Douglas L Rothman

List of Publications by Year
in descending order

236	21,588	8755 75	9861 141
papers	citations	h-index	g-index

250	250	250	16058
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Quantitation of Muscle Glycogen Synthesis in Normal Subjects and Subjects with Non-Insulin-Dependent Diabetes by¹³C Nuclear Magnetic Resonance Spectroscopy. New England Journal of Medicine, 1990, 322, 223-228.	27.0	1,181
2	Energy on Demand. Science, 1999, 283, 496-497.	12.6	1,090
3	Effects of free fatty acids on glucose transport and IRS-1â€“associated phosphatidylinositol 3-kinase activity. Journal of Clinical Investigation, 1999, 103, 253-259.	8.2	1,063
4	Subtype-Specific Alterations of Î³-Aminobutyric Acid and Glutamatein Patients With Major Depression. Archives of General Psychiatry, 2004, 61, 705.	12.3	704
5	Increased Glucose Transportâ€“Phosphorylation and Muscle Glycogen Synthesis after Exercise Training in Insulin-Resistant Subjects. New England Journal of Medicine, 1996, 335, 1357-1362.	27.0	585
6	Impaired Glucose Transport as a Cause of Decreased Insulin-Stimulated Muscle Glycogen Synthesis in Type 2 Diabetes. New England Journal of Medicine, 1999, 341, 240-246.	27.0	562
7	Energetic basis of brain activity: implications for neuroimaging. Trends in Neurosciences, 2004, 27, 489-495.	8.6	511
8	Quantitation of hepatic glycogenolysis and gluconeogenesis in fasting humans with 13C NMR. Science, 1991, 254, 573-576.	12.6	497
9	Analysis of macromolecule resonances in1H NMR spectra of human brain. Magnetic Resonance in Medicine, 1994, 32, 294-302.	3.0	468
10	Neuronalâ€“Glial Glucose Oxidation and Glutamatergicâ€“GABAergic Function. Journal of Cerebral Blood Flow and Metabolism, 2006, 26, 865-877.	4.3	365
11	Astroglial Contribution to Brain Energy Metabolism in Humans Revealed by¹³C Nuclear Magnetic Resonance Spectroscopy: Elucidation of the Dominant Pathway for Neurotransmitter Glutamate Repletion and Measurement of Astrocytic Oxidative Metabolism. Journal of Neuroscience, 2002, 22, 1523-1531.	3.6	351
12	Cortical Î³-Aminobutyric Acid Levels Across the Menstrual Cycle in Healthy Women and Those With Premenstrual Dysphoric Disorder. Archives of General Psychiatry, 2002, 59, 851.	12.3	338
13	Cerebral energetics and spiking frequency: The neurophysiological basis of fMRI. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 10765-10770.	7.1	322
14	In vivo NMR Studies of the Glutamate Neurotransmitter Flux and Neuroenergetics: Implications for Brain Function. Annual Review of Physiology, 2003, 65, 401-427.	13.1	310
15	The contribution of GABA to glutamate/glutamine cycling and energy metabolism in the rat cortex in vivo. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 5588-5593.	7.1	308
16	Simultaneous Determination of the Rates of the TCA Cycle, Glucose Utilization, Î±-Ketoglutarate/Glutamate Exchange, and Glutamine Synthesis in Human Brain by NMR. Journal of Cerebral Blood Flow and Metabolism, 1995, 15, 12-25.	4.3	307
17	The effect of gabapentin on brain gammaâ€aminobutyric acid in patients with epilepsy. Annals of Neurology, 1996, 39, 95-99.	5.3	289
18	The Contribution of Blood Lactate to Brain Energy Metabolism in Humans Measured by Dynamic¹³C Nuclear Magnetic Resonance Spectroscopy. Journal of Neuroscience, 2010, 30, 13983-13991.	3.6	279

