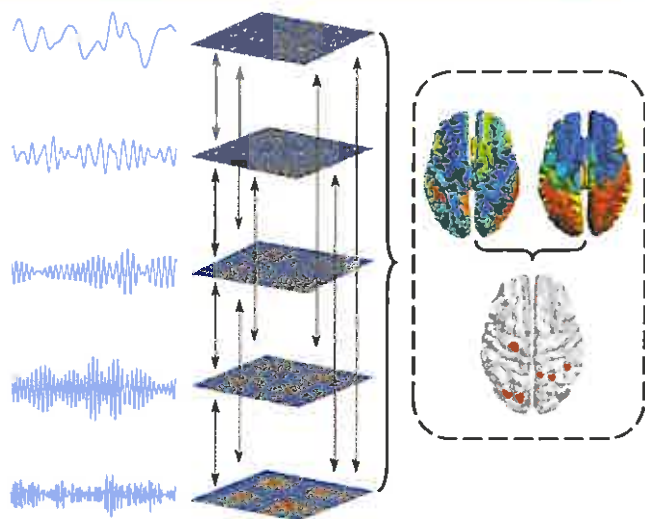


# BRAIN

A JOURNAL OF NEUROLOGY



**Cover image:** A multiplex analysis of frequency-specific functional brain networks reveals that hubs in hippocampus and posterior brain areas are preferentially affected in patients with Alzheimer's disease. From Yu *et al.* Selective impairment of hippocampus and posterior hub areas in Alzheimer's disease: an MEG-based multiplex network study. Pp. 1466–1485.

## Contents

### Editorial

D. M. Kullmann  
1171

### Scientific Commentaries

**Abnormal white matter development in children with multiple sclerosis and monophasic acquired demyelination**

Y. Hachohen, O. Ciccarelli and C. Hemingway  
1172

**Striatal dysfunction during dual-task performance in Parkinson's disease**

P. T. Bell, M. Gilat and J. M. Shine  
1174

**New hope for devastating neurodegenerative disease**

S. Stayte and B. Vissel  
1177

**Knowing your enemy: from post-mortem scene reconstruction to real-time monitoring of the spread of tau and amyloid**

R. Vandenberghe and J. Schaefferbeke  
1179

### Review Article

**Neuromodulation interventions for addictive disorders: challenges, promise, and roadmap for future research**

P. A. Spagnolo and D. Goldman  
1183

### Reports

**Clinical and genetic characterization of leukoencephalopathies in adults**

D. S. Lynch, A. Rodrigues Brandão de Paiva, W. J. Zhang, E. Bugiardini, F. Freua, L. Tavares Lucato, L. I. Macedo-Souza, R. Lakshmanan, J. A. Kinsella, A. Merwick, A. M. Rossor, N. Bajaj, B. Herron, P. McMonagle, P. J. Morrison, D. Hughes, A. Pittman, M. Laurà, M. M. Reilly, J. D. Warren, C. J. Mummery, J. M. Schott, M. Adams, N. C. Fox, E. Murphy, I. Davagnanam, F. Kok, J. Chataway and H. Houlden  
1204

**Focal CA3 hippocampal subfield atrophy following LGII VGKC-complex antibody limbic encephalitis**

T. D. Miller, T. T.-J. Chong, A. M. Aimola Davies, T. W. C. Ng, M. R. Johnson, S. R. Irani, A. Vincent, M. Husaln, S. Jacob, P. Maddison, C. Kennard, P. A. Gowland and C. R. Rosenthal

1212

**Combined effects of scanning ultrasound and a tau-specific single chain antibody in a tau transgenic mouse model**

R. M. Nisbet, A. Van der Jeugd, G. Leinenga, H. T. Evans, P. W. Janowicz and J. Götz

1220

**Split brain: divided perception but undivided consciousness**

Y. Pinto, D. A. Neville, M. Otten, P. M. Corballis, V. A. F. Lamme, E. H. F. de Haan, N. Foschi and M. Fabri

1231

**Original Articles**

**Recessive dystrophic epidermolysis bullosa results in painful small fibre neuropathy**

S. von Bischoffshausen, D. Ivulic, P. Alvarez, V. C. Schuffeneger, J. Idiaquez, C. Fuentes, P. Morande, I. Fuentes, F. Palisson, D. L. H. Bennett and M. Calvo

1238

**A recurrent WARS mutation is a novel cause of autosomal dominant distal hereditary motor neuropathy**

P.-C. Tsai, B.-W. Soong, I. Mademan, Y.-H. Huang, C.-R. Liu, C.-T. Hsiao, H.-T. Wu, T.-T. Liu, Y.-T. Liu, Y.-T. Tseng, K.-P. Lin, U.-C. Yang, K. W. Chung, B.-O. Choi, G. A. Nicholson, M. L. Kennerson, C.-C. Chan, P. De Jonghe, T.-H. Cheng, Y.-C. Liao, S. Züchner, J. Baets and Y.-C. Lee

