OptiPrep™ Reference List RC06

Isolation of cells from brain and spinal cord

The methodology for the isolation various types of neural cell (motoneurons and neuroglial cells) from brain and spinal cord using OptiPrep™ is well-established and presented in detail in the OptiPrep™ Application Sheets that can be accessed via the following website: www.Optiprep.com Click on "Methodology then "Mammalian and non-mammalian cells" and follow the links from the Index). **Application Sheet C23: Motoneurons from spinal cords; Application Sheet C36: Motoneurons from brain and Application Sheet C35: Microglial cells**

This **Reference List** brings together all of the known published papers reporting the use of OptiPrep™ for neural cells. The references are sorted into the following sections:
1. Methodology, 2. Motoneurons (sub-divided alphabetically according cell/tissue source (e.g. "Mouse brain cortex (adult)" or "Mouse brain mesencephalon (post-natal)") 3. Myelin removal from cell preparations and 4. Neuroglial and other cells. The references may be further divided into **research topic** areas. Within each section references are listed alphabetically according to **first author**.

Important information: for convenience, papers published since mid-2019 are listed in Section 5; these will be incorporated into the main index at a later date.

1. Methodology

Brinn, M., O'Neill, K., Musgrave, I., Freeman, B.J.C., Henneberg, M. and Kumaratilake, J. (2016) *An optimized method for obtaining adult rat spinal cord motorneurons to be used for tissue culture* J. Neurosci., Meth., **273**, 128–137

Brewer, G.J. and Torricelli, J.R. (2007) *Isolation and culture of adult neurons and neurospheres* Nat. Protoc., **2**, 1490-1498

Graber, D.J. and Harris, B.T. (2013) *Purification and culture of spinal motor neurons* Cold Spring Harb. Protoc., prot074161, pp 319-326

Faron-Górecka, A., Szlachta, M., Kolasa, M., Solich, J., Górecki, A., Kuśmider, M., Zurawek, D. and Dziedzicka-Wasylewska, M. (2019) *Understanding GPCR dimerization* in Methods in Cell Biology, **149**, 155-178

Hazen, J.L., Duran, M.A., Smith, R.P., Rodriguez, A.R., Martin, G.S., Kupriyanov, S., Hall, I.M. and Baldwin, K.K. (2017) *Using cloning to amplify neuronal genomes for whole-genome sequencing and comprehensive mutation detection and validation* In Genomic Mosaicism in Neurons and Other Cell Types, Neuromethods, **131**, (ed. Frade, J.M. and Gage, F.H.) Springer Science+Business Media, LLC, pp 163-185

Katzenell, S., Cabrera, J.R., North, B.J. and Leib, D.A. (2017) *Isolation, purification, and culture of primary murine sensory neurons* In Innate Antiviral Immunity: Methods and Protocols, Methods in Molecular Biology, **1656**, (ed. Mossman, K.) Springer Science+Business Media LLC pp. 229-51

Price, P.J. and Brewer, G.J. (2001) *G Serum-free media for neural cell cultures, adult and embryonic* In Protocols for Neural Cell CultureJ. Physiol., **535**, 663-677 (Ed. Federoff, S. and Richardson, A.) Humana Press,

Southam, K.A., King, A.E., Blizzard, C.A., McCormack, G.H. and Dickson, T.C. (2015) *A novel in vitro primary culture model of the lower motor neuron–neuromuscular junction circuit* In Neuromethods, **103**, Microfluidic and Compartmentalized Platforms for Neurobiological Research (ed. Biffi, E.) Springer Science+Business Media New York, pp 181-193, Totowa, N.J., USA pp 255-264

2. Motoneurons

Chicken embryo spinal cord

Macosko, J.C., Newbern, J.M., Rockford, J., Chisena, E.N., Brown, C.M., Holzwarth, G.M. and Milligan, C.E. (2008) *Fewer active motors per vesicle may explain slowed vesicle transport in chick motoneurons after three days in vitro* Brain Res., **1211**, 6-12

