



Cover image: In Parkinson's disease, those who have genetic variants are largely indistinguishable, unlike individuals who have variants in the melanocortin 1 receptor (MC1R) gene easily seen by the observable human phenotype of red hair. In this issue, Cook *et al.* demonstrate how genetic testing to a large population of people living with Parkinson's disease can uncover hidden disease-linked gene variants not suggested by clinical features, allowing for participation in precision medicine therapies. *Brain*. 2024; 147(8):2668–2679.

Contents

Editorial

The human hippocampus contributes to short-term memory

M. Husain

2593

Scientific Commentaries

Clinical genetic testing in Parkinson's disease should become part of routine patient care

Z. Gan-Or

2595

Side-effects are often a curse. Can they also be a blessing?

K. Wiech, H. Hartmann and U. Bingel

2598

Autoimmune 'secondary synaptopathies': do NMDAR antibodies cause a primary extra-synaptopathy?

M. Zhao, D. R. Lynch and S. R. Irani

2601

Disentangling genetic risks for development and progression of Alzheimer's disease

N. Mattsson-Carlgen

2604

Opinion

Failure of C9orf72 sense repeat-targeting antisense oligonucleotides: lessons learned and the path forward

A. J. Cammack, R. Balendra and A. M. Isaacs

2607

Review Articles

The lysosomal β -glucocerebrosidase strikes mitochondria: implications for Parkinson's therapeutics

J. C. Rubilar, T. F. Outeiro and A. D. Klein

2610

Predictors of cognition after glioma surgery: connectotomy, structure-function phenotype, plasticity

G. Herbet, H. Duffau and E. Mandonnet

2621



Report

Peripherally-derived LGI1-reactive monoclonal antibodies cause epileptic seizures in vivo
M. Upadhy, T. Kirmann, M. A. Wilson, C. M. Simon, D. Dhangar, C. Geis, R. Williams, G. Woodhall, S. Hallermann, S. R. Irani and S. K. Wright
2636

Clinical Trial

How side effects can improve treatment efficacy: a randomized trial
L. A. Schenk, T. Fadai and C. Büchel
2643

Original Articles

Relevance of genetic testing in the gene-targeted trial era: the Rostock Parkinson's disease study
A. Westenberger, V. Skrahina, T. Usnich, C. Beetz, E.-J. Vollstedt, B.-H. Laabs, J. J. Paul, F. Curado, S. Skobalj, H. Gaber, M. Olmedillas, X. Bogdanovic, N. Ameziane, N. Schell, J. O. Aasly, M. Afshari, P. Agarwal, J. Aldred, F. Alonso-Frech, R. Anderson, R. Araújo, D. Arkadir, M. Avenali, M. Balal, S. Benizri, S. Bette, P. Bhatia, M. Bonello, P. Braga-Neto, S. Brauneis, F. E. C. Cardoso, F. Cavallieri, J. Classen, L. Cohen, D. Coletta, D. Crosiers, P. Cullufi, K. Dashtipour, M. Demirkiran, P. de Carvalho Aguiar, A. De Rosa, R. Djaldetti, O. Dogu, M. G. dos Santos Ghilardi, C. Eggers, B. Elibol, A. Ellenbogen, S. Ertan, G. Fabiani, B. H. Falkenburger, S. Farrow, T. Fay-Karmon, G. J. Ferencz, E. T. Fonoff, Y. D. Fragoso, G. Genç, A. Gorospe, F. Grandas, D. Gruber, M. Gudesblatt, T. Gurevich, J. Hagenah, H. A. Hanagasi, S. Hassin-Baer, R. A. Hauser, J. Hernández-Vara, B. Herting, V. K. Hinson, E. Hogg, M. T. Hu, E. Hummelgen, K. Hussey, J. Infante, S. H. Isaacson, S. Jauma, N. Koleva-Alazeh, G. Kuhlenbäumer, A. Kühn, I. Litvan, L. López-Manzanares, M. Luxmore, S. Manandhar, V. Marcaud, K. Markopoulou, C. Marras, M. McKenzie, M. Matarazzo, M. Merello, B. Mollenhauer, J. C. Morgan, S. Mullin, T. Musacchio, B. Myers, A. Negrotti, A. Nieves, Z. Nitsan, N. Oskooilar, Ö. Öztıp-Çakmak, G. Pal, N. Pavese, A. Percesepe, T. Piccoli, C. Pinto de Souza, T. Prell, M. Pulera, J. Raw, K. Reetz, J. Reiner, D. Rosenberg, M. Ruiz-Lopez, J. Ruiz Martinez, E. Sammler, B. L. Santos-Lobato, R. Saunders-Pullman, I. Schlesinger, C. M. Schofield, A. F. Schumacher-Schuh, B. Scott, Á. Sesar, S. J. Shafer, R. Sheridan, M. Silverdale, R. Sophia, M. Spitz, P. Stathis, F. Stocchi, M. Tagliati, Y. F. Tai, A. Terwecoren, S. Thonke, L. Tönges, G. Toschi, V. Tumas, P. P. Urban, L. Vacca, W. Vandenberghe, E. M. Valente, F. Valzania, L. Vela-Desojo, C. Weill, D. Weise, J. Wojcieszek, M. Wolz, G. Yahalom, G. Yalcin-Cakmakli, S. Zittel, Y. Zlotnik, K. K. Kandaswamy, A. Balck, H. Hanssen, M. Borsche, L. M. Lange, I. Csoti, K. Lohmann, M. Kasten, N. Brüggemann, A. Rolfs, C. Klein and P. Bauer
2652