1252

**ZNHIT3 is defective in PEHO syndrome, a severe encephalopathy with cerebellar granule neuron loss**

A.-K. Anttonen, A. Laari, M. Kousl, Y. J. Yang, T. Jääskeläinen, M. Somer, E. Siintola, E. Jakkula, M. Muona, S. Tegelberg, T. Lönnqvist, H. Pihko, L. Valanne, A. Paetau, M. P. Lun, J. Hästbacka, O. Kopra, T. Joensuu, N. Katsanis, M. K. Lehtinen, J. J. Palvimo and A.-E. Lehesjoki

1267

**A combinatorial approach to identify calpain cleavage sites in the Machado-Joseph disease protein ataxin-3**

J. J. Weber, M. Golla, G. Guaitoli, P. Wanichawan, S. N. Hayer, S. Hauser, A.-C. Krahl, M. Nagel, S. Samer, E. Aronica, C. R. Carlson, L. Schöls, O. Riess, C. J. Gloeckner, H. P. Nguyen and J. Hübener-Schmid

1280

**White matter changes in paediatric multiple sclerosis and monophasic demyelinating disorders**

G. Longoni, R. A. Brown, P. Momayyez-Siahkhal, C. Elliott, S. Narayanan, A. Bar-Or, R. Ann Marrie, E. Ann Yeh, M. Filippi, B. Banwell and D. L. Arnold on behalf of The Canadian Pediatric Demyelinating Disease Network

1300

**Genetic and phenotypic heterogeneity suggest therapeutic implications in SCN2A-related disorders**

M. Wolff, K. M. Johannesen, U. B. S. Hedrich, S. Masnada, G. Rubboli, E. Gardella, G. Lesca, D. Ville, M. Milh, L. Villard, A. Afenjar, S. Chantot-Bastaraud, C. Mignot, C. Lardinois, C. Nava, N. Schwarz, M. Gérard, L. Perrin, D. Doummar, S. Auvin, M. J. Miranda, M. Hempel, E. Brilstra, N. Knoers, N. Verbeek, M. van Kempen, K. P. Braun, G. Mancini, S. Biskup, K. Hörtnagel, M. Döcker, T. Bast, T. Loddenkemper, L. Wong-Kissel, F. M. Baumeister, W. Fazeli, P. Striano, R. Dilena, E. Fontana, F. Zara, G. Kurlemann, J. Klepper, J. G. Thoene, D. H. Arndt, N. Deconinck, T. Schmitt-Mechelke, O. Maier, H. Muhle, B. Wical, C. Finetti, R. Brückner, J. Pietz, G. Golla, D. Jillella, K. M. Linnet, P. Charles, U. Moog, E. Öglane-Shlik, J. F. Mantovani, K. Park, M. Deprez, D. Lederer, S. Mary, E. Scalais, L. Selim, R. Van Coster, L. Lagae, M. Nikanorova, H. Hjalgrim, G. Christoph Korenke, M. Trivisano, N. Specchio, B. Ceulemans, T. Dorn, K. L. Helbig, K. Hardies, H. Stamberger, P. de Jonghe, S. Weckhuysen, J. R. Lemke, I. Krägeloh-Mann, I. Helbig, G. Kluger, H. Lerche and R. S. Møller

1316

**Dissecting gamma frequency activity during human memory processing**

M. T. Kucewicz, B. M. Berry, V. Kremen, B. H. Brinkmann, M. R. Sperling, B. C. Jobst, R. E. Gross, B. Lega, S. A. Sheth, J. M. Stein, S. R. Das, R. Gorniak, S. M. Stead, D. S. Rizzuto, M. J. Kahana and G. A. Worrell

1337

**Three- and four-dimensional mapping of speech and language in patients with epilepsy**

Y. Nakai, J.-w. Jeong, E. C. Brown, R. Rothermel, K. Kojima, T. Kambara, A. Shah, S. Mittal, S. Sood and E. Asano

1351

**Neuroimaging and clinical features in adults with a 22q11.2 deletion at risk of Parkinson's disease**

N. J. Butcher, C. Marras, M. Pondal, P. Rusjan, E. Boot, L. Christopher, G. M. Repetto, R. Fritsch, E. W. C. Chow, M. Masellis, A. P. Strafella, A. E. Lang and A. S. Bassett