Newbern, J., Taylor, A., Robinson, M., Li, L. and Milligan, C.E. (2005) *Decreases in phosphoinositide-3-kinase/Akt and extracellular signal-regulated kinase 1/2 signaling activate components of spinal motoneuron death* J. Neurochem., **94**, 1652-1665

Newbern, J., Taylor, A., Robinson, M., Lively, M.O. and Milligan, C.E. (2007) *c-Jun N-terminal kinase signaling regulates events associated with both health and degeneration in motoneurons* Neuroscience, **147**, 68-692

Robinson, M.B., Taylor, A.R., Gifondorwa, D.J., Tytell, M. and Milligan, C.E. (2008) *Exogenous Hsc70, but not thermal preconditioning, confers protection to motoneurons subjected to oxidative stress* Develop. Neurobiol., **68**, 1-17
Taylor, A.R., Gifondorwa, D.J., Newbern, J.M., Robinson, M.B., Strupe, J.L., Prevette, D., Oppenhiem, R.W. and Milligan, C.E. (2007) *Astrocyte and muscle-derived secreted factors differentially regulate motoneuron survival* J. Neurosci., **27**, 634-644
Taylor, A.R., Robinson, M.B. and Milligan, C.E. (2007) *In vitro methods to prepare astrocyte and motoneuron cultures for the investigation of potential in vivo interactions* Nat. Protoc., **2**, 1499-1507
Taylor, A.R., Gifondorwa, D.J., Robinson, M.B., Strupe, J.L., Prevette, D., Johnson, J.E., Hempstead, B., Oppenheim, R.W. and Milligan, C.E. (2012) *Motoneuron programmed cell death in response to ProBDNF* Develop. Neurobiol., **72**, 699–712

Fish

Da Silva, C.A., de Morais, E.C.P., Costa, M.D.M, Ribas, J.L.C., Guiloski, I.C., Ramsdorf, W.A., Zanata, S.M. et al (2014) *Saxitoxins induce cytotoxicity, genotoxicity and oxidative stress in teleost neurons in vitro* Toxicon, **86**, 8–15
Souto, S., Olveira, J.G., Vazquez-Salgado, L., Dopazo, C.P. and Bandín, I. (2018) *Betanodavirus infection in primary neuron cultures from sole* Vet. Res., **49**: 86

Freshwater turtle

Cocilova, C.C. and Milton, S.L. (2016) *Characterization of brevetoxin (PbTx-3) exposure in neurons of theanoxia-tolerant freshwater turtle (Trachemys scripta)* Aquat. Toxicol., **180**, 115–122

Hamster brain cortex

Hollister, J.R., Lee, K.S., Dorward, D.W. and Baron, G.S. (2015) *Efficient uptake and dissemination of scrapie prion protein by astrocytes and fibroblasts from adult hamster brain* PLoS One, **10**: e0115351Magalhaes, A.C., **Baron, G.S.**, Lee, K.S., Steele-Mortimer, O., Dorward, D., Prado, M.A.M. and Caughey, B. (2005) *Uptake and neuritic transport of scrapie prion protein coincident with infection of neuronal cells* J. Neurosci., **25**, 5207-5216

Human brain cortex (at autopsy)

Konishi, Y., Lindhilm, K., Yang, L-B., Li, R. and Shen, Y. (2002) *Isolation of living neurons from human elderly brains using the immunomagnetic sorting DNA-linker system* Am. J. Pathol., **161**, 1567-1576

Human brain cortex (ex-surgery)

Brewer, G.J., Espinosa, J., McIlhaney, M.P., Pencek, T.P., Kesslak, J.P., Cotman, C., Viel, J. and McManus, D.C. (2001) *Culture and regeneration of human neurons after brain surgery* J. Neurosci Meth., **107**, 15-23
Gibbons, H.M. and Dragunow, M. (2010) *Adult human brain cell culture for neuroscience research* Int. J. Biochem. Cell Biol., **42**, 844–856