#	Article	IF	Citations
19	NMR Determination of the TCA Cycle Rate and Î±-Ketoglutarate/Glutamate Exchange Rate in Rat Brain. Journal of Cerebral Blood Flow and Metabolism, 1992, 12, 434-447.	4.3	249
20	¹³C MRS studies of neuroenergetics and neurotransmitter cycling in humans. NMR in Biomedicine, 2011, 24, 943-957.	2.8	249
21	Localized ¹³C NMR Spectroscopy in the Human Brain of Amino Acid Labeling from <scp>d</scp>â€[1â€¹³C]Glucose. Journal of Neurochemistry, 1994, 63, 1377-1385.	3.9	229
22	In vivo13Câ€ƒNMR measurement of neurotransmitter glutamate cycling, anaplerosis and TCA cycle flux in rat brain during [2-13C]glucose infusion. Journal of Neurochemistry, 2003, 76, 975-989.	3.9	229
23	Altered Brain Mitochondrial Metabolism in Healthy Aging as Assessed by in vivo Magnetic Resonance Spectroscopy. Journal of Cerebral Blood Flow and Metabolism, 2010, 30, 211-221.	4.3	223
24	Reductions in Occipital Cortex GABA Levels in Panic Disorder Detected With 1H-Magnetic Resonance Spectroscopy. Archives of General Psychiatry, 2001, 58, 556.	12.3	222
25	Cortical energy demands of signaling and nonsignaling components in brain are conserved across mammalian species and activity levels. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 3549-3554.	7.1	204
26	In vivo nuclear magnetic resonance spectroscopy studies of the relationship between the glutamate–glutamine neurotransmitter cycle and functional neuroenergetics. Philosophical Transactions of the Royal Society B: Biological Sciences, 1999, 354, 1165-1177.	4.0	201
27	Deuterium metabolic imaging (DMI) for MRI-based 3D mapping of metabolism in vivo. Science Advances, 2018, 4, eaat7314.	10.3	194
28	Total neuroenergetics support localized brain activity: Implications for the interpretation of fMRI. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 10771-10776.	7.1	190
29	Quantitative functional imaging of the brain: towards mapping neuronal activity by BOLD fMRI. NMR in Biomedicine, 2001, 14, 413-431.	2.8	188
30	A model for the regulation of cerebral oxygen delivery. Journal of Applied Physiology, 1998, 85, 554-564.	2.5	184
31	Odor maps of aldehydes and esters revealed by functional MRI in the glomerular layer of the mouse olfactory bulb. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 11029-11034.	7.1	179
32	Glutamate-glutamine Cycling in the Epileptic Human Hippocampus. Epilepsia, 2002, 43, 703-710.	5.1	178
33	Leptin reverses diabetes by suppression of the hypothalamic-pituitary-adrenal axis. Nature Medicine, 2014, 20, 759-763.	30.7	178
34	Direct evidence for activity-dependent glucose phosphorylation in neurons with implications for the astrocyte-to-neuron lactate shuttle. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 5385-5390.	7.1	160
35	Dynamic fMRI and EEG Recordings during Spike-Wave Seizures and Generalized Tonic-Clonic Seizures in WAG/Rij Rats. Journal of Cerebral Blood Flow and Metabolism, 2004, 24, 589-599.	4.3	157
36	Glutamate Metabolism in Major Depressive Disorder. American Journal of Psychiatry, 2014, 171, 1320-1327.	7.2	155

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37	Intramuscular Glycogen and Intramyocellular Lipid Utilization during Prolonged Exercise and Recovery in Man: A 13C and 1H Nuclear Magnetic Resonance Spectroscopy Study1. Journal of Clinical Endocrinology and Metabolism, 2000, 85, 748-754.	3.6	150
