

# 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](http://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 motoneurons 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 Culture J. 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., Oppenheim, 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 Moraes, 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.**, Oliveira, 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 the anoxia-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**: e0115351 Magalhaes, 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., McIlhane, 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 Draganow, 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  $\gamma$ -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) *Gephyrin plays a key role in BDNF-dependent regulation of amygdala surface GABA<sub>A</sub>RS* 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<sup>2+</sup> 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

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

**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

**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

**Ghosh, D.,** LeVault, K.R., Barnett, A.J. and Brewer, G.J. (2012) *A reversible early oxidized redox state that precedes macromolecular ROS damage in aging nontransgenic and 3xTg-AD mouse neurons* J. Neurosci., **32**, 5821–5832

**Ghosh, D.,** LeVault, K.R. and Brewer, G.J. (2014) *Dual-energy precursor and nuclear erythroid-related 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

**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

**Leon, J.,** Sakumi, K., Castillo, E., Sheng, Z., Oka, S. and Nakabeppu, Y. (2016) *8-Oxoguanine accumulation in mitochondrial DNA causes mitochondrial dysfunction and impairs neurogenesis in cultured adult mouse cortical neurons under oxidative conditions* Sci. Rep., **6**: 22086

**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<sup>2+</sup>] in adult Alzheimer's disease mice* J. Neurochem., **105**, 262-271

**Magalhaes, 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

**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

**Nathan, B.P.,** Barsukova, A.G., Shen, F., McAsey, M. and Struble, R.G. (2004) *Estrogen facilitates neurite extension via apolipoprotein E in cultured adult mouse cortical neurons* Endocrinology, **145**, 3065-3073

- Nicoll, M.P.**, Hann, W., Shivkumar, M., Harman, L.E.R., Connor, V., Coleman, H.M., Proença, J.T. and Efstathiou, S. (2016) *The HSV-1 latency-associated transcript functions to repress latent phase lytic gene expression and suppress virus reactivation from latently infected neurons* PLoS Pathog., **12**: e1005539
- 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
- Wils, H.**, Kleinberger, G., Janssens, J., Pereson, S., Joris, G., Cuijt, I., Smits, V., Ceuterick-de Groote, C. et al (2010) *TDP-43 transgenic mice develop spastic paralysis and neuronal inclusions characteristic of ALS and frontotemporal lobar degeneration* Proc. Natl. Acad. Sci. USA, **107**, 3858–3863
- Xu, Y-h.**, Xu, K., Sun, Y., Liou, B., Quinn, B., Li, R-h., Xue, L., Zhang, W., Setchel, K.D.R., Witte, D. and Grabowski, G.A. (2014) *Multiple pathogenic proteins implicated in neuronopathic Gaucher disease mice* Hum. Mol. Genet., **23**, 3943–3957

### 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 A $\beta$  deposition by increasing A $\beta$  production but inhibiting A $\beta$  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 GSK3 $\beta$  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<sup>2+</sup>, aggregation of sodium–calcium exchanger, N-type Ca<sup>2+</sup> 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
- Chuang, J-H.**, Tung, L-C., Yin, Y. and Lin, Y. (2013) *Differentiation of glutamatergic neurons from mouse embryonic stem cells requires raptor S6K signaling* Stem Cell Res., **11**, 1117–1128
- 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 Oliver, 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)  *$\beta$ 1-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- $\beta$ -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 Apat1-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
- Ghosh, D.,** LeVault, K.R., Barnett, A.J. and Brewer, G.J. (2012) *A reversible early oxidized redox state that precedes macromolecular ROS damage in aging nontransgenic and 3xTg-AD mouse neurons* J. Neurosci., **32**, 5821–5832
- Ghosh, D.,** LeVault, K.R. and Brewer, G.J. (2014) *Dual-energy precursor and nuclear erythroid-related 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<sub>A</sub> receptors via different tyrosine receptor kinase B-mediated phosphorylation pathways* Neuroscience, **176**, 72–85
- O'Mahony, A.,** Raber, J., Montano, M., Foehr, E., Han, V., Lu, S-m., Kwon, H., LeFevour, A., Chakraborty-Sett, S. and Greene, W.C. (2006) *NF- $\kappa$ B/Rel regulates inhibitory and excitatory neuronal function and synaptic plasticity* Mol. Biol. Cell., **26**, 7283-7298
- 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<sup>+</sup>/H<sup>+</sup> 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., Schifmann, 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

**Szafran-Pilch, K.,** Faron-Górecka, A., Kolasa, M., Żurawek, D., Szlachta, M., Solich, J., Kuśmider, M., Dzedzicka-Wasylewska, M. (2017) *Antidepressants promote formation of heterocomplexes of dopamine D2 and somatostatin subtype 5 receptors in the mouse striatum* Brain Res. Bull., **135**, 92–97

### **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, A.A., 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

**Cohen, C.,** Corpet, A., Roubille, S., Maroui, M.A., Poccardi, N., Rousseau, A., Kleijwegt, C., Binda, O. et al (2018) *Promyelocytic leukemia (PML) nuclear bodies (NBs) induce latent/quiescent HSV-1 genomes chromatinization through a PML NB/Histone H3.3/H3.3 chaperone axis* PLOS Pathog., **14**, e1007313

**Ives, A.M.** and Bertke, A.S. (2017) *Stress hormones epinephrine and corticosterone selectively modulate herpes simplex virus 1 (HSV-1) and HSV-2 productive infections in adult sympathetic, but not sensory neurons* (2017) J. Virol., **91**: e00582-17

**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

**Katzenell, S.** and Leib, D.A. (2016) *Herpes simplex virus and interferon signaling induce novel autophagic clusters in sensory neurons* J. Virol., **90**, 4706-4719

**Messer, H.G.P.,** Jacobs, D., Dhummakupt, A. and Bloom, D.C. (2015) *Inhibition of H3K27me3-specific histone demethylases JMJD3 and UTX blocks reactivation of herpes simplex virus 1 in trigeminal ganglion neurons* J. Virol., **89**, 3417-3420

**Rosato, P.C.** and Leib, D.A. (2014) *Intrinsic innate immunity fails to control herpes simplex virus and vesicular stomatitis virus replication in sensory neurons and fibroblasts* J. Virol., **88**, 9991-10001

**Zhang, Y.,** Dai, J., Tang, J., Zhou, L. and Zhou, M. (2017) *MicroRNA-649 promotes HSV-1 replication by directly targeting MALT1* J. Med. Virol., **89**, 1069–1079

### **Mouse embryo**

**Barber, S.C.,** Higginbottom, A., Mead, R.J., Barber, S. and Shawa, P.J. (2009) *An in vitro screening cascade to identify neuroprotective antioxidants in ALS* Free Radical Biol. Med. **46** 1127–1138

**Guo, W.,** Pang, K., Chen, Y., Wang, S., Li, H., Xu, Y., Han, F., Yao, H. et al (2019) *TrkB agonistic antibodies superior to BDNF: utility in treating motoneuron degeneration* Neurobiol. Dis., **132**: 104590

### **Mouse embryo ventral midbrain**

**Miller, N.,** Shi, H., Zelikovich, A.S. and Ma, Y-C. (2016) *Motor neuron mitochondrial dysfunction in spinal muscular atrophy* Hum.Mol. Genet., **25**, 3395–3406

### **Mouse spinal cord (adult)**

**Benoy, V.,** Vanden Berghe, P., Jarpe, M., Van Damme, P., Robberecht, W. and Van Den Bosch, L. (2017) *Development of improved HDAC6 inhibitors as pharmacological therapy for axonal Charcot–Marie–tooth disease* Neurotherapeutics, **14**, 417–428

**Benoy, V.,** Van Helleputte, L., Prior, R., d'Ydewalle, C., Haeck, W., Geens, N., Scheveneels, W., Scheveneels, B., Cader, M.Z. (2018) *HDAC6 is a therapeutic target in mutant GARS-induced Charcot-Marie-Tooth disease* Brain, **141**, 673–687

**Galvan, M.D.,** Luchetti, S., Burgos, A.M., Nguyen, H.X., Hooshmand, M.J., Hamers, F.P.T. and Anderson, A.J. (2008) *Deficiency in complement C1q improves histological and functional locomotor outcome after spinal cord injury* J. Neurosci., **28**, 13876–13888

**Foley, L.S.,** Fullerton, D.A., Bennett, D.T., Freeman, K.A., Mares, J., Bell, M.T., Cleveland, Jr, J.C., Weyant, M.J. et al (2015) *Spinal cord ischemia-reperfusion injury induces erythropoietin receptor expression* Ann. Thorac. Surg., **100**, 41–46

- Foran, E.**, Bogrush, A., Goffredo, M., Roncaglia, P., Gustincich, S., Pasinelli, P., Trotti, D. (2011) *Motor neuron impairment mediated by a sumoylated fragment of the glial glutamate transporter EAAT2* *Glia* **59**, 1719–1731
- Khayrullina, G.**, Bermudez, S. and Byrnes, K.R. (2015) *Inhibition of NOX2 reduces locomotor impairment, inflammation, and oxidative stress after spinal cord injury* *J. Neuroinflammation*, **12**: 172
- Montoya-Gacharna, J.V.**, Sutachan, J.J., Chan, W.S., Sideris, A., Blanck, T.J.J. and Recio-Pinto, E. (2012) *Preparation of adult spinal cord motor neuron cultures under serum-free conditions* In *Neurotrophic Factors: Methods and Protocols*, *Methods in Molecular Biology*, vol. **846**, (Ed. Skaper, S.D.) Springer Science+Business Media, pp 103-116
- Rotem, N.**, Magen, I., Ionescu, A., Gershoni-Emek, N., Altman, T., Costa, C.J., Gradus, T., Pasmanik-Chor, M. et al (2017) *ALS along the axons – expression of coding and noncoding RNA differs in axons of ALS models* *Sci. Rep.*, **7**: 44500
- Shen, S.**, Benoy, V., Bergman, J.A., Kalin, J.H., Frojuello, M., Vistoli, G., Haeck, W., Van Den Bosch, L. and Kozikowski, A.P. (2016) *Bicyclic-capped histone deacetylase 6 inhibitors with improved activity in a model of axonal Charcot-Marie-Tooth disease* *ACS Chem. Neurosci.*, **7**, 240–258
- Wang, P-Y.**, Koishi, K., McGeachie, A.B., Kimber, M., MacLaughlin, D.T., Donahoe, P.K. and McLennan, I.S. (2005) *Mullerian inhibiting substance acts as a motor neuron survival factor in vitro* *Proc. Natl. Acad. Sci. USA*, **102**, 16421-16425
- Xie, Y.**, Zhou, B., Lin, M-Y., Wang, S., Foust, K.D. and Sheng, Z-H. (2015) *Endolysosomal deficits augment mitochondria pathology in spinal motor neurons of asymptomatic fALS mice* *Neuron* **87**, 355–370
- Zeisel, A.**, Hochgerner, H., Lönnerberg, P., Johnsson, A., Memic, F., van der Zwan, J., Häring, M., Braun, E., Borm, L.E. et al (2018) *Molecular architecture of the mouse nervous system* *Cell* **174**, 999–1014

## Mouse spinal cord (embryo)

### Adherence

- Vodouhe, C.**, Schmittbuhl, M., Boulmedais, F., Bagnard, D., Vautier, D., Schaaf, P., Egles, C., Voegel, J-C. and Ogier, J. (2004) *Effect of functionalization of multilayered polyelectrolyte films on motoneuron growth* *Biomaterials*, **26**, 545-554