Human embryonic spinal cord

Sundaramoorthy, V., Walker, A.K., Tan, V., Fifita, J.A., Mccann, E.P., Williams, K.L., Blair, I.P., Guillemin, G.J. et al (2015) *Defects in optineurin- and myosin VI-mediated cellular trafficking in amyotrophic lateral sclerosis* Hum. Mol. Genet., **24**, 3830–3846

Human fetal brain

Ataman, B., Boulting, G.L., Harmin, D.A., Yang, M.G., Baker-Salisbury, M., Yap, E-L., Malik, A.N., Mei, K., Rubin, A.A. et al (2016) *Evolution of Osteocrin as an activityregulated factor in the primate brain* Nature, **539**, 242-247

Human spinal cord

Colón, A., Guo, X., Akanda, N., Cai, Y. and Hickman J.J. (2017) *Functional analysis of human intrafusal fiber innervation by human γ-motoneurons* Sci. Rep., **7**: 17202
Santhanam, N., Kumanchik, L., Guo, X., Sommerhage, F., Cai, Y., Jackson, M., Martin, C., Saad, G. et al (2018) *Stem cell derived phenotypic human neuromuscular junction model for dose response evaluation of therapeutics* Biomaterials, **166**, 64-78

Mouse brain amygdala

Mou, L., Dias, B.G. Gosnell, H. and Ressler, K.J. (2013) *Gephryin plays a key role in BDNF-dependent regulation of amygdala surface* $GABA_ARS$ Neuroscience **255**, 33–44

Mouse brain cerebellar granule

Benson, M.D., Romero, M.I., Lush, M.E., Lu, R., Henkemeyer, M. and Parada, L.F. (2005) *Ephrin-B3 is a myelin-based inhibitor of neurite outgrowth* Proc. Natl. Acad. Sci. USA, **102**, 10694-10699

Davis, T.H., Chen, C. and Isom, L.L. (2004) *Sodium channels* $\beta 1$ *subunits promote neurite outgrowth in cerebellar granule neurons* J. Biol. Chem., **279**, 51424-51432

Sharkey, L.M., Cheng, X., Drews, V., Buchner, D.A., Jones, J.M., Justice, M.J., Waxman, S.G., Dib-Hajj, S.D. Meisler, M.H. (2009) *The ataxia3 mutation in the N-terminal cytoplasmic domain of sodium channel Nav1.6 disrupts intracellular trafficking* J. Neurosci., **29**, 2733–2741

Mouse brain cortex (adult)

Barsukova, A., Komarov, A., Hajnoczky, G., Bernardi, P., Bourdette, D. and Forte, M. (2011) *Activation of the mitochondrial permeability transition pore modulates* Ca^{2+} *responses to physiological stimuli in adult neurons* Eur. J, Neurosci., **33**, 831–842

Barsukova, A.G., Bourdette, D. and Forte, M. (2011) *Mitochondrial calcium and its regulation in neurodegeneration induced by oxidative stress* Eur. J. Neurosci., **34**, 437–447

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Cao, L., Pu, J., Scott, R.H., Ching, J. and McCaig, C.D. (2015) *Physiological electrical signals promote chain migration of neuroblasts by up-regulating P2Y1 purinergic receptors and enhancing cell adhesion* Stem Cell Rev. Rep., **11**, 75−86

Capó-Vélez, C.M., Morales-Vargas, B., García-González, A., Grajales-Reyes, J.G., Delgado-Vélez, M., Madera, B., Báez-Pagán, C.A., Quesada, O. and Lasalde-Dominicci, J.A. (2018) *The alpha7-nicotinic receptor contributes to gp120-induced neurotoxicity: implications in HIV-associated neurocognitive disorders* Sci. Rep., **8**: 1829

Dong, Y., Digman, M.A. and Brewer, G.J. (2019) *Age- and AD-related redox state of NADH in subcellular compartments by fluorescence lifetime imaging microscopy* GeroScience **41**, 51–67