Parkinson's disease variant detection and disclosure: PD GENERation, a North American study
L. Cook, J. Verbrugge, T.-H. Schwantes-An, J. Schulze, T. Foroud, A. Hall, K. S. Marder, I. F. Mata, N. E. Mencacci, M. A. Nance, M. A. Schwarzschild, T. Simuni, S. Bressman, A.-M. Wills, H. H. Fernandez, I. Litvan, K. E. Lyons, H. A. Shill, C. Singer, T. F. Tropea, N. V. Arroyave, J. Carbonell, R. C. Vicioso, L. Katus, J. F. Quinn, P. D. Hodges, Y. Meng, S. P. Strom, C. Blauwendraat, K. Lohmann, C. Casaceli, S. C. Rao, K. G. Galvelis, A. Naito, J. C. Beck and R. N. Alcalay, on behalf of the Parkinson's Foundation and Parkinson Study Group PD GENERation investigators
2668

Towards cascading genetic risk in Alzheimer's disease
A. Altmann, L. M. Aksman, N. P. Oxtoby, A. L. Young, ADNI, D. C. Alexander, F. Barkhof, M. Shoai, J. Hardy and J. M. Schott
2680

Neuronal A_{2A} receptor exacerbates synapse loss and memory deficits in APP/PS1 mice
V. Gomez-Murcia, A. Launay, K. Carvalho, A. Burgard, C. Meriaux, R. Caillierez, S. Eddarkaoui, D. Kilinc, D. Siedlecki-Wullich, M. Besegher, S. Bégard, B. Thiroux, M. Jung, O. Nebie, M. Wisztorski, N. Déglon, C. Montmasson, A.-P. Bemelmans, M. Hamdane, T. Lebouvier, D. Vieau, I. Fournier, L. Buee, S. Lévi, L. V. Lopes, A.-L. Boutillier, E. Faivre and D. Blum
2691

Leptin receptor reactivation restores brain function in early-life Lepr-deficient mice
C. Fernandes, L. Forny-Germano, M. M. Andrade, N. M. Lyra E Silva, A. M. Ramos-Lobo, F. Meireles, F. Tovar-Moll, J. C. Houzel, J. Donato Jr and F. G. De Felice
2706

Multivariate mapping of low-resilient neurocognitive systems within and around low-grade gliomas
S. Ng, S. Moritz-Gasser, A.-L. Lemaître, H. Duffau and G. Herbet
2718

De novo variants in ATXN7L3 lead to developmental delay, hypotonia and distinctive facial features
T. Harel, C. Spicher, E. Scheer, J. G. Buchan, J. Cech, C. Folland, T. Frey, A. M. Innes, B. Keren, W. L. Macken, C. Marcelis, C. E. Otten, S. A. Paolucci, F. Petit, R. Pfundt, R. D. S. Pitceathly, A. Rauch, G. Ravenscroft, R. Sanchez, K. Steindl, F. Tammer, A. Tyndall, D. Devys, S. D. Vincent, O. Elpeleg and L. Tora
2732

NMDA receptor autoantibodies primarily impair the extrasynaptic compartment
Z. Jamet, C. Mergaux, M. Meras, D. Bouchet, F. Villega, J. Kreye, H. Prüss and L. Groc
2745

Expanded clinical phenotype spectrum correlates with variant function in SCN2A-related disorders
A. T. Berg, C. H. Thompson, L. S. Myers, E. Anderson, L. Evans, A. J. E. Kaiser, K. Paltell, A. N. Nili, J.-M. L. DeKeyser, T. V. Abramova, G. Nesbitt, S. M. Egan, C. G. Vanoye and A. L. George Jr
2761

The clinical and genetic spectrum of inherited glycosylphosphatidylinositol deficiency disorders