### Amyotrophic lateral sclerosis

- Bernard-Marissal, N.**, Moumen, A., Sunyach, C., Pellegrino, C., Dudley, K., Henderson, C.E., Raoul, C. and Pettmann, B. (2012) *Reduced calreticulin levels link endoplasmic reticulum stress and Fas-triggered cell death in motoneurons vulnerable to ALS* *J. Neurosci.*, **32**, 4901–4912
- Blizzard, C.A.**, Southam, K.A., Dawkins, E., Lewis, K.E., King, A.E., Clark, J.A. and Dickson, T.C. (2015) *Identifying the primary site of pathogenesis in amyotrophic lateral sclerosis – vulnerability of lower motor neurons to proximal excitotoxicity* *Dis. Model. Mech.*, **8**, 215-224
- Bowerman, M.**, Salsac, C., Coque, E., Eiselt, E., Deschaumes, R.G., Brodovitch, A., Burkly, L.C., Scamps, F. and Raoul, C. (2015) *Tweak regulates astrogliosis, microgliosis and skeletal muscle atrophy in a mouse model of amyotrophic lateral sclerosis* *Hum. Mol. Genet.*, **24**, 3440–3456
- Camu, W.**, Tremblier, B., Plassot, C., Alphandery, S., Salsac, C., Pageot, N., Juntas-Morales, R., Scamps, F., Dures, J-P. and Raoul, C. (2014) *Vitamin D confers protection to motoneurons and is a prognostic factor of amyotrophic lateral sclerosis* *Neurobiol. Aging*, **35**, 1198-1205
- De Paola, M.**, Sestito, S.E., Mariani, A., Memo, C., Fanelli, R., Freschi, M., Bendotti, C., Calabrese, V. and Peri, F. (2016) *Synthetic and natural small molecule TLR4 antagonists inhibit motoneuron death in cultures from ALS mouse model* *Pharmacol. Res.*, **103**, 180–187
- Ferraiuolo, L.**, Higginbottom, A., Heath, P.R., Barber, S., Greenald, D., Kirby, J. and Shaw, P.J. (2011) *Dysregulation of astrocyte–motoneuron cross-talk in mutant superoxide dismutase 1-related amyotrophic lateral sclerosis* *Brain*, **134**, 2627–2641
- Gershoni-Emek, N.**, Mazza, A., Chein, M., Gradus-Pery, T., Xiang, X., Wan Li, K., Sharan, R. and Perlson, E. (2016) *Proteomic analysis of dynein-interacting proteins in amyotrophic lateral sclerosis synaptosomes reveals alterations in the RNA-binding protein Staufen1* *Mol. Cell. Proteom.*, **15**, 506–522
- Hogg, M.C.**, Mitchem, M.R., König, H-G. and Prehn, J.H.M. (2016) *Caspase 6 has a protective role in SOD1G93A transgenic mice* *Biochim. Biophys. Acta*, **1862**, 1063–1073
- Hounoum, B.M.**, Mavel, S., Coque, E., Patin, F., Vourc’h, P., Marouillat, S., Nadal-Desbarats, L., Emond, P., Corcia, P. et al (2017) *Wildtype motoneurons, ALS-linked SOD1 mutation and glutamate profoundly modify astrocyte metabolism and lactate shuttling* *Glia*, **65**, 592–605
- Hoye, M.L.**, Koval, E.D., Wegener, A.J., Hyman, T.S., Yang, C., O’Brien, D.R., Miller, R.L., Cole, T., Schoch, K.M., Shen, T., Kunikata, T. et al (2017) *MicroRNA profiling reveals marker of motor neuron disease in ALS models* *J. Neurosci.*, **37**, 5574 –5586

- Ionescu, A.**, Gradus, T., Altman, T., Maimon, R., Avraham, N.S., Geva, M., Hayden, M. and Perlson, E. (2019) *Targeting the sigma-1 receptor via pridopidine ameliorates central features of ALS pathology in a SOD1G93A model* Cell Death Dis., **10**: 210
- Lautenschläger, J.**, Prell, T., Ruhmer, J., Weidemann, L., Witte, O.W., Grosskreutz, J. (2013) *Overexpression of human mutated G93A SOD1 changes dynamics of the ER mitochondria calcium cycle specifically in mouse embryonic motor neurons* Exp. Neurol., **247**, 91–100
- Lee, J.K.**, Shin, J.H., Hwang, S.G., Gwag, B.J., McKee, A.C., Lee, J., Kowall, N.W., Ryu, H., Lim, D-S. and Choi, E-J. (2013) *MST1 functions as a key modulator of neurodegeneration in a mouse model of ALS* Proc. Natl. Acad. Sci. USA, **110**, 12066–12071
- Maimon, R.**, Ionescu, A., Bonnie, A., Sweetat, S., Wald-Altman, S., Inbar, S., Gradus, T., Trotti, D., Weil, M., Behar, O. and Perlson, E. (2018) *miR126-5p Downregulation facilitates axon degeneration and NMJ disruption via a non-cell-autonomous mechanism in ALS* J. Neurosci., **38**, 5478–5494
- Martínez-Palma, L.**, Miquel, E., Lagos-Rodríguez, V., Barbeito, L., Cassina, A. and Cassina, P., (2019) *Mitochondrial modulation by dichloroacetate reduces toxicity of aberrant glial cells and gliosis in the SOD1G93A rat model of amyotrophic lateral sclerosis* Neurotherapeutics, **16**, 203–215
- Miller, N.**, Shi, H., Zelikovich, A.S. and Ma, Y-C. (2016) *Motor neuron mitochondrial dysfunction in spinal muscular atrophy* Hum.Mol. Genet., **25**, 3395–3406
- Nardo, G.**, Trolese, M.C., Verderio, M., Mariani, A., de Paola, M., Riva, N., Dina, G., Panini, N. et al (2018) *Counteracting roles of MHCI and CD8<sup>+</sup> T cells in the peripheral and central nervous system of ALS SOD1<sup>G93A</sup> mice* Mol. Neurodegen., **13**: 42
- Otsmane, B.**, Aebischer, J., Moumen, A. and Raoul, C., (2014) *Cerebrospinal fluid-targeted delivery of neutralizing anti-IFN $\gamma$  antibody delays motor decline in an ALS mouse model* NeuroReport, **25**, 49–54
- Penndorf, D.**, Tadić, V., Witte, O.W., Grosskreutz, J. and Kretz, A. (2017) *DNA strand breaks and TDP-43 mislocation are absent in the murine hSOD1G93A model of amyotrophic lateral sclerosis in vivo and in vitro* PLoS ONE 12(8): e0183684.
- Prell, T.**, Lautenschlager, J., Witte, O.W., Carri, M.T. and Grosskreutz, J. (2012) *The unfolded protein response in models of human mutant G93A amyotrophic lateral sclerosis* Eur. J. Neurosci., **35**, 652–660
- Prell, T.**, Lautenschläger, J., Weidemann, L., Ruhmer, J., Witte, O.W. and Grosskreutz, J. (2014) *Endoplasmic reticulum stress is accompanied by activation of NF- $\kappa$ B in amyotrophic lateral sclerosis* J. Neuroimmunol., **270**, 29–36
- Sengupta, S.**, Le, T.T., Adam, A., Tadić, V., Stubendorff, B., Keiner, S., Kloss, L., Prell, T., Witte, O.W. and Grosskreutz, J. (2019) *Interferon- $\gamma$  receptor 1 and GluR1 upregulated in motor neurons of symptomatic hSOD1G93A mice* Eur. J. Neurosci., **49**, 62–78
- Sunyach, C.**, Michaud, M., Arnoux, T., Bernard-Marissal, N., Aebischer, J., Latyszenok, V., Gouarné, C. Raoul, C., Pruss, R.M., Bordet, T. and Pettmann, B. (2012) *Olesoxime delays muscle denervation, astrogliosis, microglial activation and motoneuron death in an ALS mouse model* Neuropharmacology, **62**, 2345-2352
- Szelechowski, M.**, Amoedo, N., Obre, E., Léger, C., Allard, L., Bonneau, M., Claverol, S., Lacombe, D. et al (2018) *Metabolic reprogramming in amyotrophic lateral sclerosis* Sci. Rep., **8**: 3953
- Tadi V.**, Adam, A., Goldhammer, N., Lautenschlaeger, J., Oberstadt, M., Malci, A., Le, T.T., Sengupta, S., Stubendorff, B. et al (2019) *Investigation of mitochondrial calcium uniporter role in embryonic and adult motor neurons from G93A<sup>hSOD1</sup> mice* Neurobiol. Aging, **75**, 210- 222
- Tadić, V.**, Malsi, A., Goldhammer, N., Stubendorff, B., Sengupts, S., Prell, T., Keiner, S. et al (2017) *Sigma 1 receptor activityion modifies intracellular calcium exchange in the G93A<sup>hSOD1</sup> ALS model* Neuroscience, **359**, 105–118
- Van Damme, P.**, Braeken, D., Callewaert, G., Robberecht, W. and Van Den Bosch, L. (2005) *GluR2 deficiency accelerates motor neuron degeneration in a mouse model of amyotropic lateral sclerosis* J. Neuropathol. Exp. Neurol., **64**, 605-612
- Vargas, M.R.**, Johnson, D.A. and Johnson, J.A. (2011) *Decreased glutathione accelerates neurological deficit and mitochondrial pathology in familial ALS-linked hSOD1G93A mice model* Neurobiol. Dis., **43**, 543–551

#### **Andermann syndrome**

- Bowerman, M.**, Salsac, C., Bernard, V., Soulard, C., Dionne, A., Coque, E., Benlefki, S., Hince, P. and Dion, P.A. (2017) *KCC3 loss-of-function contributes to Andermann syndrome by inducing activity-dependent neuromuscular junction defects* Neurobiol. Dis., **106**, 35–48

#### **Antioxidants**

- Bahia, P.K.**, Pugh, V., Hoyland, K., Hensley, V., Rattray, M. and Williams, R.J. (2012) *Neuroprotective effects of phenolic antioxidant tBHQ associate with inhibition of Foxo3a nuclear translocation and activity* J. Neurochem., **123**, 182–191



## Apoptosis

- Palandri, A.**, Salvador, V.R., Wojnacki, J., Vivinetto, A.L., Schnaar, R.L. and Lopez, P.H.H. (2015) *Myelin-associated glycoprotein modulates apoptosis of motoneurons during early postnatal development via NgR/p75NTR receptor-mediated activation of RhoA signaling pathways* Cell Death Dis., **6**: e1876
- Raoul, C.**, Barthelemy, C., Couzinet, A., Hancock, D., Pettmann, B. and Hueber, A-O. (2005) *Expression of a dominant negative form of Daxx in vivo rescues motoneurons from Fas (CD95)-induced cell death* J. Neurobiol., **62**, 178-188
- Segura, M.F.**, Sole, C., Pascual, M., Moubarak, R.S., Perez-Garcia, M.J., Gozzelino, R., Iglesias, V., Badiola, N. et al (2007) *The long form of Fas apoptotic inhibitory molecule is expressed specifically in neurons and protects them against death receptor-triggered apoptosis* J. Neurosci., **27**, 11228-11241
- Ugolini, G.**, Raoul, C., Ferri, A., Haenggeli, C., Yamamoto, Y., Salaun, D., Henderson, C.E., Kato, A.C., Pettmann, B. and Hueber, A-O. (2003) *Fas/tumor necrosis factor receptor death signaling is required for axotomy-induced death of motoneurons in vivo* Neuroscience, **23**, 8526-8531

## Astrocyte effects

- Diana, V.**, Ottolina, A., Botti, F., Fumagalli, E., Calcagno, E., De Paola, M., Cagnotto, A., Invernici, G., Parati, E., Curti, D. and Mennini, T. (2010) *Neural precursor-derived astrocytes of wobbler mice induce apoptotic death of motor neurons through reduced glutamate uptake* Exp. Neurol., **225**, 163–172
- Vargas, M.R.**, Johnson, D.A., Sirkis, D.W., Messing, A. and Johnson, J.A. (2008) *Nrf2 activation in astrocytes protects against neurodegeneration in mouse models of familial amyotrophic lateral sclerosis* J. Neurosci., **28**, 13574–13581

## Axonal degeneration

- Benzina, O.**, Cloitre, T., Martin, M., Raoul, C., Gergely, C. and Scamps, F. (2014) *Morphology and intrinsic excitability of regenerating sensory and motor neurons grown on a line micropattern* PLoS One, **9**: e110687

## Ca<sup>2+</sup> regulation

- Barneo-Muñoz, M.**, Juárez1, P., Civera-Tregón, A., Yndriago, L., Pla-Martin, D., Zenker, J., Cuevas-Martín, C., Estela, A. et al (2015) *Lack of GDAP1 induces neuronal calcium and mitochondrial defects in a knockout mouse model of Charcot-Marie-Tooth neuropathy* PLoS Genet., **11**: e1005115
- Gou-Fabregas, M.**, Garcera, A., Mincheva, S., Perez-Garcia, M.J., Comella, J.X. and Soler, R.M. (2009) *Specific vulnerability of mouse spinal cord motoneurons to membrane depolarization* J. Neurochem., **110**, 1842-1854
- Langou, K.**, Moumen, A., Pellegrino, C., Aebischer, J., Medina, I., Aebischer, P. and Raoul, C. (2010) *AAV-mediated expression of wild-type and ALS-linked mutant VAPB selectively triggers death of motoneurons through a Ca<sup>2+</sup>-dependent pathway* J. Neurochem., **114**, 795–809
- Rainey-Smith, S.R.**, Andersson, D.A., Williams, R.J. and Rattray, M. (2010) *Tumour necrosis factor alpha induces rapid reduction in AMPA receptor-mediated calcium entry in motor neurons by increasing cell surface expression of the GluR2 subunit: relevance to neurodegeneration* J. Neurochem., **113**, 692–703
- Rodríguez-García, A.**, Rojo-Ruiz, J., Navas-Navarro, P., Aulestia, F.J., Gallego-Sandin, S., Garcia-Sancho, J. and Alonso, M.T. (2014) *GAP, an aequorin-based fluorescent indicator for imaging Ca<sup>2+</sup> in organelles* Proc. Natl. Acad. Sci. USA, **111**, 2584–2589
- Rousset, M.**, Cens, T., Menard, C., Bowerman, M., Bellis, M., Brusés, J., Raoul, C., Scamps, F. and Charnet, P. (2015) *Regulation of neuronal high-voltage activated Ca<sub>v</sub>2 Ca<sup>2+</sup> channels by the small GTPase RhoA* Neuropharmacology 97 (2015) 201e209