Feng, X., Bader, B.M., Yang, F., Segura, M., Schultz, L.,Schröder, O, H-U., Rolfs, A. and Luo, J. (2018) *Improvement of impaired electrical activity in NPC1 mutant cortical neurons upon DHPG stimulation detected by micro-electrode array* Brain Res., **1694**, 87–93

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Kolasa, M., Solich, J., Faron-Górecka, A., Zurawek, D., Pabian, P., Ukasiewicz, S., Kuśmider, M., Szafran-Pilch, K. et al (2018) *Paroxetine and low-dose risperidone induce serotonin 5-HT1A and dopamine D2 receptor heteromerization in the mouse prefrontal cortex* Neuroscience **377**, 184–196

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Li, S., Nie, E.H., Yin, Y., Benowitz, L.I., Tung, S., Vinters, H.V., Bahjat, F.R., Stenzel-Poore, M.P. et al (2015) *GDF10 is a signal for axonal sprouting and functional recovery after stroke* Nat. Neurosci., **18**, 1737-1745

Lopez, J.R., Lyckman, A., Oddo, S., LaFerla, F.M., Querfurth, H.W., Shtifman, A. (2008) *Increased intraneuronal resting* $[Ca^{2+}]$ *in adult Alzheimer's disease mice* J. Neurochem., **105**, 262-271

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Nathan, B.P., Jiang, Y., Wong, G.K., Shen, F., Brewer, G.J. and Struble, R.G. (2002) *Apolipoprotein E4 inhibits, and apolipoprotein E3 promotes neurite outgrowth in cultured adult mouse cortical neurons through the low-density lipoprotein receptor-related protein* Brain Res., **928**, 96-105

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Tiwari, M., Lopez-Cruzan, M., Morgan, W.W. and Herman, B. (2011) *Loss of caspase-2-dependent apoptosis induces autophagy after mitochondrial oxidative stress in primary cultures of young adult cortical neurons* J. Biol. Chem., **286**, 8493–8506

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Mouse brain cortex (juvenile)

Osada, K., Tamamaki, N., Song, S-Y., Kakazu, N., Yamazaki, Y., Makino, H., Sasaki, A., Hirayama, T. et al (2005) *Developmental pluripotency of the nuclei of neurons in the cerebral cortex of juvenile mice* J. Neurosci., **25**, 8368-8374

Wang, Y-J., Wang, X., Lu, J-J., Li, Q-X.,Gao, C-Y., Liu, X-H., Sun, Y., Yang, M. et al (2011) *p75NTR regulates Aβ deposition by increasing Aβ production but inhibiting Aβ aggregation with its extracellular domain* J. Neurosci., **31**, 2292–2304

Mouse brain cortex (neo-natal)

Tang, Z., Arjunan, P., Lee, C., Li, Y., Kumar, A., Hou, X., Wang, B., Wardega, P., Zhang, F. et al (2010) *Survival effect of PDGF-CC rescues neurons from apoptosis in both brain and retina by regulating GSK3β phosphorylation* J. Exp. Med., **207**, 867-880

Mouse brain cortex (post-natal)

Ahmed, A.I., Shtaya, A.B., Zaben, M.J., Owens, E.V., Kiecker, C. and Gray, W.P. (2012) *Endogenous GFAP-positive neural stem/progenitor cells in the postnatal mouse cortex are activated following traumatic brain injury* J. Neurotrauma, **29**, 828–842

Agarwal, A.K., Tunison, K., Dalal, J.S., Nagamma, S.S., Hamra, F.K., Sankella, S., Shao, X., Auchus, R.J. and Garg, A. (2017) *Metabolic, reproductive, and neurologic abnormalities in Agpat1-null mice* Endocrinology, **158**, 3954–3973

Barsukova, A.G., Forte, M. and Bourdette, D. (2012) *Focal increases of axoplasmic Ca^{2+}, aggregation of sodium–calcium exchanger, N-type Ca^{2+} channel, and actin define the sites of spheroids in axons undergoing oxidative stress* J. Neurosci., **32**, 12028 –12037

