats-Alfonso E, Matsoukis S, Guger C, Garrido JA, Picaud S, Guimerà-Brunet A* & **Wykes RC*** (2024). **Concurrent functional ultrasound imaging with graphene-based DC-coupled electrophysiology as a platform to study slow brain signals and cerebral blood flow under control and pathophysiological brain states.** Nanoscale Horizons. PMID 38323517. *Corresponding authors

2023

Mosneag IE, Flaherty SM, **Wykes RC**, & Allan SM(2023). **Stroke and translational research – review of experimental models with a focus on awake ischaemic induction and anaesthesia** . Neuroscience. PMID: 38065289.

Blondiaux A, Jia S, Annamneedi A, Caliskan G, Schulze J, Montenegro-Venegas C, **Wykes RC**, Fejtova A, Walker MC, stork O, Gundelfiger ED, Dityatev A & Seidenbecher CL (2023). **Linking epileptic phenotypes and neural extracellular matrix remodelling signatures in mouse models of epilepsy.** Neurobiology of Disease. PMID: 37838005.

Aytakin K, Shekh-Ahmad T, Kovac S, **Wykes RC**, Horgen D, Fleig A, Walker MC (2023). **Drugs acting at TRPM7 channels inhibit seizure-like activity.** *Epilepsia Open*. PMID: 37328275.

Parrish RR, Jackson-Taylor T, Grundmann A, Codadu NK, Calin A, Alfonsa H, **Wykes RC**, Voipio J, Trevelyan AJ (2023). **Indirect effects of Halorhodopsin activation: potassium redistribution, non-specific inhibition and spreading depression.** *Journal of Neuroscience*. PMID: 36639898.

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Mulroe F, Lin WH, Scott CMG, Fan AYN, Coutts G, Parrish RR, Smolders I, Trevelyan A, **Wykes RC**, Allan S, Freeman S, Baines RA. (2022). **Targeting firing rate neuronal homeostasis can prevent seizures.** *Disease Models & Mechanisms* PMID: 36073607.

Wykes RC*, Masvidal-Codina E, Guimerà-Brunet A*, & Garrido JA*. (2022). **The advantages of mapping slow brain potentials using DC-Coupled graphene micro-transistors: Clinical and Translational applications.** *Journal of Clinical & Translational Medicine*. PMID 35802821.

*Corresponding author

Jafarian A & **Wykes RC** (2022). **Impact of DC-Coupled electrophysiological recordings for translational neuroscience: case study of tracking neural dynamics in rodent models of seizures.** *Frontiers in Computational Neuroscience*. doi: 10.3389/fncom.2022.900063

Hills KE, Kostarelos K & **Wykes RC*** (2022). **Converging mechanisms of epileptogenesis & their insight in glioblastoma.** *Frontiers in Molecular Neuroscience*. <https://doi.org/10.3389/fnmol.2022.903115>. *Corresponding author

Bonaccini Calia A, Masvidal-Codina M, Smith TM, Schäfer N, Rathore D, Rodríguez-Lucas E, Illa X, De la Cruz JM, Del Corro E, Prats-Alfonso E, Viana D, Bousquet J, Hébert C, Martínez-Aguilar J, Sperling JR, Drummond M, Halder A, Dodd A, Barr K, Savage S, Fornell J, Sort J, Guger C, Villa R, Kostarelos, **Wykes RC***, Guimerà-Brunet A*, & Garrido JA*. (2022). **Full bandwidth electrophysiology of seizures and epileptiform activity enabled by flexible graphene micro-transistor depth neural probes**. *Nature Nanotechnology*. DOI: 10.1038/ s41565-021-01041-9. * Corresponding authors.

2021

Jafarian A, Zeidman P, **Wykes RC**, Walker MC & Friston K. (2021). **"Adiabatic dynamic causal modelling"**. *Neuroimage*. PMID 34116151

Masvidal-Codina E, Smith TM, Rathore D, Gao Y, Illa X, Prats-Alfonso E, Del Corro E, Bonaccini Calia A, Rius G, Martin-Fernandez I, Guger C, Reitner P, Villa R, Garrido JA, Guimerà-Brunet A*, **Wykes RC***. (2021). **Characterization of optogenetically-induced cortical spreading depression in awake mice using graphene micro-transistor arrays**. *Journal of Neural Engineering* PMID: 33690187. *Corresponding authors.

Tosh JL, Rhymes E, Mumford P, Whittaker H, Pulford LJ, Noy SJ, Cleverley K, Schorge S, Walker MC, Tybulewicz VLJ, **Wykes RC**, Fisher EMC, Wiseman FK. (2021) **Genetic dissection of Down syndrome-associated alterations in APP/amyloid- β biology using mouse models**. *Scientific Reports* PMID 33707583.