## Charcot-Marie-Tooth (see also “Mouse spinal cord (adult)”)

- Barneo-Muñoz, M.**, Juárez1, P., Civera-Tregón, A., Yndriago, L., Pla-Martin, D., Zenker, J., Cuevas-Martín, C., Estela, A. et al (2015) *Lack of GDAP1 induces neuronal calcium and mitochondrial defects in a knockout mouse model of Charcot-Marie-Tooth neuropathy* PLoS Genet., **11**: e1005115
- Jacquier, A.**, Delorme, C., Belotti, E., Juntas-Morales, R., Solé, G., Dubourg, O., Giroux, M., Maurage, C-A., Castellani, V. et al (2017) *Cryptic amyloidogenic elements in mutant NEFH causing Charcot-Marie-Tooth 2 trigger aggregosome formation and neuronal death* Acta Neuropathol. Comm., **5**: 55

## Cytokines

- De Paola, M.**, Visconti, L., Vianello, E., Mattana, F., Banfi, G., Corsi, M.M., Beghi, E. and Mennini, T. (2011) *Circulating cytokines and growth factors in professional soccer players: correlation with in vitro-induced motor neuron death* Eur. J. Neurol., **18**, 85–92

**Mir, M.**, Asesnio, V.J., Tolosa, L., Gou-Fabregas, M., Soler, R.M., Lladó, J. and Olmos, G (2009) *Tumor necrosis factor alpha and interferon gamma cooperatively induce oxidative stress and motoneuron death in rat spinal cord embryonic explants* Neuroscience **162**, 959–971

#### Degeneration/ER stress

**Bernard-Marissal, N.**, Médard, J.-J., Azzedine, H. and Chrast, R. (2015) *Dysfunction in endoplasmic reticulum mitochondria crosstalk underlies SIGMAR1 loss of function mediated motor neuron degeneration* Brain, **138**, 875–890

**Montague, K.**, Malik, B., Gray, A.L., La Spada, A.R., Hanna, M.G., Szabadkai, G. and Greensmith, L. (2014) *Endoplasmic reticulum stress in spinal and bulbar muscular atrophy: a potential target for therapy* Brain, **137**, 1894–1906

#### Drug delivery

**Mauri, E.**, Veglianese, P., Papa, S., Mariani, A., De Paola, M., Rigamonti, R., Chincarini, G.M.F., Vismara, I. et al (2017) *Double conjugated nanogels for selective intracellular drug delivery* RSC Adv., **7**, 30345-30356

#### Facial nerve injury

Greene, J.J., McClendon, M.T., Stephanopoulos, N.S., Álvarez, Z., Stupp, S.I., Richter, C-P. (2018) *Electrophysiological assessment of a peptide amphiphile nanofiber nerve graft for facial nerve repair* J. Tissue Eng. Regen. Med., **12**, 1389–1401

#### Glutamate, effects of

**Hounoum, B.M.**, Blasco, H., Coque, E., Vourc'h, P., Emond, P., Corcia, P., Andres, C.R., Raoul, C. and Mavel, S. (2018) *The metabolic disturbances of motoneurons exposed to glutamate* Mol. Neurobiol., **55**, 7669–7676

#### Growth factors

**De Paola, M.**, Visconti, L., Vianello, E., Mattana, F., Banfi, G., Corsi, M.M., Beghi, E. and Mennini, T. (2011) *Circulating cytokines and growth factors in professional soccer players: correlation with in vitro-induced motor neuron death* Eur. J. Neurol., **18**, 85–92

**Payne, A.M.**, Zheng, Z., Messi, M.L., Milligan, C.E., Gonzalez, E. and Delbono, O. (2006) *Motor neuron targeting of IGF-1 prevents specific force decline in ageing mouse muscle* J. Physiol., **570**, 283-294

#### Inflammasomes

**Ydens, E.**, Demon, D., Lornet, G., De Winter, V., Timmerman, V., Lamkanfi, M. and Janssens, S. (2015) *Nlrp6 promotes recovery after peripheral nerve injury independently of inflammasomes* J. Neuroinflamm., **12**: 143

#### Methodology

**De Paola, M.**, Diana, V., Bigini, P. and Mennini, T. (2008) *Morphological features and responses to AMPA receptor-mediated excitotoxicity of mouse motor neurons: comparison in purified, mixed anterior horn or motor neuron/glia cocultures* J. Neurosci. Meth., **170**, 85-95

**Fallini, C.**, Bassell, G.J. and Rossoll, W. (2010) *High-efficiency transfection of cultured primary motor neurons to study protein localization, trafficking, and function* Mol. Neurodegener., **5**:17

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

**Guettier-Sigrist, S.**, Appert-Collin, A., Duong, F., Azzouz, M., Coupin, G., Gies, J-P. and Poindron, P. (2005) *Improved methods for culturing rat and mouse motor neurons* Bio Valley Monogr. Basel Karger, **1**, 96-108

**Hoque, R.**, Farooq, A., Ghani, A., Gorelick, F. and Mehal, W.Z. (2014) *Lactate reduces liver and pancreatic injury in Toll-like receptor-and inflammasome-mediated inflammation via GPR81-mediated suppression of innate immunity* Gastroenterology, **146**, 1763–1774

**Wang, W.**, Qi, B., Lv, H., Wu, F., Liu, L., Wang, W., Wang, Q., Hu, L., Hao, Y. and Wang, Y. (2017) *A new method of isolating spinal motor neurons from fetal mouse* J. Neurosci. Meth., **288**, 57–61

#### Micro-RNA expression

**Yardeni, T.** and Hornstein, E. (2017) *Protocol for high-content screening for the impact of overexpressed microRNAs on primary motor neurons* Neuromethods (2017) **128**: 11–19

**Yardeni, T.**, Fine, R., Joshi, Y., Gradus-Pery, T., Kozler, N., Reichenstein, I., Yanowski, E., Nevo, S., Weiss-Tishler, H. et al (2018) *High content image analysis reveals function of miR-124 upstream of Vimentin in regulating motor neuron mitochondria* Sci. Rep., **8**: 59

### Muscular atrophy

**Malik, B.**, Devine, H., Patani, R., La Spada, A.R., Hanna, M.G. and Greensmith, L. (2019) *Gene expression analysis reveals early dysregulation of disease pathways and links Chmp7 to pathogenesis of spinal and bulbar muscular atrophy* Sci. Rep., **9**: 3539

### Neuronal culture

**Ito, K.**, Ohkawara, B., Yagi, H., Nakashima, H., Tsushima, M., Ota, K., Konishi, H., Masuda, A., Imagama, S., Kiyama, H., Ishiguro, N. and Ohno, K. (2018) *Lack of Fgf18 causes abnormal clustering of motor nerve terminals at the neuromuscular junction with reduced acetylcholine receptor clusters* Sci. Rep., **8**: 434

### Neurotrophic factors

**Appert-Collin, A.**, Hugel, B., Levy, R., Niederhoffer, N., Coupin, G., Lombard, Y., André, P., Poindron, P. and Gies, J.P. (2006) *Cyclin dependent kinase inhibitors prevent apoptosis of postmitotic mouse motoneurons* Life Sci., **79**, 484-490

**Duong, F.H.T.**, Warter, J.M., Poindron, P. and Passilly, P. (1999) *Effect of the nonpeptide neurotrophic compound SR57746A on the phenotypic survival of purified mouse motoneurons* Br. J. Pharmacol., **128**, 1385-1392

**Mincheva, S.**, Garcera, A., Gou-Fabregas, M., Encinas, M., Dolcet, X. and Soler, R.M. (2011) *The canonical nuclear factor- $\kappa$ B pathway regulates cell survival in a developmental model of spinal cord motoneurons* J. Neurosci., **31**, 6493– 6503

### Nitric oxide

**Bishop, A.**, Gooch, R., Eguchi, A., Jeffrey, S., Smallwood, L., Anderson, J. and Estevez, A.G. (2009) *Mitigation of peroxynitrite-mediated nitric oxide (NO) toxicity as a mechanism of induced adaptive NO resistance in the CNS* J. Neurochem., **109**, 74-84

**Bishop, A.**, Green Hobbs, K., Eguchi, A., Jeffrey, S., Smallwood, L., Pennie, C., Anderson, J. and Estevez, A.G. (2009) *Differential sensitivity of oligodendrocytes and motor neurons to reactive nitrogen species: implications for multiple sclerosis* J. Neurochem., **109**, 93-104

**Lee, J.**, Ryu, H. and Kowall, N.W. (2009) *Differential regulation of neuronal and inducible nitric oxide synthase (NOS) in the spinal cord of mutant SOD1 (G93A) ALS mice* Biochem. Biophys. Res. Commun., **387**, 202–206

### Programmed cell death

**Aebischer, J.**, Sturny, R., Andrieu, D., Rieusset, A., Schaller, F., Geib, S., Raoul, C. and Muscatelli, F. (2011) *Necdin protects embryonic motoneurons from programmed cell death* PLoS One **6**: e23764

### Receptors

**Barak, R.**, Yom-Tov, G., Guez-Haddad, J., Gasri-Plotnitsky, L., Maimon, R., Cohen-Berkman, M., McCarthy, A.A., Perlson, E., Henis-Korenblit, S., Isupov, M.N. and Opatowsky, Y. (2019) *Structural principles in Robo activation and auto-inhibition* Cell, **177**, 272–285

### Spinal muscular atrophy (see also “Zebrafish”)

**Arumugam, S.**, Mincheva-Tasheva, S., Periyakaruppiyah, A., de la Fuente, S., Soler, R.M. and Garcera, A. (2018) *Regulation of survival motor neuron protein by the nuclear factor-Kappa B pathway in mouse spinal cord motoneurons* Mol. Neurobiol., **55**, 5019–5030

**Chen, Y.-C.**, Chang, J.-G., Jong, Y.-J., Liu, T.-Y. and You, C.-Y. (2015) *High expression level of Tra2- $\beta$ 1 is responsible for increased SMN2 exon 7 inclusion in the testis of SMA mice* PLoS One **10**: e0120721

**Martin, J.E.**, Nguyen, T.K.T., Grunseich, C., Nofziger, J.H., Lee, P.R., Fields, D., Fischbeck, K.H. and Foran, E. (2017) *Decreased motor neuron support by SMA astrocytes due to diminished MCP1 secretion* J. Neurosci., **37**, 5309-5318

**Miller, N.**, Feng, Z., Edens, B.M., Yang, B., Shi, H., Sze, C.C., Hong, B.T. Su, S.C. et al (2015) *Non-aggregating tau phosphorylation by cyclin-dependent kinase 5 contributes to motor neuron degeneration in spinal muscular atrophy* J. Neurosci., **35**, 6038–6050

**Miller, N.**, Shi, H., Zelikovich, A.S. and Ma, Y.-C. (2016) *Motor neuron mitochondrial dysfunction in spinal muscular atrophy* Hum.Mol. Genet., **25**, 3395–3406

**Montague, K.**, Malik, B., Gray, A.L., La Spada, A.R., Hanna, M.G., Szabadkai, G. and Greensmith, L. (2014) *Endoplasmic reticulum stress in spinal and bulbar muscular atrophy: a potential target for therapy* Brain, **137**, 1894–1906

### Superoxide dismutase

- Aebischer, J.**, Cassina, p., Otsmane, b., Moumen, A., Seilhean, D., Meininger, V., Barbeito, L., Pettmann, B. and Raoul, C. (2011) *IFN $\gamma$  triggers a LIGHT-dependent selective death of motoneurons contributing to the non-cell-autonomous effects of mutant SOD1* Cell Death Differ. **18**, 754–768
- Bernard-Marissal, N.**, Moumen, A., Sunyach, C., Pellegrino, C., Dudley, K., Henderson, C.E., Raoul, C. and Pettmann, B. (2012) *Reduced calreticulin levels link endoplasmic reticulum stress and Fas-triggered cell death in motoneurons vulnerable to ALS* J. Neurosci., **32**, 4901–4912
- Fischer, L.R.**, Igoudjil, A., Magrane, J., Li, Y., Hansen, J.M., Manfredi, G. and Glass, J.D. (2011) *SOD1 targeted to the mitochondrial intermembrane space prevents motor neuropathy in the Sod1 knockout mouse* Brain, **134**, 196–209
- Lautenschläger, J.**, Prell, T., Ruhmer, J., Weidemann, L., Witte, O.W., Grosskreutz, J. (2013) *Overexpression of human mutated G93A SOD1 changes dynamics of the ER mitochondria calcium cycle specifically in mouse embryonic motor neurons* Exp. Neurol., **247**, 91–100
- Lee, J.**, Ryu, H. and Kowall, N.W. (2009) *Motor neuronal protection by L-arginine prolongs survival of mutant SOD1(G93A) ALS mice* Biochem. Biophys. Res. Comm., **384**, 524–529
- Lee, J.K.**, Shin, J.H., Hwang, S.G., Gwag, B.J., McKee, A.C., Lee, J., Kowall, N.W., Ryu, H., Lim, D-S. and Choi, E-J. (2013) *MST1 functions as a key modulator of neurodegeneration in a mouse model of ALS* Proc. Natl. Acad. Sci. USA, **110**, 12066–12071
- Lunn, J.S.**, Sakowski, S.A., Kim, B., Rosenberg, A.A. and Feldman, E.L. (2009) *Vascular endothelial growth factor prevents G93A-SOD1-induced motor neuron degeneration* Develop. Neurobiol., **69**, 871-884
- Prell, T.**, Lautenschläger, J., Witte, O.W., Carri, M.T. and Grosskreutz, J. (2012) *The unfolded protein response in models of human mutant G93A amyotrophic lateral sclerosis* Eur. J. Neurosci., **35**, 652-660
- Raoul, C.**, Estévez, A.G., Nishimune, H., Cleveland, D.W., de Lapeyrière, O., Henderson, C.E., Haase, G. and Pettmann, B. (2002) *Motoneuron death triggered by a specific pathway downstream of Fas: Potentiation by ALS-linked SOD1 mutations* Neuron, **35**, 1067-1083
- Sunyach, C.**, Michaud, M., Arnoux, T., Bernard-Marissal, N., Aebischer, J., Latyszenok, V., Gouarné, C. Raoul, C., Pruss, R.M., Bordet, T. and Pettmann, B. (2012) *Olesoxime delays muscle denervation, astrogliosis, microglial activation and motoneuron death in an ALS mouse model* Neuropharmacology, **62**, 2345-2352
- Vargas, M.R.**, Johnson, D.A. and Johnson, J.A. (2011) *Decreased glutathione accelerates neurological deficit and mitochondrial pathology in familial ALS-linked hSOD1G93A mice model* Neurobiol. Dis., **43**, 543–551