Berretta, A., Gowing, E.K., Jasoni, C.L. and Clarkson, A.N. (2016) *Sonic hedgehog stimulates neurite outgrowth in a mechanical stretch model of reactive-astrogliosis* Sci. Rep., **6**: 21896

Caracciolo, L., Marosi, M., Mazzitelli, J., Latifi, S., Sano, Y., Galvan, L., Kawaguchi, R., Holley, S., Levine, M.S. et al (2018) *CREB controls cortical circuit plasticity and functional recovery after stroke* Nat. Comm., **9**: 2250

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Finelli, M.J., Sanchez-Pulido, L., Liu, K.X., Davies, K.E. and Oliver, P.L. (2016) *The evolutionarily conserved Tre2/Bub2/Cdc16 (TBC), lysin motif (LysM), domain catalytic (TLDc) domain is neuroprotective against oxidative stress* J. Biol. Chem., **291**, 2751–2763

Finelli, M.J., Paramo, T., Pires, E., Ryan, B.J., Wade-Martins, R., Biggin, P.C., McCullagh, J. and Oliver1, P.L. (2019) *Oxidation resistance 1 modulates glycolytic pathways in the cerebellum via an interaction with glucose-6-phosphate isomerase* Mol. Neurobiol., **56**, 1558–1577

Fujita, T., Chen, M.J., Li, B., Smith, N.A., Peng, W., Sun, W., Toner, M.J., Kress, B.T. et al (2014) *Neuronal transgene expression in dominant-negative SNARE mice* J. Neurosci., **34**,16594 –16604

Goto-Silva, L., McShane, M.P., Salinas, S., Kalaidzidis, Y., Schiavo, G. and Zerial, M. (2019) *Retrograde transport of Akt by a neuronal Rab5-APPL1 endosome* Sci. Rep., **9**: 2433

Ingram, N.T., Khankan, R.R. and Phelps, P.E. (2016) *Olfactory ensheathing cells express a7 integrin to mediate their migration on laminin* PloS One, **11:** e0153394

Kruger, L.C., O'Malley, H.A., Hull, J.M., Kleeman, A., Patino, G.A. and Isom, L.L. (2016) *β1-C121W is down but not out: epilepsy-associated Scn1b-C121W results in a deleterious gain-of-function* J. Neurosci., **36**, 6213–6224

Kuo, L-C., Song, Y-Q., Yao, C-A., Cheng, I,H., Chien, C-T., Lee, G-C., Yang, W-C. and Lin, Y. (2019) *Ginkgolide a prevents the amyloid-β-induced depolarization of cortical neurons* J. Agric. Food Chem., **67**, 81−89

Parker, K., Berretta, A., Saenger, S., Sivaramakrishnan, M., Shirley, S.A., Metzger, F. and Clarkson, A.N. (2017) *PEGylated insulin-like growth factor-I affords protection and facilitates recovery of lost functions post-focal ischemia* Sci. Rep., **7:** 241

Mouse brain hippocampus (adult)

Agarwal, A.K., Tunison, K., Dalal, J.S., Nagamma, S.S., Hamra, F.K., Sankella, S., Shao, X., Auchus, R.J. and Garg, A. (2017) *Metabolic, reproductive, and neurologic abnormalities in Agpat1-null mice* Endocrinology, **158**, 3954–3973

Arneson, D., Zhang, G., Ying, Z., Zhuang, Y., Byun, H.R., Ahn, I.S., Gomez-Pinilla, F. and Yang, X. (2018) *Single cell molecular alterations reveal target cells and pathways of concussive brain injury* Nat. Comm., 9: 3894

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Ghosh, D., LeVault, K.R. and Brewer, G.J. (2014) *Dual-energy precursor and nuclear erythroiderelated factor 2 activator treatment additively improve redox glutathione levels and neuron survival in aging and Alzheimer mouse neurons upstream of reactive oxygen species* Neurobiol. Aging, **35**, 179-190