38	Preliminary Evidence of Low Cortical GABA Levels in Localized¹H-MR Spectra of Alcohol-Dependent and Hepatic Encephalopathy Patients. American Journal of Psychiatry, 1999, 156, 952-954.	7.2	146
39	The effects of ketamine on prefrontal glutamate neurotransmission in healthy and depressed subjects. Neuropsychopharmacology, 2018, 43, 2154-2160.	5.4	146
40	Glutamatergic Neurotransmission and Neuronal Glucose Oxidation are Coupled during Intense Neuronal Activation. Journal of Cerebral Blood Flow and Metabolism, 2004, 24, 972-985.	4.3	141
41	Baseline brain energy supports the state of consciousness. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 11096-11101.	7.1	135
42	Evaluating the gray and white matter energy budgets of human brain function. Journal of Cerebral Blood Flow and Metabolism, 2018, 38, 1339-1353.	4.3	131
43	Human Brain Î²-Hydroxybutyrate and Lactate Increase in Fasting-Induced Ketosis. Journal of Cerebral Blood Flow and Metabolism, 2000, 20, 1502-1507.	4.3	128
44	Magnetic resonance spectroscopy of neurotransmitters in human brain. Annals of Neurology, 2003, 54, S25-S31.	5.3	126
45	Dynamic multi-coil shimming of the human brain at 7T. Journal of Magnetic Resonance, 2011, 212, 280-288.	2.1	126
46	Oxidative Glucose Metabolism in Rat Brain during Single Forepaw Stimulation: A Spatially Localized 1H[13C] Nuclear Magnetic Resonance Study. Journal of Cerebral Blood Flow and Metabolism, 1997, 17, 1040-1047.	4.3	122
47	Improvements on anin Vivo automatic shimming method (FASTERMAP). Magnetic Resonance in Medicine, 1997, 38, 834-839.	3.0	122
48	Increased Brain Monocarboxylic Acid Transport and Utilization in Type 1 Diabetes. Diabetes, 2006, 55, 929-934.	0.6	117
49	Validation of13c nmr measurement of human skeletal muscle glycogen by direct biochemical assay of needle biopsy samples. Magnetic Resonance in Medicine, 1992, 27, 13-20.	3.0	116
50	Lactate efflux and the neuroenergetic basis of brain function. NMR in Biomedicine, 2001, 14, 389-396.	2.8	116
51	1H-[13C]-Nuclear Magnetic Resonance Spectroscopy Measures of Ketamine's Effect on Amino Acid Neurotransmitter Metabolism. Biological Psychiatry, 2012, 71, 1022-1025.	1.3	114
52	Initial Observations on Effect of Vigabatrin on In Vivo 1H Spectroscopic Measurements of gamma-Aminobutyric Acid, Glutamate, and Glutamine in Human Brain. Epilepsia, 1995, 36, 457-464.	5.1	111
53	Dynamic shim updating: A new approach towards optimized whole brain shimming. Magnetic Resonance in Medicine, 1996, 36, 159-165.	3.0	109
54	NMR Determination of Intracerebral Glucose Concentration and Transport Kinetics in Rat Brain. Journal of Cerebral Blood Flow and Metabolism, 1992, 12, 448-455.	4.3	106

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55	13C NMR of Intermediary Metabolism: Implications for Systemic Physiology. Annual Review of Physiology, 2001, 63, 15-48.	13.1	106
56	High-Resolution CMRO2 Mapping in Rat Cortex: A Multiparametric Approach to Calibration of BOLD Image Contrast at 7 Tesla. Journal of Cerebral Blood Flow and Metabolism, 2000, 20, 847-860.	4.3	104
57	Effects of Gabapentin on Brain GABA, Homocarnosine, and Pyrrolidinone in Epilepsy Patients. Epilepsia, 2000, 41, 675-680.	5.1	104
58	State of the art direct ¹³C and indirect ¹Hâ€[¹³C] NMR spectroscopy in vivo. A practical guide. NMR in Biomedicine, 2011, 24, 958-972.	2.8	101