### Survival

- Garcera, A.**, Mincheva, S., Gou-Fabregas, M., Caraballo-Miralles, V., Lladó, J., Comella, J.X. and Soler, R.M. (2011) *A new model to study spinal muscular atrophy: Neurite degeneration and cell death is counteracted by BCL-XL overexpression in motoneurons* Neurobiol. Dis., **42**, 415–426
- Wang, P-Y.**, Koishi, K. and McLennan, I.S. (2007) *BMP6 is axonally transported by motoneurons and supports their survival in vitro* Mol. Cell Neurosci., **34**, 653-661
- Zhang, H.**, Xing, L., Rossoll, W., Wichterle, H., Singer, R.H. and Bassell, G.J. (2006) *Multiprotein complexes of the survival of motor neuron protein SMN with gemins traffic to neuronal processes and growth cones of motor neurons* J. Neurosci., **26**, 8622-8632

### Synaptic differentiation

- Misgeld, T.**, Kummer, T.T., Lichtman, J.W. and Sanes, J.R. (2005) *Agrin promotes synaptic differentiation by counteracting an inhibitory effect of neurotransmitter* Proc. Natl. Acad. Sci. USA, **102**, 11088-11093

### Toll-like receptors

- Goethals, S.**, Ydens, E., Timmerman, V. and Janssens, S. (2010) *Toll-like receptor expression in the peripheral nerve* Glia, **58**, 1701–1709

### Tyrosine kinase B

- Zahavi, E.E.**, Steinberg, N., Altman, T., Chein, M., Joshi, Y., Gradus-Pery, T. and Perlson, E. (2018) *The receptor tyrosine kinase TrkB signals without dimerization at the plasma membrane* Sci. Signal. **11**: eaao4006

### Virus receptor transport

- Zussy, C.** and Salinas, S. (2014) *Study of adenovirus and CAR axonal transport in primary neurons* In Methods Mol. Biol., **1089**, Adenovirus: Methods and Protocol (ed. Chillón, M. and Bosch, A.) Springer Science+Business Media, LLC pp 71-78

### Mouse spinal cord (neo-natal)

**Pavelko, K.**, Howe, C.L., Drescher, K.M., Gamez, J.D., Johnson, A.J., Wei, T., Ransohoff, R.M. and Roriguez, M. (2003) *Interleukin-6 protects anterior horn neurons from lethal virus-induced injury* J. Neurosci., **23**, 481-492

### Mouse spinal cord (post-natal)

**Benedusi, V.**, Martorana, F., Brambilla, L., Maggi, A. and la Rossi, D. (2012) *The peroxisome proliferator-activated receptor  $\gamma$  (PPAR $\gamma$ ) controls natural protective mechanisms against lipid peroxidation in amyotrophic lateral sclerosis* J. Biol. Chem., **287**, 35899–35911

**Foley, L.S.**, Fullerton, D.A., Mares, J., Sungelo, M., Weyant, M.J., Cleveland, Jr, J.C. and Reece, T.B. (2017) *Erythropoietin's beta common receptor mediates neuroprotection in spinal cord neurons* Ann. Thorac. Surg. **104**, 1909–1914

**Freeman, K.A.**, Puskas, F., Bell, M.T., Mares, J.M., Foley, L.S., Weyant, M.J., Cleveland, J.C. et al (2015) *Alpha-2 agonist attenuates ischemic injury in spinal cord neurons* J. Surg. Res., **195**, 21-28

**Häring, M.**, Zeisel, A., Hochgerner, H., Rinwa, P., Jakobsson, J.E.T., Lönnerberg, P., La Manno, G. Sharma, N. et al (2018) *Neuronal atlas of the dorsal horn defines its architecture and links sensory input to transcriptional cell types* Nat. Neurosci., **21**, 869–880

**Kempf, A.**, Montani, L., Petrinovic, M.M., Schroeter, A., Weinmann, O., Patrignani, A. and Schwab, M.E. (2013) *Upregulation of axon guidance molecules in the adult central nervous system of Nogo-A knockout mice restricts neuronal growth and regeneration* Eur. J. Neurosci., **38**, 3567–3579

**Lee, S.**, Ives, A.M. and Bertke, A.S. (2015) *Herpes simplex virus 1 reactivates from autonomic ciliary ganglia independently from sensory trigeminal ganglia to cause recurrent ocular disease* J. Virol., **89**, 8383-8391

**Milligan, C.** and Gifondorwa, D. (2011) *Isolation and culture of postnatal spinal motoneurons* In Methods Mol. Biol., **793**, Neurodegeneration: Methods and Protocols (ed. Manfredi, G. and Kawamata, H.) Springer Science+Business Media, LLC

**Xu, J.**, Huang, G., Zhang, K., Sun, J., Xu, T., Li, R., Tao, H. and Xu, W. (2014) *Nrf2 activation in astrocytes contributes to spinal cord ischemic tolerance induced by hyperbaric oxygen preconditioning* J. Neurotrauma, **31**, 1343–1353

### Mouse thoracic ganglia

**Furlan, A.**, La Manno, G., Lübke, M., Häring, M., Abdo, H., Hochgerner, H., Kupari, J., Usoskin, D. et al (2016) *Visceral motor neuron diversity delineates a cellular basis for nipple- and pilo-erection muscle control* Nature Neurosci., **19**, 1331-1340

### Rat brain amygdala

**Jasnow, A.M.**, Ressler, K.J., Hammack, S.E., Chhatwal, J.P. and Rainnie, D.G. (2009) *Distinct subtypes of cholecystokinin (CCK)-containing interneurons of the basolateral amygdala identified using a CCK promoter-specific lentivirus* J. Neurophysiol., **101**, 1494–1506

### Rat brain cerebellar

**Martinez, J.**, Stessin, A.M., Campana, A., Hou, J., Nikulina, E., Buck, J., Levin, L.R. and Filbin, M.T. (2014) *Soluble adenylyl cyclase is necessary and sufficient to overcome the block of axonal growth by myelin-associated factors* J. Neurosci., **34**, 9281–9289

### Rat brain cortex (adult)

**Jones, T.T.** and Brewer, G.J. (2009) *Critical age-related loss of cofactors of neuron cytochrome C oxidase reversed by estrogen* Exp. Neurol., **215**, 212–219

**Jones, T.T.** and Brewer, G.J. (2010) *Age-related deficiencies in complex I endogenous substrate availability and reserve capacity of complex IV in cortical neuron electron transport* Biochim. Biophys. Acta, **1797**, 167–176

**Martin-Montañez, E.**, Pavia, J., Santin, L.J., Boraldi, F., Estivill-Torrus, G., Aguirre, J.A. and Garcia-Fernandez, M. (2014) *Involvement of IGF-II receptors in the antioxidant and neuroprotective effects of IGF-II on adult cortical neuronal cultures* Biochim. Biophys. Acta, **1842**, 1041–1051

**Martín-Montañez, E.**, Millon, C., Boraldi, F., Garcia-Guirado, F., Pedraza, C., Lara, E., Santin, L.J., Pavia, J. and Garcia-Fernandez, M. (2017) *IGF-II promotes neuroprotection and neuroplasticity recovery in a longlasting model of oxidative damage induced by glucocorticoids* Redox Biol., **13**, 69–81

**McCormick, A.M.**, Maddipatla, M.V.S.N., Shi, S., Chamsaz, E.A, Yokoyama, H., Joy, A. and Leipzig, N.D. (2014) *Micropatterned coumarin polyester thin films direct neurite orientation* ACS Appl. Mater. Interfaces, **6**, 19655–19667

- Patel, J.R.** and Brewer, G. J. (2008) *Age-related differences in NF $\kappa$ B translocation and Bcl-2/Bax ratio caused by TNF $\alpha$  and Abeta42 promote survival in middle-age neurons and death in old neurons* Exp. Neurol., **213**, 93-100
- Peterson, S.L.**, Nguyen, H.X., Mendez, O.A. and Anderson, A.J. (2017) *Complement protein C3 suppresses axon growth and promotes neuron loss* Sci. Rep., **7**: 12904
- Singh, A.K.**, Jiang, Y., Gupta, S., Younus, M. and Ramzan, M. (2013) *Anti-inflammatory potency of nano-formulated puerarin and curcumin in rats subjected to the lipopolysaccharide-induced inflammation* J. Med. Food, **16**, 899–911
- Viel, J.J.**, McManus, D.Q., Brewer, G.J. (2004) *Postmortem effect of pentobarbital anesthetic on survival of adult cortical neurons in primary culture* Brain Res., **1009**, 219-222
- Yip, P.K.**, Wong, L-F., Pattinson, D., Battaglia, A., Grist, J., Bradbury, E.J., Maden, M., McMahon, S.B. and Mazarakis, N.D. (2006) *Lentiviral vector expressing retinoic acid receptor  $\beta$ 2 promotes of function after corticospinal tract injury in the adult rat spinal cord* Hum. Mol. Genet., **15**, 3107-3118
- Yip, P.K.**, Wong, L-F., Sears, T.A., Yáñez-Muñoz, R.J. and McMahon, S.B. (2010) *Cortical overexpression of neuronal calcium sensor-1 induces functional plasticity in spinal cord following unilateral pyramidal tract injury in rat* PLoS Biol., **8**: e1000399

### **Rat brain cortex (embryo)**

- Cheng, Y.C.**, Chen, T-A., Chen, C-Y., Liang, C.M. and Liang, S-M. (2012) *3'Poly-G-tailed ODNs inhibit F- $\beta$  spondin to induce cell death and neurite retraction in rat embryonic neurons* Mol. Neurobiol., **45**, 536–549

### **Rat brain cortex (neo-natal)**

- De Vellis, J.**, Ghiani, C.A., Wanner, I.B. and Cole, R. (2010) *Preparation of normal and reactive astrocyte cultures* In, Protocols for Neural Cell Culture, Springer Protocols Handbooks, (ed. Doering, L.C.), Humana Press (Springer Science+Business Media), Totowa, NJ. pp 193-215
- Peterson, S.L.**, Nguyen, H.X., Mendez, O.A. and Anderson, A.J. (2017) *Complement protein C3 suppresses axon growth and promotes neuron loss* Sci. Rep., **7**: 12904

### **Rat brain cortex (post-natal)**

- Foret, M.K.**, Do Carmo, S., Lincoln, R., Greene, L.E., Zhang, W., Cuello, A.C. and Cosa, G. (2019) *Effect of antioxidant supplements on lipid peroxidation levels in primary cortical neuron cultures* Free Radical Biol. Med., **130**, 471–477
- Hannila, S.S.**, Siddiq, M.M., Carmel, J.B., Hou, J., Chaudhry, N., Bradley, P.M.J., Hilaire, M. Richman, E.L., Hart, R.P. and Filbin, M.T. (2013) *Secretory leukocyte protease inhibitor reverses inhibition by CNS myelin, promotes regeneration in the optic nerve, and suppresses expression of the transforming growth factor- $\beta$  signaling protein Smad2* J. Neurosci., **33**, 5138 –5151
- He, H.**, Deng, K., Siddiq, M.M., Pyie, A., Mellado, W., Hannila, S.S. and Filbin, M.T. (2016) *Cyclic AMP and polyamines overcome inhibition by myelin-associated glycoprotein through eIF5A-mediated increases in p35 expression and activation of Cdk5* J. Neurosci., **36**, 3079 –3091
- Khankan, R.R.**, Wanner, I.B. and Phelps, P.E. (2015) *Olfactory ensheathing cell–neurite alignment enhances neurite outgrowth in scar-like cultures* Exp. Neurol., **269**, 93–101
- Khankan, R.R.**, Griffis, K.G., Haggerty-Skeans, J.R., Zhong, H., Roy, R.R., Edgerton, V.R. and Phelps, P. (2016) *Olfactory ensheathing cell transplantation after a complete spinal cord transection mediates neuroprotective and immunomodulatory mechanisms to facilitate regeneration* J. Neurosci., **36**, 6269-6286
- Piroli, G.G.**, Manuel, A.M., Patel, T., Walla, M.D., Shi, L., Lanci, S.A., Wang, J., Galloway, A. et al (2019) *Identification of novel protein targets of dimethyl fumarate modification in neurons and astrocytes reveals actions independent of Nrf2 stabilization* Mol. Cell. Proteom., **18**, 504–519
- Siddiq, M.M.**, Hannila, S.S., Carmel, J.B., Bryson, J.B., Hou, J., Nikulina, E., Willis, M.R., Mellado, W. et al (2015) *Metallothionein-I/II promotes axonal regeneration in the central nervous system* J. Biol. Chem., **290**, 16343–16356