Varghese, K., Das, M., Bhargava, N., Stancescu, M., Molnar, P., Kindy, M.S. and Hickman, J.J. (2009) *Regeneration and characterization of adult mouse hippocampal neurons in a defined in vitro system* J. Neurosci. Meth., **177**, 51–59

Mouse brain hippocampus (neo-natal)

Mou, L., Heldt, S.A. and Ressler, K.J. (2011) *Rapid brain-derived neurotrophic factor-dependent sequestration of amygdala and hippocampal $GABA_A$ receptors vis different tyrosine receptor kinase B-mediated phosphorylation pathways* Neuroscience, **176**, 72–85

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Wang, X.Q., Deriy, L.V., Foss, S., Huang, P., Lamb, F.S., Kaetzel, M.A., Bindokas, V., Marks, J.D. and Nelson, D.J. (2006) *CLC-3 channels modulate excitatory synaptic transmission in hippocampal neurons* Neuron, **52**, 321-333

Mouse brain hippocampus (post-natal)

Chen, M., Geoffroy, C.G., Wong, H.N., Tress, O., Nguyen, M.T., Holzman, L.B., Jin, Y. and Zheng, B. (2106) *Leucine Zipper-bearing Kinase promotes axon growth in mammalian central nervous system neurons* Sci. Rep., **6**: 31482

Jinadasa, T., Szabó, E.Z., Numata, M. and Orlowski, J. (2014) *Activation of AMP-activated protein kinase regulates hippocampal neuronal pH by recruiting Na^+/H^+ exchanger NHE5 to the cell surface* J. Biol. Chem., **289**, 20879–20897

Mahan, A.L., Mou, L., Shah, N., Hu, J-H., Worley, P.F. and Ressler, K.J. (2012) *Epigenetic modulation of Homer1a transcription regulation in amygdala and hippocampus with Pavlovian fear conditioning* J. Neurosci., **32**, 4651– 4659

Mouse brain mesencephalon (post-natal)

Tiwari, M., Herman, B. and Morgan, W.W. (2011) *A knockout of the caspase 2 gene produces increased resistance of the nigrostriatal dopaminergic pathway to MPTP-induced toxicity* Exp. Neurol., 229, 421–428

Mouse brain olfactory bulb (post-natal)

Pathania, M., Torres-Reveron, J., Yan, L., Kimura, T., Lin, T.V., Gordon, V., Teng, Z-Q., Zhao, X. et al (2012) *miR-132 enhances dendritic morphogenesis, spine density, synaptic integration and survival of newborn olfactory bulb neurons* PLoS One, **7**: e38174

Mouse brain striatum (adult)

Ena, S.L., De Backer, J.F., Schiffmann, S.N. and de Kerchove d'Exaerde, A. (2013) *FACS array profiling identifies ecto-5' nucleotidase as a striatopallidal neuron-specific gene involved in striatal-dependent learning* J. Neurosci., **33**, 8794–8809

Lambot, L., Rodriguez, E.C., Houtteman, D., Li, Y., Schiffmann, S.N., Gall, D., and de Kerchove d'Exaerde, A. (2016) *Striatopallidal neuron NMDA receptors control synaptic connectivity, locomotor, and goal-directed behaviors* J. Neurosci., **36**, 4976–4992
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Mouse brain trigeminal ganglia

Arneson, D., Zhang, G., Ying, Z., Zhuang, Y., Byun, H.R., Ahn, I.S., Gomez-Pinilla, F. and Yang, X. (2018) *Single cell molecular alterations reveal target cells and pathways of concussive brain injury* Nat. Comm., 9: 3894
Bertke, A.S., Swanson, S.M., Chen, J., Imai, Y., Kinchington, P.R. and Margolis, T.P. (2011) *A5-Positive primary sensory neurons are nonpermissive for productive infection with herpes simplex virus 1 in vitro* J. Virol., **85**, 6669–6677
Bertke, A.S., Apakupakul, K., Ma. AA., Imai, Y., Gussow. A.M., Wang, K., Cohen, J.I., Bloom, D.C., Margolis, T.P. (2012) *LAT region factors mediating differential neuronal tropism of HSV-1 and HSV-2 do not act in trans* PLoS One, **7**: e53281
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Maroui, M.A., Callé, A., Cohen, C., Streichenberger, N., Texier, P., Takissian, J., Rousseau, A., Poccardi, N., Welsch, J. et al (2016) *Latency entry of herpes simplex virus 1 is determined by the interaction of its genome with the nuclear environment* PLoS Pathog., **12**: e1005834
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Mouse spinal cord (embryo)