59	Glutamatergic Function in the Resting Awake Human Brain is Supported by Uniformly High Oxidative Energy. Journal of Cerebral Blood Flow and Metabolism, 2013, 33, 339-347.	4.3	101
60	Homocarnosine and the measurement of neuronal pH in patients with epilepsy. Magnetic Resonance in Medicine, 1997, 38, 924-929.	3.0	100
61	Glutamine is the major precursor for GABA synthesis in rat neocortex in vivo following acute GABA-transaminase inhibition. Brain Research, 2001, 919, 207-220.	2.2	99
62	Glymphatic System Function in Relation to Anesthesia and Sleep States. Anesthesia and Analgesia, 2019, 128, 747-758.	2.2	95
63	Short echo time proton magnetic resonance spectroscopic imaging of macromolecule and metabolite signal intensities in the human brain. Magnetic Resonance in Medicine, 1996, 35, 633-639.	3.0	92
64	Dependence of Oxygen Delivery on Blood Flow in Rat Brain: A 7 Tesla Nuclear Magnetic Resonance Study. Journal of Cerebral Blood Flow and Metabolism, 2000, 20, 485-498.	4.3	92
65	Differentiation of Glucose Transport in Human Brain Gray and White Matter. Journal of Cerebral Blood Flow and Metabolism, 2001, 21, 483-492.	4.3	90
66	1H NMR Studies of Glucose Transport in the Human Brain. Journal of Cerebral Blood Flow and Metabolism, 1996, 16, 427-438.	4.3	89
67	Measuring human brain GABA in vivo. Molecular Neurobiology, 1998, 16, 97-121.	4.0	89
68	Regional glucose metabolism and glutamatergic neurotransmission in rat brain in vivo. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 12700-12705.	7.1	88
69	Utility of Imaging-Based Biomarkers for Glutamate-Targeted Drug Development in Psychotic Disorders. JAMA Psychiatry, 2018, 75, 11.	11.0	88
70	Functional Energy Metabolism:In vivo ¹³C-NMR Spectroscopy Evidence for Coupling of Cerebral Glucose Consumption and Gl utamatergic Neuronal Activity. Developmental Neuroscience, 1998, 20, 321-330.	2.0	86
71	Detection of [1,6-13C2]-glucose metabolism in rat brain by in vivo1H-[13C]-NMR spectroscopy. Magnetic Resonance in Medicine, 2003, 49, 37-46.	3.0	86
72	[2,4-13C2]-Î²-Hydroxybutyrate Metabolism in Human Brain. Journal of Cerebral Blood Flow and Metabolism, 2002, 22, 890-898.	4.3	83

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73	Measurements of the anaplerotic rate in the human cerebral cortex using13C magnetic resonance spectroscopy and [1-13C] and [2-13C] glucose. Journal of Neurochemistry, 2007, 100, 73-86.	3.9	82
74	Decrease in GABA synthesis rate in rat cortex following GABA-transaminase inhibition correlates with the decrease in GAD67 protein. Brain Research, 2001, 914, 81-91.	2.2	81
75	Quantitative fMRI and oxidative neuroenergetics. NeuroImage, 2012, 62, 985-994.	4.2	81
76	Direct assessment of hepatic mitochondrial oxidative and anaplerotic fluxes in humans using dynamic 13C magnetic resonance spectroscopy. Nature Medicine, 2014, 20, 98-102.	30.7	80
77	Lactate preserves neuronal metabolism and function following antecedent recurrent hypoglycemia. Journal of Clinical Investigation, 2013, 123, 1988-1998.	8.2	80
78	Topiramate Rapidly Raises Brain GABA in Epilepsyâ€ƒPatients. Epilepsia, 2001, 42, 543-548.	5.1	78
79	Evaluation of Cerebral Acetate Transport and Metabolic Rates in the Rat Brain in vivo Using ¹H-[¹³C]-NMR. Journal of Cerebral Blood Flow and Metabolism, 2010, 30, 1200-1213.	4.3	78