1371

**Impaired dual tasking in Parkinson's disease is associated with reduced focusing of cortico-striatal activity**

F. Nieuwhof, B. R. Bloem, M. F. Reelick, E. Aarts, I. Maidan, A. Mirelman, J. M. Hausdorff, I. Toni and R. C. Helmich

1384

**Glycation potentiates  $\alpha$ -synuclein-associated neurodegeneration in synucleinopathies**

H. Vicente Miranda, É. M. Szegő, L. M. A. Oliveira, C. Breda, E. Darendelioglu, R. M. de Oliveira, D. G. Ferreira, M. A. Gomes, R. Rott, M. Oliveira, F. Munari, F. J. Enguita, T. Simões, E. F. Rodrigues, M. Helnrich, I. C. Martins, I. Zamolo, O. Riess, C. Cordeiro, A. Ponces-Freire, H. A. Lashuel, N. C. Santos, L. V. Lopes, W. Xiang, T. M. Jovin, D. Penque, S. Engelender, M. Zweckstetter, J. Klucken, F. Giorgini, A. Quintas and T. F. Outeiro

1399

**Insulin resistance and exendin-4 treatment for multiple system atrophy**

F. Basil, M.-H. Cannon, A. Vital, E. Bezaud, Y. Li, N. H. Greig, S. Gulyani, D. Kapogiannis, P.-O. Fernagut and W. G. Meissner

1420

**Gene-based association studies report genetic links for clinical subtypes of frontotemporal dementia**

A. Mishra, R. Ferrari, P. Heutink, J. Hardy, Y. Pijnenburg and D. Posthuma on behalf of the International FTD-Genomics Consortium

1437

**Restoring neuronal progranulin reverses deficits in a mouse model of frontotemporal dementia**

A. E. Arrant, A. J. Filiano, D. E. Unger, A. H. Young and E. D. Roberson

1447

**Selective impairment of hippocampus and posterior hub areas in Alzheimer's disease: an MEG-based multiplex network study**

M. Yu, M. M. A. Engels, A. Hillebrand, E. C. W. van Straaten, A. A. Gouw, C. Teunissen, W. M. van der Flier, P. Scheltens and C. J. Stam

1466

**Biochemically-defined pools of amyloid- $\beta$  in sporadic Alzheimer's disease: correlation with amyloid PET**

B. R. Roberts, M. Lind, A. Z. Wagen, A. Rembach, T. Frugier, Q.-X. Li, T. M. Ryan, C. A. McLean, J. D. Doecke, C. C. Rowe, V. L. Villemagne and C. L. Masters

1486

**Association between tau deposition and antecedent amyloid- $\beta$  accumulation rates in normal and early symptomatic individuals**

D. Tosun, S. Landau, P. S. Aisen, R. C. Petersen, M. Mintun, W. Jagust and M. W. Welner for the Alzheimer's Disease Neuroimaging Initiative

1499

**Salience and default mode network dysregulation in chronic cocaine users predict treatment outcome**

X. Geng, Y. Hu, H. Gu, B. J. Salmeron, B. Adinoff, E. A. Stein and Y. Yang

1513

**Dorsal column**

**Grey Matter**

**The life and legacy of Brown-Séquard**

M. J. Aminoff

1525

**Book Review**

**Not quite the last word**

D. Chadwick

1533

**Letters to the Editor**

**Clinical approach to delayed-onset cerebellar impairment following deep brain stimulation for tremor**

M. F. Contarino, R. van Coller, A. Mosch, N. A. van der Gaag and C. F. Hoffmann

e27

**Reply: Clinical approach to delayed-onset cerebellar impairment following deep brain stimulation for tremor**

M. M. Relch, N. G. Pozzi, J. Brumberg, M. Åström, J. Volkmann and I. U. Isaías

e28

**Multi-infarct dementia of Swedish type is caused by a 3'UTR mutation of COL4A1**

M. Siitonen, A. Börjesson-Hanson, M. Pöyhönen, A. Ora, P. Pasanen, J. Bras, S. Kern, J. Kern, O. Andersen, H. Stanescu, R. Kleta, M. Baumann, R. Kalaria, H. Kalimo, A. Singleton, J. Hardy, M. Viitanen, L. Myllykangas and R. Guerreiro

e29

**Computer models to inform epilepsy surgery strategies: prediction of postoperative outcome**

M. Goodfellow, C. Rummel, E. Abela, M. P. Richardson, K. Schindler and J. R. Terry

e30

**Reply: Computer models to inform epilepsy surgery strategies: prediction of postoperative outcome**

N. Sinha, J. Dauwels, M. Kaiser, S. S. Cash, M. Brandon Westover, Y. Wang and P. N. Taylor

e31