### **Rat brain stem**

- Evans, J.**, Sumners, C., Moore, J., Huentelmann, M.J., Deng, J., Gelband, C.H. and Shaw, G. (2002) *Characterization of mitotic neurons derived from adult rat hypothalamus and brain stem* J. Neurophysiol., **87**, 1076-1085
- Hernandez-Morato, I.**, Pitman, M.J. and Sharma, S. (2016) *Muscle specific nucleus ambiguus neurons isolation and culturing* J. Neurosci. Meth., **273**, 33–39

### **Rat brain dentate gyrus**

**Howell, O.W.**, Doyle, K., Goodman, J.H., Scharfman, H.E., Herzog, H., Pringle, A., Beck-Sickinger, A. G. and Gray, W.P. (2005) *Neuropeptide Y stimulates neuronal precursor proliferation in the post-natal and adult dentate gyrus* J. Neurochem., **93**, 560-570

### **Rat brain hippocampus (adult)**

**Cady, C.**, Evans, M.S. and Brewer, G.J. (2001) *Age-related differences in NMDA responses in cultured rat hippocampal neurons* Brain Res., **921**, 1-11

**Edwards, D.**, Das, M., Molnar, P. and Hickman, J.J. (2010) *Addition of glutamate to serum-free culture promotes recovery of electrical activity in adult hippocampal neurons in vitro* J. Neurosci. Methods, **190**, 155–163

**Gamerding, M.**, Hajieva1, P., Kaya1, A.M., Wolfrum, U., Hartl, F.U. and Behl, C. (2009) *Protein quality control during aging involves recruitment of the macroautophagy pathway by BAG3* EMBO J., **28**, 889–901

**Hajieva, P.**, Kuhlmann, C., Luhmann, H.K. and Behl, C. (2009) *Impaired calcium homeostasis in aged hippocampal neurons* Neurosci. Lett., **451**, 119–123

**Jones, T.T.** and Brewer, G.J. (2009) *Critical age-related loss of cofactors of neuron cytochrome C oxidase reversed by estrogen* Exp. Neurol., **215**, 212–219

**Jones, T.T.** and Brewer, G.J. (2010) *Age-related deficiencies in complex I endogenous substrate availability and reserve capacity of complex IV in cortical neuron electron transport* Biochim. Biophys. Acta, **1797**, 167–176

**Kour, S.** and Rath, P.C. (2016) *All-trans retinoic acid induces expression of a novel intergenic long noncoding RNA in adult rat primary hippocampal neurons* J. Mol. Neurosci., **58**, 266-276

**Kour, S.** and Rath, P.C. (2017) *Age-related expression of a repeat-rich intergenic long noncoding RNA in the rat brain* Mol. Neurobiol., **54**, 639–660

**Majd, S.**, Rastegar, K., Zarifkar, A. and Takhshid, M.A. (2007) *Fibrillar beta-amyloid (A $\beta$ ) elevates extracellular A $\beta$  in cultured hippocampal neurons of adult rats* Brain Res., **1185**, 321-327

**Majd, S.**, Zarifkar, A., Rastegar, K. and Takhshid, M.A. (2008) *Culturing adult rat hippocampal neurons with long-interval changing media* Iran. Biomed. J., **12**, 101-107

**Majd, S.**, Zarifkar, A., Rastegar, K. and Takhshid, M.A. (2008) *Different fibrillar A $\beta$  1-42 concentrations induce adult hippocampal neurons to reenter various phases of the cell cycle* Brain Res., **1218**, 224-229

**Majd, S.**, Chegini, F., Chataway, T., Zhou, X-F. and Gai, W. (2013) *Reciprocal induction between  $\alpha$ -synuclein and  $\beta$ -amyloid in adult rat neurons* Neurotox. Res., **23**, 69–78

**Marks, J.D.**, Boriboun, C. and Wang, J. (2005) *Mitochondrial nitric oxide mediates decreased vulnerability of hippocampal neurons from immature animals to NMDA* J. Neurosci., **25**, 6561-6575

**Ray, B.**, Bailey, J.A. Sarkar, S. and Lahiri, D.K. (2009) *Molecular and immunocytochemical characterization of primary neuronal cultures from adult rat brain: Differential expression of neuronal and glial protein markers* J. Neurosci. Methods, **184**, 294–302

**Vasko, M.R.**, Guo, C. and Kelley, M.R. (2005) *The multifunctional DNA repair/redox enzyme Ape1/Ref-1 promotes survival of neurons after oxidative stress* DNA Repair, **4**, 367-379

**Vasko, M.R.**, Guo, C., Thompson, E.L. and Kelley, M.R. (2011) *The repair function of the multifunctional DNA repair/redox protein APE1 is neuroprotective after ionizing radiation* DNA Repair, **10**, 942– 952

**Wang, S.**, Huang, G., Wang, Y., Huang, T., Lin, S. and Gu, J. (2013) *Up-regulation of immunoglobulin G gene expression in the hippocampus of rats subjected to acute immobilization stress* J. Neuroimmunol., **258**, 1–9

**Zurawek, D.**, Gruca, P., Antkiewicz-Michaluk, L. and Dziedzicka-Wasylewska, M. (2019) *Resilient phenotype in chronic mild stress paradigm is associated with altered expression levels of miR-18a-5p and serotonin 5-HT1a receptor in dorsal part of the hippocampus* Mol. Neurobiol., **56**, 7680–7693

### **Rat brain hippocampus (embryo)**

**Cheng, Y.C.**, Chen, T-A., Chen, C-Y., Liang, C.M. and Liang, S-M. (2012) *3'Poly-G-tailed ODNs inhibit F- $\beta$ -spondin to induce cell death and neurite retraction in rat embryonic neurons* Mol. Neurobiol., **45**, 536–549

**Henriquez, B.**, Bustos, F.J., Aguilar, R., Becerra, A., Simon, F., Montecino, M. and van Zundert, B. (2013) *Ezh1 and Ezh2 differentially regulate PSD-95 gene transcription in developing hippocampal neurons* Mol. Cell. Neurosci., **57**, 130–143

### **Rat brain hippocampus (juvenile)**

**Gamerding, M.**, Hajieva1, P., Kaya1, A.M., Wolfrum, U., Hartl, F.U. and Behl, C. (2009) *Protein quality control during aging involves recruitment of the macroautophagy pathway by BAG3* EMBO J., **28**, 889–901

### **Rat brain hippocampus (neo-natal)**

- Choi, S.J.**, Kim, F., Schwartz, M.W. and Wisse, B.E. (2010) *Cultured hypothalamic neurons are resistant to inflammation and insulin resistance induced by saturated fatty acids* Am. J. Physiol. Endocrinol. Metab., **298**, E1122–E1130
- Ehrenreich, H.**, Degner, D., Meller, J., Brines, M., Béhe, M., Hasselblatt, M., Woldt, H., Falkai, P. et al (2004) *Erythropoietin: a candidate compound for neuroprotection in schizophrenia* Mol. Psychiatry., **9**, 42-54
- Fester, L.**, Zhou, L., Bütow, A., Huber, C., von Lossow, R., Prange-Kiel, J., Jarry, H. and Rune, G.M. (2009) *Cholesterol-promoted synaptogenesis requires the conversion of cholesterol to estradiol in the hippocampus* Hippocampus, **19**, 692-705
- Fordyce, C.B.**, Jagasia, R., Zhu, X. and Schlichter, L.C. (2005) *Microglia Kv1.3 channels contribute to their ability to kill neurons* J. Neurosci., **25**, 7139-7149
- Howell, O.W.**, Scharfman, H.E., Herzog, H., Sundstrom, L.E., Beck-Sickinger, A and Gray, W.P. (2003) *Neuropeptide Y is neuroproliferative for hippocampal precursor cells* J. Neurochem., **86**, 646-659
- Howell, O.W.**, Doyle, K., Goodman, J.H., Scharfman, H.E., Herzog, H., Pringle, A., Beck-Sickinger, A. G. and Gray, W.P. (2005) *Neuropeptide Y stimulates neuronal precursor proliferation in the post-natal and adult dentate gyrus* J. Neurochem., **93**, 560-570
- Kretz, O.**, Fester, L., Wehrenberg, U., Zhou, L., Brauckmann, S., Zhao, S., Prange-Kiel, J., Naumann, T., Jarry, H., Frotscher, M. and Rune, G. M. (2004) *Hippocampal synapses depend on hippocampal estrogen synthesis* J. Neurosci., **24**, 5913-5921
- Liu, Y.**, Ford, B., Mann, M.A. and Fischbach, G.D. (2001) *Neuregulins increase  $\alpha 7$  nicotinic acetylcholine receptors and enhance excitatory synaptic transmission in GABAergic interneurons of the hippocampus* J. Neurosci., **21**, 5660-5669
- Li, Q.**, Lau, A., Morris, T.J., Guo, L., Fordyce, C.B. and Stanley, E.F. (2004) *A syntaxin 1,  $G\alpha_o$ , and N-type calcium channel complex at a presynaptic nerve terminal: analysis by quantitative immunocolocalization* J. Neurosci., **24**, 4070-4081
- Marks, J.D.**, Bindokas, V.P. and Zhang, X-M. (2001) *Maturation of vulnerability to excitotoxicity: intracellular mechanisms in cultured postnatal hippocampal neurons* Dev. Brain Res., **124**, 101-116
- Marks, J.D.**, Boriboun, C. and Wang, J. (2005) *Mitochondrial nitric oxide mediates decreased vulnerability of hippocampal neurons from immature animals to NMDA* J. Neurosci., **25**, 6561-6575
- Nuñez-Villena, F.**, Becerra, A., Echeverría, C., Briceño, N., Porras, O., Armisen, R., Varela, D., Montorfano, I, Sarmiento, D. and Simon, F. (2011) *Increased expression of the transient receptor potential melastatin 7 channel is critically involved in lipopolysaccharide-induced reactive oxygen species-mediated neuronal death* Antioxid. Redox Signal., **15**, 2425–2438
- Qin, J.**, Berdyshev, E., Goya, J., Natarajan, V. and Dawson, G. (2010) *Neurons and oligodendrocytes recycle sphingosine 1-phosphate to ceramide: significance for apoptosis and multiple sclerosis* J. Biol. Chem., **285**, 14134-14143
- Von Schassen, C.**, Fester, L., Prange-Kiel, J., Lohse, C., Huber, C., Böttner, M. and Rune, G.M. (2006) *Oestrogen synthesis in the hippocampus: role in axon outgrowth* J. Neuroendocrinol., **18**, 847-856
- Wang, X.Q.**, Deriy, L.V., Foss, S., Hunag, 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
- Wong, W.** and Schlichter, L.C. (2004) *Differential recruitment of Kv1.4 and Kv4.2 to lipid rafts by PSD-95* J. Biol. Chem., **279**, 444-452
- Zhou, L.**, Lehan, N., Wehrenberg, U., Disteldorf, E., von Lossow, R., Mares, U., Jarry, H. and Rune, G.M. (2007) *Neuroprotection by estradiol: A role of aromatase against spine synapse loss after blockade of GABA<sub>A</sub> receptors* Exp. Neurol., **203**, 72-81

### **Rat brain hippocampus (post-natal)**

- Bonnas, C.**, Wüstefeld, L., Winkler, D., Kronstein-Wiedemann, R., Dere, E. Specht, K., Boxberg, M. Tonn, T. et al (2017) *EV-3, an endogenous human erythropoietin isoform with distinct functional relevance* Sci. Rep., **7**: 3684
- Fester, L.**, Zhou, L., Ossig, C., Labitzke, J., Blaute, C., Bader, M., Vollmre, G., Jarry, H. and Rune, G.M. (2017) *Synaptodin is regulated by aromatase activity* J. Neurochem., **140**, 126–139
- Hannila, S.S.**, Siddiq, M.M., Carmel, J.B., Hou, J., Chaudhry, N., Bradley, P.M.J., Hilaire, M. Riehman, E.L., Hart, R.P. and Filbin, M.T. (2013) *Secretory leukocyte protease inhibitor reverses inhibition by CNS myelin, promotes regeneration in the optic nerve, and suppresses expression of the transforming growth factor- $\beta$  signaling protein Smad2* J. Neurosci., **33**, 5138 –5151
- Khan, D.**, Khan, M., Runesson, J., Zaben, M. and Gray, W.P. (2017) *GalR3 mediates galanin proliferative effects on postnatal hippocampal precursors* Neuropeptides **63**, 14–17