80	Glutamatergic and GABAergic Neurotransmitter Cycling and Energy Metabolism in Rat Cerebral Cortex during Postnatal Development. Journal of Cerebral Blood Flow and Metabolism, 2007, 27, 1895-1907.	4.3	75
81	The Contribution of Ketone Bodies to Basal and Activity-Dependent Neuronal Oxidation in Vivo. Journal of Cerebral Blood Flow and Metabolism, 2014, 34, 1233-1242.	4.3	75
82	Uniform distributions of glucose oxidation and oxygen extraction in gray matter of normal human brain: No evidence of regional differences of aerobic glycolysis. Journal of Cerebral Blood Flow and Metabolism, 2016, 36, 903-916.	4.3	74
83	Biophysical basis of brain activity: implications for neuroimaging. Quarterly Reviews of Biophysics, 2002, 35, 287-325.	5.7	72
84	A ketogenic diet increases transport and oxidation of ketone bodies in RG2 and 9L gliomas without affecting tumor growth. Neuro-Oncology, 2016, 18, 1079-1087.	1.2	72
85	Dynamic shim updating (DSU) for multislice signal acquisition. Magnetic Resonance in Medicine, 2003, 49, 409-416.	3.0	71
86	A comparison of 13C NMR measurements of the rates of glutamine synthesis and the tricarboxylic acid cycle during oral and intravenous administration of [1-13C]glucose. Brain Research Protocols, 2003, 10, 181-190.	1.6	70
87	Hypophosphatemia promotes lower rates of muscle ATP synthesis. FASEB Journal, 2016, 30, 3378-3387.	0.5	70
88	Validation of13C NMR measurements of liver glycogenin vivo. Magnetic Resonance in Medicine, 1994, 31, 583-588.	3.0	68
89	A BOLD search for baseline. NeuroImage, 2007, 36, 277-281.	4.2	67
90	Dynamic shimming of the human brain at 7 T. Concepts in Magnetic Resonance Part B, 2010, 37B, 116-128.	0.7	67

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91	Vigabatrin: Effects on Human Brain GABA Levels by Nuclear Magnetic Resonance Spectroscopy. Epilepsia, 1994, 35, S29-32.	5.1	65
92	Blunted rise in brain glucose levels during hyperglycemia in adults with obesity and T2DM. JCI Insight, 2017, 2, .	5.0	65
93	¹⁵N-NMR Spectroscopy Studies of Ammonia Transport and Glutamine Synthesis in the Hyperammonemic Rat Brain. Developmental Neuroscience, 1998, 20, 434-443.	2.0	63
94	Carbon-13 NMR relaxation times of hepatic glycogen in vitro and in vivo. Biochemistry, 1990, 29, 6815-6820.	2.5	61
95	Glucose, Lactate, Î²-Hydroxybutyrate, Acetate, GABA, and Succinate as Substrates for Synthesis of Glutamate and GABA in the Glutamineâ€“Glutamate/GABA Cycle. Advances in Neurobiology, 2016, 13, 9-42.	1.8	61
96	Hippocampal Pathology in Clinical High-Risk Patients and the Onset of Schizophrenia. Biological Psychiatry, 2020, 87, 234-242.	1.3	61
97	Caloric Restriction Impedes Age-Related Decline of Mitochondrial Function and Neuronal Activity. Journal of Cerebral Blood Flow and Metabolism, 2014, 34, 1440-1443.	4.3	60
98	Magnetic field homogenization of the human prefrontal cortex with a set of localized electrical coils. Magnetic Resonance in Medicine, 2010, 63, 171-180.	3.0	58
99	Propionate Increases Hepatic Pyruvate Cycling and Anaplerosis and Alters Mitochondrial Metabolism. Journal of Biological Chemistry, 2016, 291, 12161-12170.	3.4	58
100	The human brain produces fructose from glucose. JCI Insight, 2017, 2, e90508.	5.0	58
101	In vivo chemical shift imaging of ?-aminobutyric acid in the human brain. Magnetic Resonance in Medicine, 1999, 41, 35-42.	3.0	57
102	In vivo GABA editing using a novel doubly selective multiple quantum filter. Magnetic Resonance in Medicine, 2002, 47, 447-454.	3.0	57