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Charcot-Marie-Tooth (see also "Mouse spinal cord (adult)")

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Spinal muscular atrophy (see also "Zebrafish")

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Inflammatory cells

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Macrophages

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5. Recently published papers

Amyotrophic lateral scelerosis; mouse embryo; primary motor neurons

Tischbein, M., Baron, D.M., Lin, Y-C., Gall, K.V., Landers, J.E., Fallini, C. and Bosco, D.A. (2019) *The RNA-binding protein FUS/TLS undergoes calcium mediated nuclear egress during excitotoxic stress and is required for GRIA2 mRNA processing* J. Biol. Chem., **294**, 10194–10210

Astrocyte purification (mouse hindbrain)

Jin, J., Smith, M.D., Kersbergen, C.J., Kam, T-I., Viswanathan, M., Martin, K., Dawson, T.M., Dawson, V.L., Zack, D.J. et al (2019) *Glial pathology and retinal neurotoxicity in the anterior visual pathway in experimental autoimmune encephalomyelitis* Acta Neuropathol. Comm., **7**: 125

Charcot-Marie-Tooth disease; mouse ventral spinal cord cells;

Fernandez-Lizarbe, S., Civera-Tregon, A., Cantarero, L., Herrer, I., Juarez, P., Hoenick, J. and Palau, F. (2019) *Neuroinflammation in the pathogenesis of axonal Charcot-Marie-Tooth disease caused by lack of GDAP1* Exp. Neurol., **320**, 113004

Cortical neurons (mouse foetus)
Park, D-J., Kang, J-B., Shah, F-A., Jin, Y-B. and Koh, P-O. (2020) *Quercetin attenuates decrease of thioredoxin expression following focal cerebral ischemia and glutamate-induced neuronal cell damage* Neuroscience, **428**, 38–49

Embryonic spinal cord (mouse embryo); *amyotrophic lateral sclerosis*
Giampetruzzi, A., Danielson, E.W., Gumina, V., Jeon, M., Boopathy, S., Brown, R.H., Ratti, A., Landers, J.E. and Fallini, C. (2019) *Modulation of actin polymerization affects nucleocytoplasmic transport in multiple forms of* Nat. Comm., **10**: 3827

Hippocampal neurons (various ages); Alzheimer's disease
Dong, Y., Sameni, S., Digman, A. and Brewer. G.J. (2019) *Reversibility of age-related oxidized free NADH redox states in Alzheimer's disease neurons by imposed external Cys/CySS redox shifts* Sci. Rep., **9**: 11274

Hippocampal neurons:
Memory storage
Zhu, Y., Huang, M., Bushong, E., Phan, S., Uytiepo, M., Beutter, E., Boemer, D., Tsui. K., Ellisman, M. and Maximov, A. (2019) *Class IIa HDACs regulate learning and memory through dynamic experience-dependent repression of transcription* Nat. Comm., **10**: 3469
Pyramidal cell (epilepsy)
Yang, F., Yang, L., Wataya-Kaneda, M., Teng, L. and Katayama, I. (2020) *Epilepsy in a melanocyte-lineage mTOR hyperactivation mouse model: A novel epilepsy model* PLoS One, **15**: e0228204

Hypothalamus
Lipoprotein receptors
Lee, S.D., Priest, C., Bjursell, M., Gao, J., Arneson, D.V., Ahn, I.S., Diamante, G., van Veen, J.E., Massa, M.G., Calkin, A.C., et al (2019) *IDOL regulates systemic energy balance through control of neuronal VLDLR expression* Nature Metab., **1090**, 1089–1100