2020

A. Guimerà-Brunet, E. Masvidal-Codina, X. Illa, M. Dasilva, A. Bonaccini-Calía, E. Prats-Alfonso, J. Martínez-Aguilar, J.M. De la Cruz, R. García-Cortadella, N. Schaefer, A. Barbero, P. Godignon, G. Rius, E. Del Corro, J. Bousquet, C. Hébert, **R. Wykes**, M.V. Sanchez-Vives, R. Villa and J.A. Garrido. (2020). **"Neural interfaces based on flexible graphene transistors: A new tool for electrophysiology"**. 2019 IEEE International Electron Devices Meeting (IEDM). DOI: [10.1109/IEDM19573.2019.8993433](https://doi.org/10.1109/IEDM19573.2019.8993433)

2019

Wykes RC*, Khoo HM, Caciagli L, Blumenfeld H, Golshani P, Kapur J, Mehta A, Stern J, Bernasconi A, Dedeurwaerdere S & Bernasconi N. (2019). **"Network Concept from an Imaging Perspective"**. *Epilepsia* PMID: 31179547. * 1st and co-corresponding author.

Snowball A*, **Wykes RC***, Chabrol E*, Shekh-Ahmad T*, Cornford JH, Lieb A, Hughes MP, Massaro G, Rahim AA, Hashemi KS, Walker MC, Kullmann DM, Schorge S. (2019) **"Epilepsy gene therapy using an engineered potassium channel gene"**. *Journal of Neuroscience* PMID: 30755487. * joint 1st authors.

2018

Chang BL, Leite M, Snowball A, Chabrol, Leib A, Walker MC, Kullmann DM, Schorge S*, **Wykes RC***. (2018) **"Semiology, clustering, periodicity and natural history of seizures in an experimental visual cortical epilepsy model"**. *Disease Models & Mechanisms* PMID: 30467223. * Corresponding authors.

Rossi LF, Kullmann DM & **Wykes RC***. (2018). **"The Enlightened Brain: Novel Imaging Methods Focus on Epileptic Networks at Multiple Scales"**. *Front Cell Neuroscience* PMID: 29632475. * Corresponding author.

Dubey M, Brouwers E, Hamilton EMC, Stiedl O, Bugiani M, Koch H, **Wykes RC**, Mansvelder HD, Van der Knaap MS & Min R. (2018) **"Seizures and disturbed brain potassium dynamics in the leukodystrophy megalencephalic leukoencephalopathy with subcortical cysts"**. Annals of Neurology PMID: 29466841.

2017

Rossi LF, **Wykes RC***, Kullmann DM & Carandini M. (2017) **"Focal seizures start as standing waves and propagate respecting cortical connectivity"**. Nature Communications. PMID: 28794407. * co-corresponding author.

Wykes RC* & Lignani G. (2017) **"Gene therapy and editing: novel potential treatments for neuronal channelopathies"**. Neuropharmacology PMID: 28564577 * co-corresponding author.

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Wykes RC*, Kullmann DM, Pavlov I & Magloire V. (2016) **"Optogenetic approaches to treat epilepsy"**. Journal of Neuroscience Methods PMID: 26072246. *Corresponding author.

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Kullmann DM, Schorge S, Walker MC & **Wykes RC**. (2014) **"Gene therapy in epilepsy – is it time for clinical trials?"** Nature Reviews Neurology PMID 24638133.

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Walker MC, Schorge S, Kullmann DM, **Wykes RC**, Heeroma JH & Mantoan L. (2013) **"Gene therapy in status epilepticus"**. Epilepsia, PMID 24001071.

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Wykes RC, Heeroma JH, Mantoan L, Zheng K, MacDonald DC, Deisseroth K Hashemi KS, Walker MC, Schorge S & Kullmann DM. (2012) **"Optogenetic and potassium channel gene therapy for focal neocortical epilepsy"**. Science Translational Medicine PMID: 23147003.

Wykes R, Kalmbach A, Eliava M, Waters J. (2012) **"Changes in the physiology of CA1 hippocampal pyramidal neurons in preplaque CRND8 mice."** Neurobiology of Aging. PMID: 21676499.

2009

Wareham K, Vial C, **Wykes RC**, Bradding P, Seward EP. (2009) **"Functional evidence for the expression of P2X1, P2X4 and P2X7 receptors in human lung mast cells."** British Journal of Pharmacology. PMID: 19552691.

2007

Wykes RC, Lee M, Duffy SM, Yang W, Seward EP, Bradding P. (2007) **"Functional transient receptor potential melastatin 7 channels are critical for human mast cell survival."** Journal of Immunology. PMID: 17785843.

Wykes RC, Bauer CS, Khan SU, Weiss JL, Seward EP. (2007) **"Differential regulation of endogenous N- and P/Q-type Ca²⁺ channel inactivation by Ca²⁺/calmodulin impacts on**

their ability to support exocytosis in chromaffin cells. *Journal of Neuroscience*. PMID: 17494710.

Invited Book Chapters.

Walker MC, Jefferys JGR & **Wykes RC**. (2016). "**Tetanus Toxin**" in Models of Seizure and Epilepsy, 2nd edition. Elsevier Press.

Seward EP & **Wykes RC** (2023). "**Membrane capacitance measurements of Stimulus-evoked Exocytosis in adrenal chromaffin cells**" in Chromaffin Cell Methods. PMID: 3620595.