103	Assessment of Hepatic Mitochondrial Oxidation and Pyruvate Cycling in NAFLD by 13C Magnetic Resonance Spectroscopy. Cell Metabolism, 2016, 24, 167-171.	16.2	57
104	Delivery of mesenchymal stem cells in biomimetic engineered scaffolds promotes healing of diabetic ulcers. Regenerative Medicine, 2016, 11, 245-260.	1.7	55
105	In vivo detection and quantification of scalar coupled1H NMR resonances. Concepts in Magnetic Resonance, 2001, 13, 32-76.	1.3	54
106	Detection and assignment of the glucose signal in1h nmr difference spectra of the human brain. Magnetic Resonance in Medicine, 1992, 27, 183-188.	3.0	53
107	Is there In Vivo Evidence for Amino Acid Shuttles Carrying Ammonia from Neurons to Astrocytes?. Neurochemical Research, 2012, 37, 2597-2612.	3.3	53
108	Decreased Occipital Cortical Glutamate Levels in Response to Successful Cognitive-Behavioral Therapy and Pharmacotherapy for Major Depressive Disorder. Psychotherapy and Psychosomatics, 2014, 83, 298-307.	8.8	53

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109	Cerebral Lactate Turnover after Electroshock: In vivo Measurements by ¹H/¹³C Magnetic Resonance Spectroscopy. Journal of Cerebral Blood Flow and Metabolism, 1992, 12, 1022-1029.	4.3	51
110	Metabolic control analysis of hepatic glycogen synthesis in vivo. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 8166-8176.	7.1	51
111	Acute Effects of Vigabatrin on Brain GABA and Homocarnosine in Patients with Complex Partial Seizures. Epilepsia, 1999, 40, 958-964.	5.1	50
112	Glutamine-Glutamate Cycle Flux Is Similar in Cultured Astrocytes and Brain and Both Glutamate Production and Oxidation Are Mainly Catalyzed by Aspartate Aminotransferase. Biology, 2017, 6, 17.	2.8	50
113	In vivo carbon-edited detection with proton echo-planar spectroscopic imaging (ICED PEPSI): [3,4-13CH2]glutamate/glutamine tomography in rat brain. Magnetic Resonance in Medicine, 1999, 42, 997-1003.	3.0	49
114	Cerebral metabolism and consciousness. Comptes Rendus - Biologies, 2003, 326, 253-273.	0.2	49
115	Basic principles of metabolic modeling of NMR 13C isotopic turnover to determine rates of brain metabolism in vivo. Metabolic Engineering, 2004, 6, 75-84.	7.0	47
116	Non-invasive assessment of hepatic mitochondrial metabolism by positional isotopomer NMR tracer analysis (PINTA). Nature Communications, 2017, 8, 798.	12.8	45
117	Linear projection method for automatic slice shimming. Magnetic Resonance in Medicine, 1999, 42, 1082-1088.	3.0	44
118	Neurophysiology of functional imaging. NeuroImage, 2009, 45, 1047-1054.	4.2	43
119	Chronic Riluzole Treatment Increases Glucose Metabolism in Rat Prefrontal Cortex and Hippocampus. Journal of Cerebral Blood Flow and Metabolism, 2008, 28, 1892-1897.	4.3	42
120	Proposed cycles for functional glutamate trafficking in synaptic neurotransmission. Neurochemistry International, 2008, 52, 809-825.	3.8	42
121	Cerebral pyruvate carboxylase flux is unaltered during bicuculline-seizures. Journal of Neuroscience Research, 2005, 79, 128-138.	2.9	41
122	Insights from Neuroenergetics into the Interpretation of Functional Neuroimaging: An Alternative Empirical Model for Studying the Brain's Support of Behavior. Journal of Cerebral Blood Flow and Metabolism, 2014, 34, 1721-1735.	4.3	41