J. Sidpra, S. Sudhakar, A. Biswas, F. Massey, V. Turchetti, T. Lau, E. Cook, J. R. Alvi, H. M. Elbendary, J. L. Jewell, A. Riva, A. Orsini, A. Vignoli, Z. Federico, J. Rosenblum, A.-S. Schoonjans, M. de Wachter, I. D. Alvarez, A. Felipe-Rucián, N. A. Haridy, S. Haider, M. Zaman, S. Banu, N. Anwaar, F. Rahman, S. Maqbool, R. Yadav, V. Salpietro, R. Maroofian, R. Patel, R. Radhakrishnan, S. P. Prabhu, K. Lichtenbelt, H. Stewart, Y. Murakami, U. Löbel, F. D'Arco, E. Wakeling, W. Jones, E. Hay, S. Bhate, T. S. Jacques, D. M. Mirsky, M. T. Whitehead, M. S. Zaki, T. Sultan, P. Striano, A. C. Jansen, M. Lequin, L. S. de Vries, M. Severino, A. C. Edmondson, L. Menzies, P. M. Campeau, H. Houlden, A. McTague, S. Efthymiou and K. Mankad
2775

Long-term neuropsychological trajectories in children with epilepsy: does surgery halt decline?

M. H. Eriksson, F. Prentice, R. J. Piper, K. Wagstyl, S. Adler, A. Chari, J. Booth, F. Moeller, K. Das, C. Eltze, G. Cooray, A. P. Caballero, L. Menzies, A. McTague, S. Shavel-Jessop, M. M. Tisdall, J. H. Cross, P. M. Sanfilippo and T. Baldeweg
2791

Thalamic epileptic spikes disrupt sleep spindles in patients with epileptic encephalopathy

A. Wodeyar, D. Chinappen, D. Mylonas, B. Baxter, D. S. Manoach, U. T. Eden, M. A. Kramer and C. J. Chu
2803

Identifying novel risk genes in intracranial aneurysm by integrating human proteomes and genetics

C. Wu, H. Liu, Q. Zuo, A. Jiang, C. Wang, N. Lv, R. Lin, Y. Wang, K. Zong, Y. Wei, Q. Huang, Q. Li, P. Yang, R. Zhao and J. Liu
2817

Spatial enrichment and genomic analyses reveal the link of *NOMO1* with amyotrophic lateral sclerosis

J. Guo, L. You, Y. Zhou, J. Hu, J. Li, W. Yang, X. Tang, Y. Sun, Y. Gu, Y. Dong, X. Chen, C. Sato, L. Zinman, E. Rogueva, J. Wang, Y. Chen and M. Zhang
2826

Revisiting distinct nerve excitability patterns in patients with amyotrophic lateral sclerosis

D. J. L. Stikvoort García, H. S. Goedee, R. P. A. van Eijk, L. J. van Schelven, L. H. van den Berg and B. T. H. M. Sleutjes
2842

Different learning aberrations relate to delusion-like beliefs with different contents

R. Rossi-Goldthorpe, S. M. Silverstein, J. M. Gold, J. Schiffman, J. A. Waltz, T. F. Williams, A. R. Powers, S. W. Woods, R. E. Zinbarg, V. A. Mittal, L. M. Ellman, G. P. Strauss, E. F. Walker, J. A. Levin, S. Castiello, J. Kenney and P. R. Corlett
2854

Biallelic variants in *SNUPN* cause a limb girdle muscular dystrophy with myofibrillar-like features

P. Iruzubieta, A. Damborenea, M. Ioghen, S. Bajew, R. Fernandez-Torrón, A. Töpf, Á. Herrero-Reiriz, D. Epure, K. Vill, A. Hernández-Lain, M. Manterola, M. Azkargorta, O. Pikatza-Menoio, L. Pérez-Fernandez, M. García-Puga, G. Gaina, A. Bastian, I. Streat, M. C. Walter, W. Müller-Felber, S. Thiele, S. Moragón, N. Bastida-Lertxundi, A. López-Cortajarena, F. Elortza, G. Gereñu, S. Alonso-Martin, V. Straub, D. de Sancho, R. Teleanu, A. López de Munain and L. Blázquez
2867

Novel insight into atogepant mechanisms of action in migraine prevention

A. Melo-Carrillo, A. M. Strassman, R. Broide, A. Adams, B. Dabruzzo, M. Brin and R. Burstein
2884

Letters to the Editor

The challenge of assessing invasive biomarkers for epilepsy surgery

N. Roehri, S. Vulliemoz and S. Lagarde
e52

To plan efficacious epilepsy surgery

S. A. Weiss, M. R. Sperling, J. Engel Jr and R. Staba
e55

Reply: The challenge of assessing invasive biomarkers for epilepsy surgery and To plan efficacious epilepsy surgery

W. Shi, U. Eden, M. A. Kramer and C. J. Chu
e58

Corrections

Correction to: Microbiota from Alzheimer's patients induce deficits in cognition and hippocampal neurogenesis
e61

Correction to: INPP5K and SIL1 associated pathologies with overlapping clinical phenotypes converge through dysregulation of PHGDH
e62