**Siddiq, M.M.**, Hannila, S.S., Carmel, J.B., Bryson, J.B., Hou, J., Nikulina, E., Willis, M.R., Mellado, W. et al (2015) *Metallothionein-I/II promotes axonal regeneration in the central nervous system* J. Biol. Chem., **290**, 16343–16356

### **Rat brain hypothalamus**

**Choi, S.J.**, Kim, F., Schwartz, M.W. and Wisse, B.E. (2010) *Cultured hypothalamic neurons are resistant to inflammation and insulin resistance induced by saturated fatty acids* Am. J. Physiol. Endocrinol. Metab., **298**, E1122–E1130

**Evans, J.**, Sumners, C., Moore, J., Huentelmann, M.J., Deng, J., Gelband, C.H. and Shaw, G. (2002) *Characterization of mitotic neurons derived from adult rat hypothalamus and brain stem* J. Neurophysiol., **87**, 1076–1085

**Malikov, V.**, and Madeira, M.D. (2013) *Regulation of ER $\alpha$  protein expression by 17 $\beta$ -estradiol in cultured neurons of hypothalamic ventromedial nucleus* Neurochem. Res., **38**, 82–89

### **Rat brain mesencephalic area**

**Majd, S.**, Smardencas, A., Parish, C.L. and Drago, J. (2011) *Development of an in vitro model to evaluate the regenerative capacity of adult brain-derived tyrosine hydroxylase-expressing dopaminergic neurons* Neurochem. Res., **36**, 967–977

### **Rat brain striatal**

**Rivera-Ramírez, N.**, Montejo-Lopez, W., Lopez-Mendez, M.C., Guerrero-Hernandez, A., Molina-Hernandez, A., García-Hernandez, U. and Arias-Montano, J.A. (2016) *Histamine H3 receptor activation stimulates calcium mobilization in a subpopulation of rat striatal neurons in primary culture, but not in synaptosomes* Neurochem. Int., **101**, 38–47

### **Rat brain, ventral brain stem**

**Halum, S.L.**, McRae, B., Bijangi-Vishehsaraei, K. and Hiatt, K. (2012) *Neurotrophic factor-secreting autologous muscle stem cell therapy for the treatment of laryngeal denervation injury* Laryngoscope, **122**, 2482–2496

### **Rat brain trigeminal ganglia**

**Pita-Thomas, W.**, Barroso-Garcia, G., Moral, V., Hackett, A.R., Cavalli, V. and Nieto-Diaz, M. (2017) *Identification of axon growth promoters in the secretome of the deer antler velvet* Neuroscience, **340**, 333–344

### **Rat dorsal root ganglion cells**

**Smith, T.P.**, Smith, S.N. and Sweitzer, S.M. (2014) *Endothelin-1 induced desensitization in primary afferent neurons* Neurosci. Lett., **582**, 59–64

**Van Helleputte, L.**, Kater, M., Cook, D.P., Eykens, C., Rossaert, E., Haeck, W., Jaspers, T., Geens, N., Vanden Bergh, P., Gysemans, C. et al (2018) *Inhibition of histone deacetylase 6 (HDAC6) protects against vincristine induced peripheral neuropathies and inhibits tumor growth* Neurobiol. Dis., **111**, 59–69

**Zeisel, A.**, Hochgerner, H., Lönnerberg, P., Johnsson, A., Memic, F., van der Zwan, J., Häring, M., Braun, E., Borm, L.E. et al (2018) *Molecular architecture of the mouse nervous system* Cell **174**, 999–1014

### **Rat enterorhinal cortex**

**Olsen, L.C.**, O'Reilly, K.C., Liabakk, N.B., Witter, M.P. and Sætrom, P. (2017) *MicroRNAs contribute to postnatal development of laminar differences and neuronal subtypes in the rat medial entorhinal cortex* Brain Struct. Funct., **222**, 3107–3126

### **Rat spinal cord (adult)**

**Alizadeh, A.**, Santhosh, K.T., Kataria, H., Gounni, A.S. and Karimi-Abdolrezaee, S. (2018) *Neuregulin-1 elicits a regulatory immune response following traumatic spinal cord injury* J. Neuroinflamm., **15**: 53

**Brinn, M.**, Zhao, S., Kumaratilake, J., Lu, T-F., Freeman, B., Al-Sarawi, S. and Henneberg, M. (2015) *Axon stretch growth of adult primary motor neurons* J. Neurochem., **134** (Suppl. 1), 333

**Chen, J.**, Cui, Z., Yang, S., Wu, C., Li, W., Bao, G., Xu, G., Sun, Y., Wang, L. and Zhang, J. (2017) *The upregulation of annexin A2 after spinal cord injury in rats may have implication for astrocyte proliferation* Neuropeptides **61**, 67–76

**Dey, S.**, Bose, S., Kumar, S., Rathore, R., Mathur, R. and Jain, S. (2017) *Extremely low frequency magnetic field protects injured spinal cord from the microglia- and iron-induced tissue damage* Electromagn. Biol. Med., **36**, 330–340

- Doan, L.V.**, Eydlin, O., Piskoun, B., Kline, R.P., Recio-Pinto, E., Rosenberg, A.D., Blanck, T.J.J. and Xu, F. (2014) *Despite differences in cytosolic calcium regulation, lidocaine toxicity is similar in adult and neonatal rat dorsal root ganglia in vitro* Anesthesiology, **120**, 50-61
- He, S-Q.**, Yang, F., Perez, F.M., Xu, Q., Shechter, R., Cheong, Y-K., Carteret, A.F., Dong, X., Sweitzer, S.M., Raja, S.N. and Guan, Y. (2013) *Tolerance develops to the antiallodynic effects of the peripherally acting opioid loperamide hydrochloride in nerve-injured rats* Pain, **154**, 2477–2486
- Huang, S.**, Liu, X., Zhang, J., Bao, G., Xu, G., Sun, Y., Shen, Q., Lian, M., Huang, Y. and Cui, Z. (2015) *Expression of peroxiredoxin 1 after traumatic spinal cord injury in rats* Cell. Mol. Neurobiol., **35**, 1217–1226
- Nguyen, H.X.**, Beck, K.D. and Anderson, A.J. (2011) *Quantitative assessment of immune cells in the injured spinal cord tissue by flow cytometry: a novel use for a cell purification method* J. Visualized Exp., **50**: 1-5

## Rat spinal cord (embryo)

### Amyotrophic lateral sclerosis

- Andries, M.**, Van Damme, P., Robberecht, W. and van den Bosch, L. (2007) *Ivermectin inhibits AMPA receptor-mediated excitotoxicity in cultured motor neurons and extends the life span of a transgenic mouse model of amyotrophic lateral sclerosis* Neurobiol. Dis., **25**, 8-16
- Kia, A.**, McAvoy, K., Krishnamurthy, K., Trotti, D. and Pasinelli, P. (2018) *Astrocytes expressing ALS-linked mutant FUS induce motor neuron death through release of tumor necrosis factor-alpha* Glia, **66**, 1016–1033
- Song, W.**, Song, Y., Kincaid, B., Bossy, B. and Bossy-Wetzel, E. (2013) *Mutant SOD1G93A triggers mitochondrial fragmentation in spinal cord motor neurons: Neuroprotection by SIRT3 and PGC-1 $\alpha$*  Neurobiol. Dis., **51**, 72–81
- Wang, W.**, Li, L., Lin, W-L., Dickson, D.W., Petrucelli, L., Zhang, T. and Wang, X. (2013) *The ALS disease-associated mutant TDP-43 impairs mitochondrial dynamics and function in motor neurons* Hum. Mol. Genet., **22**, 4706–4719

### Apoptosis

- Carlton, E.**, Teng, Q., Federici, T., Yang, J., Riley, J. and Boulis, N.M. (2008) *Fusion of the tetanus toxin C fragment binding domain and Bcl-xL for protection of peripheral nerve neurons* Neurosurgery, **63**, 1175-1184
- Gandelman, M.**, Levy, M., Cassina, P., Barbeito, L. and Beckman, J.S. (2013) *P2X7 receptor-induced death of motor neurons by a peroxynitrite/FAS-dependent pathway* J. Neurochem., **126**, 382-388

### Arginase 1

- Estévez, A.G.**, Sahawneh, M.A., Lange, P.S., Bae, N., Egea, M. and Ratan, R.R. (2006) *Arginase 1 regulation of nitric oxide production is key to survival of trophic factor-deprived motor neurons* J. Neurosci., **26**, 8512-8516
- Ma, T.C.**, Campana, A., Lange, P.S., Lee, H-H., Banerjee, K., Bryson, J.B., Mahishi L., Alam, S. et al (2010) *A large-scale chemical screen for regulators of the arginase 1 promoter identifies the soy isoflavone daidzein as a clinically approved small molecule that can promote neuronal protection or regeneration via a cAMP-independent pathway* J. Neurosci., **30**, 739-748

### Astrocyte interactions

- Domeniconi, M.**, Hempstead, B.L. and Chao, M.V. (2007) *Pro-NGF secreted by astrocytes promotes motor neuron cell death* Mol. Cell. Neurosci., **34**, 271-279
- Miquel, E.**, Cassina, A., Martínez-Palma, L., Bolatto, C., Trias, E., Gandelman, M., Radi, R., Barbeito, L. and Cassina, P. (2012) *Modulation of astrocytic mitochondrial function by dichloroacetate improves survival and motor performance in inherited amyotrophic lateral sclerosis* PLoS One, **7**: e34776
- Ragancokova, D.**, Jahn, K., Kotsiari, A., Schlesinger, F., Haastert, K., Stangel, M., Petri, S. and Krampfl, K. (2009) *Analysis of neuroprotective effects of valproic acid on primary motor neurons in monoculture or co-cultures with astrocytes or Schwann cells* Cell. Mol. Neurobiol., **29**, 1037–1043
- Wanner, I.B.**, Deik, A., Torres, M., Rosendahl, A., Neary, J.T., Lemmon, V.P. and Bixby, J.L. (2008) *A new in vitro model of the glial scar inhibits axon growth* Glia, **56**, 1691-1709

### Axon regeneration

- Liu, Y.**, Grumbles, R.M. and Thomas, C.K. (2013) *Electrical stimulation of embryonic neurons for 1 hour improves axon regeneration and the number of reinnervated muscles that function* J. Neuropathol. Exp. Neurol., **72**, 697-707

### Ca<sup>2+</sup> regulation

- Castillo, C.**, Norcini, M., Baquero-Buitrago, J., Levacic, D., Medina, R., Montoya-Gacharna, J.V., Blanck, T.J.J., Dubois, M. and Recio-Pinto, E. (2011) *The N-methyl-D-aspartate-evoked cytoplasmic calcium increase*

in adult rat dorsal root ganglion neuronal somata was potentiated by substance P pretreatment in a protein kinase C-dependent manner *Neuroscience*, **177**, 308–320

**Grosskreutz, J.**, Haastert, K., Dewil, M., Van Damme, P., Callewaert, G., Robberecht, W., Dengler, R. and Van den Bosch, L. (2007) *Role of mitochondria in kainate-induced fast Ca<sup>2+</sup> transients in cultured spinal motor neurons* *Cell Calcium*, **42**, 59-69

**Haastert, K.**, Grosskreutz, J., Jaeckel, M., Laderer, C., Bufler, J., Grothe, C. and Claus, P. (2005) *Rat embryonic motoneurons in long-term co-culture with Schwann cells – a system to investigate motoneuron diseases on a cellular level in vitro* *J. Neurosci. Meth.*, **142**, 275-284

**Jahn, K.**, Grosskreutz, J., Haastert, K., Ziegler, E., Schlesinger, F., Grothe, C., Dengler, R. and Bufler, J. (2006) *Temporospatial coupling of networked synaptic activation of AMPA-type glutamate receptor channels and calcium transients in cultured motoneurons* *Neuroscience*, **142**, 1019-1029

### Culture of

**Guettier-Sigris, S.**, Appert-Collin, A., Duong, F., Azzouz, M., Coupin, G., Gies, J-P. and Poindron, P. (2005) *Improved methods for culturing rat and mouse motor neurons* *Bio Valley Monogr. Basel Karger*, **1**, 96-108

**Sepehr, A.**, Ruud, J. and Mohseni, S. (2009) *Neuron survival in vitro is more influenced by the developmental age of the cells than by glucose condition* *Cytotechnology*, **61**, 73–79

**Vincent, A.M.** and Feldman, E.L. (2010) *Primary sensory and motor neuron cultures* In, *Protocols for Neural Cell Culture*, Springer Protocols Handbooks, (ed. Doering, L.C.), Humana Press (Springer Science+Business Media), Totowa, NJ. pp 161-173

### Culture, nanofibres

**Corey, J.M.**, Gertz, C.C., Wang, B-S., Birrell, L.K., Johnson, S.L., Martin, D.C. and Feldman, E.L. (2008) *The design of electrospun PLLA nanofiber scaffolds compatible with serum-free growth of primary motor neuron and sensory neurons* *Acta Biomater.*, **4**, 863-875