123	Dynamically shimmed multivoxel1H magnetic resonance spectroscopy and multislice magnetic resonance spectroscopic imaging of the human brain. Magnetic Resonance in Medicine, 2007, 57, 587-591.	3.0	40
124	Increased Brain Lactate Concentrations Without Increased Lactate Oxidation During Hypoglycemia in Type 1 Diabetic Individuals. Diabetes, 2013, 62, 3075-3080.	0.6	40
125	Advances in Imaging Brain Metabolism. Annual Review of Biomedical Engineering, 2017, 19, 485-515.	12.3	40
126	Recurrent Antecedent Hypoglycemia Alters Neuronal Oxidative Metabolism In Vivo. Diabetes, 2009, 58, 1266-1274.	0.6	38

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127	Detection of cerebral NAD⁺ in humans at 7T. Magnetic Resonance in Medicine, 2017, 78, 828-835.	3.0	38
128	Neuronal correlate of BOLD signal fluctuations at rest: Err on the side of the baseline. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 10773-10774.	7.1	37
129	Carbon-13 nuclear magnetic resonance studies of myocardial glycogen metabolism in live guinea pigs. Biochemistry, 1984, 23, 5029-5035.	2.5	36
130	Turnover of human muscle glycogen with low-intensity exercise. Medicine and Science in Sports and Exercise, 1994, 26, 983???991.	0.4	35
131	What have novel imaging techniques revealed about metabolism in the aging brain?. Future Neurology, 2014, 9, 341-354.	0.5	35
132	Localized1H NMR measurements of 2-pyrrolidinone in human brain in vivo. Magnetic Resonance in Medicine, 1999, 41, 889-896.	3.0	34
133	The Glycogen Shunt Maintains Glycolytic Homeostasis and the Warburg Effect in Cancer. Trends in Cancer, 2017, 3, 761-767.	7.4	34
134	In vivo ¹³C and ¹Hâ€[¹³C] MRS studies of neuroenergetics and neurotransmitter cycling, applications to neurological and psychiatric disease and brain cancer. NMR in Biomedicine, 2019, 32, e4172.	2.8	34
135	Neurovascular and neurometabolic couplings in dynamic calibrated fMRI: transient oxidative neuroenergetics for block-design and event-related paradigms. Frontiers in Neuroenergetics, 2010, 2, .	5.3	31
136	Characterization of Cerebral Glutamine Uptake from Blood in the Mouse Brain: Implications for Metabolic Modeling of ¹³C NMR Data. Journal of Cerebral Blood Flow and Metabolism, 2014, 34, 1666-1672.	4.3	31
137	Extracellular pH mapping of liver cancer on a clinical 3T MRI scanner. Magnetic Resonance in Medicine, 2020, 83, 1553-1564.	3.0	30
138	Direct carbon versus proton heteronuclear editing of 2â€•13 C ethanol in rabbit brain in vivo : A sensitivity comparison. Magnetic Resonance in Medicine, 1990, 16, 431-443.	3.0	29
139	Determination of the Glutamateâ€"Glutamine Cycling Flux Using Two-Compartment Dynamic Metabolic Modeling is Sensitive to Astroglial Dilution. Journal of Cerebral Blood Flow and Metabolism, 2009, 29, 108-118.	4.3	29
140	GABA Changes with Vigabatrin in the Developing Human Brain. Epilepsia, 1999, 40, 462-466.	5.1	28
141	Cortical Substrate Oxidation during Hyperketonemia in the Fasted Anesthetized Rat in Vivo. Journal of Cerebral Blood Flow and Metabolism, 2011, 31, 2313-2323.	4.3	28
142	Reevaluation of Astrocyte-Neuron Energy Metabolism with Astrocyte Volume Fraction Correction: Impact on Cellular Glucose Oxidation Rates, Glutamateâ€"Glutamine Cycle Energetics, Glycogen Levels and Utilization Rates vs. Exercising Muscle, and Na+/K+ Pumping Rates. Neurochemical Research, 2020, 45, 2607-2630.	3.3	28