Microglial cells
Chastain, L.G., Franklin, T., Gangisetty, O., Cabrera, M.A., Mukherjee, S., Shrivastava, P., Jabbar, S. and Sarkar, D.K. (2019) *Early life alcohol exposure primes hypothalamic microglia to later-life hyper-sensitivity to immune stress: possible epigenetic mechanism* Neuropsychopharmacol., **44**, 1579–1588
Mauri, E., Veglianese, P., Papa, S., Rossetti, A., De Paola, M., Mariani, A., Posel, Z., Posocco, P., Sacchetti, A. and Rossi, F. (2020) *Effects of primary amine-based coatings on microglia internalization of Nanogels* Colloids Surf. B: Biointerfaces, **185**: 110574

Motor axon growth
Katiyar, K.S., Struzyna, L.A., Das, S. and Cullen, D.K. (2019) *Stretch growth of motor axons in custom mechanobioreactors to generate long-projecting axonal constructs* J. Tissue Eng. Regen. Med., **13**, 2040–2054

Mouse adult brain cortex; neuronal projection
Chen, X., Sun, Y-C., Zhan, H., Kebschull, J.M., Fischer, S., Matho, K., Huang, Z.J., Gillis, J. and Zador, A.M. (2019) *High-throughput mapping of long-range neuronal projection using in situ sequencing* Cell, **179**, 772–786

Mouse embryo spinal cord; neuron degeneration
García-Morales, V., Rodríguez-Bey, G., Gómez-Pérez, L., Domínguez-Vías, G., González-Forero, D., Portillo, F., Campos-Caro, A., Gento-Caro, A. et al (2019) *Sp1-regulated expression of p11 contributes to motor neuron degeneration by membrane insertion of TASK1* Nat. Comm., **10**: 3784

Mouse post-natal; neurite outgrowth
Ossingera,A., Bajica, A., Pana, S., Andersson, B., Ranefall, P., Hailer, N.P. and Schizasa, N. (2020) *A rapid and accurate method to quantify neurite outgrowth from cell and tissue cultures: Two image analytic approaches using adaptive thresholds or machine learning* J. Neurosci. Meth., **331**: 108522

Niemann-Pick disease
Park, M.H., Choi, B.J., Jeong, M.S., Lee, J.Y., Jung, I.K., Park, K.H., Lee, H.W., Yamaguchi, T. et al (2019) *Characterization of the subventricular-thalamo-cortical circuit in the NP-C mouse brain, and new insights regarding treatment* Mol. Ther., **27**, 1507-1526

Prefontal cortex (mouse brain); neuropsychiatric disease
Bhattacherjee, A., Djekidel, M.N., Chen, R., Chen, W., Tuesta, L.M. and Zhang, Y. (2019) *Cell type-specific transcriptional programs in mouse prefrontal cortex during adolescence and addiction* Nat. Comm., **10**: 4169

Rat embryonic spinal cord; motor axon growth
Casci, I., Krishnamurthy, K., Kour, S., Tripathy, V., Ramesh, N., Anderson, E.N., Marrone, L., Grant, R.A. et al (2019) *Muscleblind acts as a modifier of FUS toxicity by modulating stress granule dynamics and SMN localization* Nat. Comm., **10**: 5583

Rat embryonic spinal cord; synaptogenesis; ribosome reduction
Costa, R.O., Martins, H., Martins, L.F., Cwetsch, A.W., Mele, M., Pedro, J.R., Tome, D., Jeon, N.L. et al (2019) *Synaptogenesis stimulates a proteasome-mediated ribosome reduction in axons* Cell Rep., **28**, 864–876

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Serumwerk Bernburg AG • Hallesche Landstraße 105 b • 06406 Bernburg • Germany
phone: +49 3471 860 429 • diagnostic.serumwerk.com • diagnostic@serumwwerk.com • serumwerk.de