**Gertz, C.C.**, Leach, M.K., Birrell, L.K., Martin, D.C., Feldman, E.L. and Corey, J.M. (2010) *Accelerated neuritogenesis and maturation of primary spinal motor neurons in response to nanofibers* *Dev. Neurobiol.*, **70**, 589–603

**Leach, M.K.**, Feng, Z-Q., Gertz, C.C., Tuck, S.J., Regan, T.M., Naim, Y., Vincent, A.M. and Corey, J.M. (2011) *The culture of primary motor and sensory neurons in defined media on electrospun poly-L-lactide nanofiber scaffolds* *J. Visualized Exp.*, **48**: 1-5

**Martin, D.C.**, Wu, J., Shaw, C.M., King, Z., Spanninga, S.A., Richardson-Burns, S., Hendricks, J. and Yang, J. (2010) *The morphology of Poly(3,4-Ethylenedioxythiophene)* *Polymer Rev.*, **50**, 340–384

### Gene expression

**Rossi, S.L.**, Lumpkin, C.J., Harris, A.W., Holbrook, J., Gentillon, C., McCahan, S.M., Wang, W. and Butchbach, M.E.R. (2016) *Identification of early gene expression changes in primary cultured neurons treated with topoisomerase I poisons* *Biochem. Biophys. Res. Comm.*, **479**, 319-324

### Growth factors

**De Muynck, L.**, Herdewyna, S., Beel, S., Scheveneels, W., Van Den Bosch, L., Robberecht, W. and Van Damme, P. (2013) *The neurotrophic properties of progranulin depend on the granulin E domain but do not require sortilin binding* *Neurobiol. Aging*, **34**, 2541-2547

**Poesen, K.**, Lambrechts, D., Van Damme, P., Dhondt, J., Bender, F., Frank, N., Bogaert, E., Claes, B., Heylen, L. et al (2008) *Novel role for vascular endothelial growth factor (VEGF) receptor-1 and its ligand VEGF-B in motor neuron degeneration* *J. Neurosci.*, **15**, 10451-10459

**Wang, J.**, Van Damme, P., Cruchaga, C., Gitcho, M.A., Vidal, J.M., Seijo-Martinez, M., Wang, L., Wu, J.Y., Robberecht, W. and Goate, A. (2010) *Pathogenic cysteine mutations affect progranulin function and production of mature granulins* *J. Neurochem.* (2010) **112**, 1305–1315

### Inflammation

**Beck, K.D.**, Nguyen, H.X., Galvan, M.D., Salazar, D.L., Woodruff, T.M. and Anderson, A.J. (2010) *Quantitative analysis of cellular inflammation after traumatic spinal cord injury: evidence for a multiphasic inflammatory response in the acute to chronic environment* *Brain* **133**, 433–447

### Methodology

**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

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

**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

### **Muscular atrophy/re-innervation**

**Liu, Y.**, Grumbles, R.M. and Thomas, C.K. (2014) *Electrical stimulation of transplanted motoneurons improves motor unit formation* *J. Neurophysiol.*, **112**, 660–670

### **Na<sup>+</sup>-K<sup>+</sup>-2Cl<sup>-</sup> co-transporter**

**Chabwine, J.N.**, Talavera, K., Verbert, L., Eggermont, J., Vanderwinden, J-M., De Smedt, H., Van Den Bosch, L., Robberecht, W., Callewaert, G. (2009) *Differential contribution of the Na<sup>+</sup>-K<sup>+</sup>-2Cl<sup>-</sup> cotransporter NKCC1 to chloride handling in rat embryonic dorsal root ganglion neurons and motor neurons* *FASEB J.*, **23**, 1168–1176

### **Nerve repair/growth**

**Feng, Z-Q.**, Franz, E.W., Leach, M.K., Winterroth, F., White, C.M., Rastogi, A., Gu, Z-Z. and Corey, J.M. (2016) *Mechanical tension applied to substrate films specifies location of neuriteogenesis and promotes major neurite growth at the expense of minor neurite development* *J. Biomed Mater. Res. Part A*, **104A**, 966–974

**Irobi, J.**, Almeida-Souza, L., Asselbergh, B., De Winter, V., Goethals, S., Dierick, I., Krishnan, J. et al (2010) *Mutant HSPB8 causes motor neuron-specific neurite degeneration* *Hum. Mol. Genet.*, **19**, 3254–3265

**Montoya-Gachana, J.V.**, Sutachan, J.J., Chan, W.S., Sideris, A., Blanck, T.J.J. and Recio-Pinto, E. (2009) *Muscle-conditioned media and cAMP promote survival and neurite outgrowth of adult spinal cord motor neurons* *Exp. Neurol.*, **220** 303–315

### **Neuromuscular junction/signalling**

**Das, M.**, Rumsey, J.W., Bhargava, N., Stancescu, M. and Hickman, J.J. (2010) *A defined long-term in vitro tissue engineered model of neuromuscular junctions* *Biomaterials* **31**, 4880-4888

**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

### **Neurotrophic factors**

**Deinhardt, K.**, Reversi, A., Berninghausen, O., Hopkins, C.R., and Schiavo, G. (2007) *Neurotrophins redirect p75<sup>NTR</sup> from a clathrin-independent to a clathrin-dependent pathway coupled to axonal transport* *Traffic*, **8**, 1736-1749

**Niu, C.** and Yip, H.K. (2011) *Neuroprotective signaling mechanisms of telomerase are regulated by brain-derived neurotrophic factor in rat spinal cord motor neurons* *J. Neuropathol. Exp. Neurol.*, **70**, 634-652

**Van Damme, P.**, Van Hoecke, A., Lambrechts, D., Vanacker, P., Bogaert, E., van Swieten, J., Carmeleit, P., Van Den Bosch, L. and Robberecht, W. (2008) *Progranulin functions as a neurotrophic factor to regulate neurite outgrowth and enhance neuronal survival* *J. Cell Biol.*, **181**, 37-41

### **NFE2-related factor 2**

**Sporn, M.**, Beal, M.F. and Kiaei, M. (2011) *Neuroprotective effect of Nrf2/ARE activators, CDDO ethylamide and CDDO trifluoroethylamide, in a mouse model of amyotrophic lateral sclerosis* *Free Radic. Biol. Med.*, **51**, 88–96

### **Nitric oxide**

**Estévez, A.G.**, Sahawneh, M.A., Lange, P.S., Bae, N., Egea, M. and Ratan, R.R. (2006) *Arginase 1 regulation of nitric oxide production is key to survival of trophic factor-deprived motor neurons* *J. Neurosci.*, **26**, 8512-8516

### **Non-NMDA receptors**

**King, A.E.**, Dickson, T.C., Blizzard, C.A., Foster, S.S., Chung, R.S., West, A.K., Chuah, M.I. and Vickers, J.C. (2007) *Excitotoxicity mediated by non-NMDA receptors causes axonopathy in long-term cultured spinal motor neurons* *Eur. J. Neurosci.*, **26**, 215102159

### Schwann cell interactions

**Haastert, K.**, Grosskreutz, J., Jaeckel, M., Laderer, C., Bufler, J., Grothe, C. and Claus, P. (2005) *Rat embryonic motoneurons in long-term co-culture with Schwann cells – a system to investigate motoneuron diseases on a cellular level in vitro* J. Neurosci. Meth., **142**, 275-284

**Ragancokova, D.**, Jahn, K., Kotsiari, A., Schlesinger, F., Haastert, K., Stangel, M., Petri, S. and Krampfl, K. (2009) *Analysis of neuroprotective effects of valproic acid on primary motor neurons in monoculture or co-cultures with astrocytes or Schwann cells* Cell. Mol. Neurobiol., **29**, 1037–1043

**Rumsey, J.W.**, Das, M., Stancescu, M., Bott, M., Fernandez-Valle, C. and Hickman, J.J. (2009) *Node of Ranvier formation on motoneurons in vitro* Biomaterials **30**, 3567–3572

### SOD-1

**Lobsiger, C.S.**, Boillée, S. and Cleveland, D.W. (2007) *Toxicity from different SOD1 mutants dysregulates the complement system and the neuronal regenerative response in ALS motor neurons* Proc. Natl. Acad. Sci. USA, **104**, 7319-7326

**Magrané, J.**, Sahawneh, M.A., Przedborski, S., Estévez, A.G. and Manfredi, G. (2012) *Mitochondrial dynamics and bioenergetic dysfunction is associated with synaptic alterations in mutant SOD1 motor neurons* J. Neurosci., **32**, 229–242

**Marchetto, M.C.N.**, Muotri, A.R., Mu, Y., Smith, A.M., Cezar, G.G. and Gage, F.H. (2008) *Non-cell-autonomous effect of human SOD1G37R astrocytes on motor neurons derived from human embryonic stem cells* Cell Stem Cell. **3**, 649-657

**Sahawneh, M.A.**, Ricart, K.C., Roberts, B.R., Bomben, V.C., Basso, M., Ye, Y., Sahawneh, J., Franco, M.C., Beckman, J.S. and Estévez, A.G. (2010) *Cu,Zn-superoxide dismutase increases toxicity of mutant and zinc-deficient superoxide dismutase by enhancing protein stability* J. Biol. Chem., **285**, 33885-33897

**Song, W.**, Song, Y., Kincaid, B., Bossy, B. and Bossy-Wetzel, E. (2013) *Mutant SOD1G93A triggers mitochondrial fragmentation in spinal cord motor neurons: Neuroprotection by SIRT3 and PGC-1 $\alpha$*  Neurobiol. Dis., **51**, 72–81

**Trumbull, K.A.**, McAllister, D., Gandelman, M.M., Fung, W.Y., Lew, T., Brennan, L., Lopez, N., Morré, J., Kalyanaraman, B., Beckman, J.S. (2012) *Diapocynin and apocynin administration fails to significantly extend survival in G93A SOD1 ALS mice* Neurobiol. Dis., **45**, 137–144

### Spinal motor control

**Guo, X.**, Ayala, J.E., Gonzalez, M., Stancescu, M., Lambert, S. and Hickman, J.J. (2012) *Tissue engineering the monosynaptic circuit of the stretch reflex arc with co-culture of embryonic motoneurons and proprioceptive sensory neurons* Biomaterials, **33**, 5723-5731

### Topoisomerase poisons

**Rossi, S.L.**, Lumpkin, C.J., Harris, A.W., Holbrook, J., Gentillon, C., McCahan, S.M., Wang, W. and Butchbach, M.E.R. (2016) *Identification of early gene expression changes in primary cultured neurons treated with topoisomerase I poisons* Biochem. Biophys. Res. Comm., **479**, 319-324

### Ubiquitin ligase

**Lassot, I.**, Robbins, I., Kristiansen, M., Rahmeh, R., Jaudon, F., Magiera, M.M., Mora, S., Vanhille, L., Lipkin, A., Pettmann, B., Ham, J. and Desagher, S. (2010) *Trim17, a novel E3 ubiquitin-ligase, initiates neuronal apoptosis* Cell Death Differ. **17**, 1928–1941

### Valproic acid

**Ragancokova, D.**, Song, Y., Nau, H., Dengler, R., Krampfl, K. and Petri, S. (2010) *Modulation of synaptic transmission and analysis of neuroprotective effects of valproic acid and derivatives in rat embryonic motoneurons* Cell. Mol. Neurobiol., **30**, 891–900

### Viral transduction

**Eleftheriadou, I.**, Trabalza, A., Ellison, S.M., Gharun, I.K. and Mazarakis, N.D. (2014) *Specific retrograde transduction of spinal motor neurons using lentiviral vectors targeted to presynaptic NMJ receptors* Mol. Ther., **22**, 1285–1298

**Hislop, J.N.**, Islam, T.A., Eleftheriadou, I., Carpentier, D.C.J., Trabalza, A., Parkinson, M., Schiavo, G. and Mazarakis, N.D. (2014) *Rabies virus envelope glycoprotein targets lentiviral vectors to the axonal retrograde pathway in motor neurons* J. Biol. Chem., **289**, 16148-16163

**Peluffo, H.**, Foster, E., Ahmed, S.G., Lago, N., Hutson, T.H., Moon, L., Yip, P., Wanisch, K., Caraballo-Mirallas, V., Olmos, G., Llado, J., McMahan, S.B. and Yáñez-Muñoz, R.J. (2013) *Efficient gene expression from integration-deficient lentiviral vectors in the spinal cord* Gene Ther., **20**, 645–657

**Trabalza, A.**, Georgiadis, C., Eleftheriadou, I., Hislop, J.N., Ellison, S.M., Karavassilis, M.E. and Mazarakis, N.D. (2013) *Venezuelan equine encephalitis virus glycoprotein pseudotyping confers neurotropism to lentiviral vectors* Gene Ther., **20**, 723–732

#### **Rat spinal cord (post-natal)**

**Southam, K.A.**, King, A.E., Blizzard, C.A., McCormack, G.H. and Dickson, T.C. (2013) *Microfluidic primary culture model of the lower motor neuron–neuromuscular junction circuit* J. Neurosci. Methods, **218**, 164–169

#### **Rat ventral mesencephalic neurons**

**Lautenschläger, J.**, Mosharov, E.V., Kanter, E., Sulzer, D. and Kaminski Schierle, G.S. (2018) *An easy-to-implement protocol for preparing postnatal ventral mesencephalic cultures* Front. Cell. Neurosci., **12**: 44