143	Protein phosphorylation can regulate metabolite concentrations rather than control flux: The example of glycogen synthase. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 1485-1490.	7.1	27
144	Glycemic Variability and Brain Glucose Levels in Type 1 Diabetes. Diabetes, 2019, 68, 163-171.	0.6	27

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145	Dissociation of Muscle Insulin Resistance from Alterations in Mitochondrial Substrate Preference. Cell Metabolism, 2020, 32, 726-735.e5.	16.2	27
146	In vivo lactate and Î²-hydroxybutyrate editing using a pure-phase refocusing pulse train. Magnetic Resonance in Medicine, 1998, 40, 783-788.	3.0	26
147	Brain region and activity-dependent properties of M for calibrated fMRI. NeuroImage, 2016, 125, 848-856.	4.2	26
148	NMR of glycogen in exercise. Proceedings of the Nutrition Society, 1999, 58, 851-859.	1.0	24
149	Increased Brain Transport and Metabolism of Acetate in Hypoglycemia Unawareness. Journal of Clinical Endocrinology and Metabolism, 2013, 98, 3811-3820.	3.6	24
150	Metabolic demands of neural-hemodynamic associated and disassociated areas in brain. Journal of Cerebral Blood Flow and Metabolism, 2016, 36, 1695-1707.	4.3	24
151	Quantitative Î² mapping for calibrated fMRI. NeuroImage, 2016, 126, 219-228.	4.2	24
152	Functional MRS with J-edited lactate in human motor cortex at 4â€¯T. NeuroImage, 2019, 184, 101-108.	4.2	24
153	Glucose sparing by glycogenolysis (GSG) determines the relationship between brain metabolism and neurotransmission. Journal of Cerebral Blood Flow and Metabolism, 2022, 42, 844-860.	4.3	24
154	Glycogenolysis in Cerebral Cortex During Sensory Stimulation, Acute Hypoglycemia, and Exercise: Impact on Astrocytic Energetics, Aerobic Glycolysis, and Astrocyte-Neuron Interactions. Advances in Neurobiology, 2019, 23, 209-267.	1.8	22
155	Homeostasis and the glycogen shunt explains aerobic ethanol production in yeast. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 10902-10907.	7.1	21
156	Selective protonâ€observed, carbonâ€edited (selPOCE) MRS method for measurement of glutamate and glutamine ¹³Câ€labeling in the human frontal cortex. Magnetic Resonance in Medicine, 2018, 80, 11-20.	3.0	19
157	Studies of metabolic compartmentation and glucose transport usingin vivo MRS. NMR in Biomedicine, 2001, 14, 149-160.	2.8	18
158	Highâ€sensitivity, broadbandâ€decoupled ¹³C MR spectroscopy in humans at 7T using twoâ€dimensional heteronuclear singleâ€quantum coherence. Magnetic Resonance in Medicine, 2015, 74, 903-914.	3.0	18
159	Microdialysate concentration changes do not provide sufficient information to evaluate metabolic effects of lactate supplementation in brain-injured patients. Journal of Cerebral Blood Flow and Metabolism, 2016, 36, 1844-1864.	4.3	18
160	Graded image segmentation of brain tissue in the presence of inhomogeneous radio frequency fields. Magnetic Resonance Imaging, 2002, 20, 431-436.	1.8	17
161	Evidence for the importance of measuring total brain activity in neuroimaging. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 5475-5476.	7.1	17
162	Effects of Î³â€Aminobutyric acid transporter 1 inhibition by tiagabine on brain glutamate and Î³â€Aminobutyric acid metabolism in the anesthetized rat In vivo. Journal of Neuroscience Research, 2015, 93, 1101-1108.	2.9	16

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