#### **Turtle cerebral hemisphere**

**Milton, S.L.**, Nayak, G., Kesaraju, S., Kara, L. and Prentice, H.M. (2007) *Suppression of reactive oxygen species production enhances neuronal survival in vitro and in vivo in the anoxia-tolerant turtle *Trachemys scripta** J. Neurochem., **101**, 993–1001

**Nayak, G.**, Prentice, H.M. and Milton, S.L. (2009) *Role of neuroglobin in regulating reactive oxygen species in the brain of the anoxia-tolerant turtle *Trachemys scripta** J. Neurochem., **110**, 603–612

**Nayak, G.H.**, Prentice, H.M. and Milton, S.L. (2011) *Neuroprotective signaling pathways are modulated by adenosine in the anoxia tolerant turtle* J.Cereb. Blood Flow Metab., **31**, 467–475

#### **Zebrafish (spinal muscular atrophy)**

**Boyd, P.J.**, Tu, W.-Y., Shorrock, H.K., Groen, E.J.N., Carter, R.N., Powis, R.A., Thomson, D., Graham, L.C. (2017) *Bioenergetic status modulates motor neuron vulnerability and pathogenesis in a zebrafish model of spinal muscular atrophy* PLoS Genet., **13**: e1007644

**Gassman, A.**, Hao, L.T., Bhoite, L., Bradford, C.L., Chien, C-B., Beattie, C.E. and Manfredi, J.P. (2013) *Small molecule suppressors of *Drosophila* kinesin deficiency rescue motor axon development in a zebrafish model of spinal muscular atrophy* PLoS One, **8**: e74325

### **3. Myelin removal from cell preparations**

**Crang, A.J.**, Gilson, J.M., Li, W.-W. and Blakemore, W.F. (2004) *The remyelinating potential and in vitro differentiation of MOG-expressing oligodendrocyte precursors isolated from the adult rat CNS* Eur. J. Neurosci., **20**, 1445–1460

**Janes, K.**, Wahlman, C., Little, J.W., Doyle, T., Tosh, D.K., Jacobson, K.A. and Salvemini, D. (2015) *Spinal neuroimmune activation is independent of T-cell infiltration and attenuated by A3 adenosine receptor agonists in a model of oxaliplatin-induced peripheral neuropathy* Brain, Behav. Immun., **44** 91–99

**Luyt, K.**, Varadi, A., Halfpenny, C.A., Scolding, N.J. and Molnar, E. (2004) *Metabotropic glutamate receptors are expressed in adult human glial progenitor cells* Biochem. Biophys. Res. Commun., **319**, 120–129

**Margul, D.J.**, Park, J., Boehler, R.M., Smith, D.R., Johnson, M.A., McCreedy, D.A., He, T., Ataliwala, A., Kukushliev, T.V., Liang, J., Sohrabi, A. et al (2016) *Reducing neuroinflammation by delivery of IL-10 encoding lentivirus from multiple-channel bridges* Bioeng. Transl. Med., **1**, 136–148

**Mavrikis Cox, G.**, Kithcart, A.P., Pitt, D., Guan, Z., Alexander, J., Williams, J.L., Shawler, T., Dagia, N.M., Popovich, P.G., Satoskar, A.R. and Whitacre, C.C. (2013) *Macrophage migration inhibitory factor potentiates autoimmune-mediated neuroinflammation* J. Immunol., **191**, 1043–1054.

### **4. Neuroglial and other cells**

#### **Astrocytes**

**Eijkelkamp, N.**, Steen-Louws, C., Hartgring, S.A.Y., Willems, H.L.D.M., Prado, J., Lafeber, F.P.J.G., Heijnen, C.J., Hack, C.E., van Roon, J.A.G. and Kavelaars, A. (2016) *IL4-10 Fusion protein is a novel drug to treat persistent inflammatory pain* J. Neurosci., **36**, 7353–7363

**Eelen, G.**, Dubois, C., Cantelmo, A.R., Goveia, J., Brüning, U., DeRan, M., Jarugumilli, G., van Rijssel, J., Saladino, G., Comitani, F. and Zecchin, A. (2018) *Role of glutamine synthetase in angiogenesis beyond glutamine synthesis* Nature, **561**, 63–69

**Freeman, K.A.**, Fullerton, D.A., Foley, L.S., Bell, M.T., Cleveland, Jr, J.C., Weyant, M.J. Mares, J. et al (2015) *Spinal cord protection via alpha-2 agonist-mediated increase in glial cell-line–derived neurotrophic factor* J. Thorac. Cardiovasc. Surg., **149**, 578–86

**Kerstetter, A.E.** and Miller, R.H. (2012) *Isolation and culture of spinal cord astrocytes* In Methods Mol. Biol., **814**, Astrocytes: Methods and Protocols (ed. Milner, R.) Springer Science+Business Media, LLC pp 93–104

## Inflammatory cells

**Mavrikis Cox, G.**, Kithcart, A.P., Pitt, D., Guan, Z., Alexander, J., Williams, J.L., Shawler, T., Dagia, N.M., Popovich, P.G., Satoskar, A.R. and Whitacre, C.C. (2013) *Macrophage migration inhibitory factor potentiates autoimmune-mediated neuroinflammation* J. Immunol., **191**, 1043–1054

## Macrophages

**Turtzo, L.C.**, Lescher, J., Janes, L., Dean, D.D., Budde, M.D. and Frank, J.A. (2014) *Macrophagic and microglial responses after focal traumatic brain injury in the female rat* J. Neuroinflamm., **11**: 82

## Microglial cells

- Beck, K.D.**, Nguyen, H.X., Galvan, M.D., Salazar, D.L., Woodruff, T.M. and Anderson, A.J. (2010) *Quantitative analysis of cellular inflammation after traumatic spinal cord injury: evidence for a multiphasic inflammatory response in the acute to chronic environment* Brain **133**, 433–447
- Bell, M.T.**, Puskas, F., Agoston, V.A., Cleveland, Jr, J.C., Freeman, K.A., Gamboni, F., Herson, P.S., Meng, X. and Smith, P.D. (2013) *Toll-like receptor 4-dependent microglial activation mediates spinal cord ischemia-reperfusion injury* Circulation, **128** [suppl 1], S152-S156
- Bettinger, I.**, Thanos, S. and Paulus, W. (2002) *Microglia promote glioma migration* Acta Neuropathol., **103**, 351-355
- Chen, J.**, Cui, Z., Yang, S., Wu, C., Li, W., Bao, G., Xu, G., Sun, Y., Wang, L. and Zhang, J. (2017) *The upregulation of annexin A2 after spinal cord injury in rats may have implication for astrocyte proliferation* Neuropeptides **61**, 67–76
- Dyck, S.**, Kataria, H., Alizadeh, A., Santhosh, K.T., Lang, B., Silver, J. and Karimi-Abdolrezaee, S. (2018) *Perturbing chondroitin sulfate proteoglycan signaling through LAR and PTP $\sigma$  receptors promotes a beneficial inflammatory response following spinal cord injury* J. Neuroinflamm., **15**: 90
- Fumagalli, S.**, Fiordaliso, F., Perego, C., Corbelli, A., Mariani, A., De Paola, M. and De Simoni, M-G. (2019) *The phagocytic state of brain myeloid cells after ischemia revealed by superresolution structured illumination microscopy* J. Neuroinflamm., **16**: 9
- Galvan, M.D.**, Luchetti, S., Burgos, A.M., Nguyen, H.X., Hooshmand, M.J., Hamers, F.P.T. and Anderson, A.J. (2008) *Deficiency in complement C1q improves histological and functional locomotor outcome after spinal cord injury* J. Neurosci., **28**, 13876–13888
- Hong, H-B.**, Krause, H.J., Sohn, S-W., Baik, T-K., Park, J.H., Shin, S-W., Park, C-H. and Song, D-Y. (2014) *In situ measurement of superoxide and hydroxyl radicals by frequency mixing detection technique* Anal. Biochem., **447**, 141-145
- Mariani, A.**, Fanelli, R., Re Depaolini, A. and De Paola, M. (2015) *Decabrominated diphenyl ether and methylmercury impair fetal nervous system development in mice at documented human exposure levels*. Develop. Neurobiol., **75**, 23–38
- Mauri, E.**, Veglianese, P., Papa, S., Mariani, A., De Paola, M., Rigamonti, R., Chincarini, G.M.F., Vismara, I. et al (2017) *Double conjugated nanogels for selective intracellular drug delivery* RSC Adv., **7**, 30345-30356
- Mauri, E.**, Veglianese, P., Papa, S., Mariani, A., De Paola, M., Rigamonti, R., Chincarini, G.M.F., Rimondo, S., Sacchetti, A. and Rossi, F. (2017) *Chemoselective functionalization of nanogels for microglia treatment* Eur. Polymer J., **94**, 143–151
- Mavrikis Cox, G.**, Kithcart, A.P., Pitt, D., Guan, Z., Alexander, J., Williams, J.L., Shawler, T. et al (2013) *Macrophage migration inhibitory factor potentiates autoimmune-mediated neuroinflammation* J. Immunol., **191**, 1043–1054
- O'Mahony, A.**, Raber, J., Montano, M., Foehr, E., Han, V., Lu, S-m., Goethals, S., Ydens, E., Timmerman, V. and Janssens, S. (2010) *Toll-like receptor expression in the peripheral nerve* Glia, **58**, 1701–1709
- Kwon, H.**, LeFevour, A., Chakraborty-Sett, S. and Greene, W.C. (2006) *NF- $\kappa$ B/Rel regulates inhibitory and excitatory neuronal function and synaptic plasticity* Mol. Biol. Cell., **26**, 7283-7298
- Papa, S.**, Rossi, F., Ferrari, R., Mariani, A., De Paola, M., Caron, I., Fiordaliso, F., Bisighini, C. et al (2013) *Selective nanovector mediated treatment of activated proinflammatory microglia/macrophages in spinal cord injury* ACS Nano, **7**, 9881–9895
- Papa, S.**, Ferrari, R., De Paola, M., Rossi, F., Mariani, A., Caron, I., Sammali, E., Peviani, M. et al (2014) *Polymeric nanoparticle system to target activated microglia/macrophages in spinal cord injury* J. Control. Release, **174**, 15-26
- Papa, S.**, Caron, I., Erba, E., Panini, N., De Paola, M., Mariani, A., Colombo, C., Ferrari, R., Pozzer, D. et al (2016) *Early modulation of pro-inflammatory microglia by minocycline loaded nanoparticles confers long lasting protection after spinal cord injury* Biomaterials, **75**, 13-24
- Sarkar, D.**, Chastain, L., Cabrera and Shrivastava, P. (2016) *Ethanol exposures during the developmental period increase microglia sensitivity to a stress challenge during adulthood: a possible cause for the stress hyperresponse in fetal alcohol exposed offspring* Neuropsychopharmacology **41**, S136-137

- Shrivastava, P.**, Cabrera, M.A., Chastain, L.G., Boyadjieva, N.I., Jabbar, S., Franklin, T. and Sarkar, D.K. (2017) *Mu-opioid receptor and delta-opioid receptor differentially regulate microglial inflammatory response to control proopiomelanocortin neuronal apoptosis in the hypothalamus: effects of neonatal alcohol* J. Neuroinflamm., **14**: 83
- Song, D-Y.**, Yu, H-N., Park, C-R., Lee, J-S., Lee, J-Y., Park, B-G., Woo, R-S., Han, J-T. et al (2013) *Down-regulation of microglial activity attenuates axotomized nigral dopaminergic neuronal cell loss* BMC Neurosci., **14**: 112
- Tsuchiya, T.**, Park, K.C., Toyonaga, S., Yamada, S.M., Nakabayashi, H., Nakai, E., Ikawa, N. et al (2005) *Characterization of microglia induced from mouse embryonic stem cells and their migration into brain parenchyma* J. Neuroimmunol., **160**, 210-218
- Tucsek, Z.**, Toth, P., Sosnowska, D., Gautam, T., Mitschelen, M., Koller, A., Szalai, G., Sonntag, W.E., Ungvari, Z. and Csiszar, A. (2014) *Obesity in aging exacerbates blood-brain barrier disruption, neuroinflammation, and oxidative stress in the mouse hippocampus: effects on expression of genes involved in beta-amyloid generation and Alzheimer's disease* J. Gerontol. A Biol. Sci. Med. Sci., **69**, 1212–1226
- Turtzo, L.C.**, Lescher, J., Janes, L., Dean, D.D., Budde, M.D. and Frank, J.A. (2014) *Macrophagic and microglial responses after focal traumatic brain injury in the female rat* J. Neuroinflamm., **11**: 82
- Vincent, A.M.** and Feldman, E.L. (2010) *Primary sensory and motor neuron cultures* In, Protocols for Neural Cell Culture, Springer Protocols Handbooks, (ed. Doering, L.C.), Humana Press (Springer Science+Business Media), Totowa, NJ. pp 161-173
- Yang, B.**, Parsha, K., Migliati, E. and Savitz, S. (2014) *Bone marrow mononuclear cells may enhance recovery after stroke by modulating the microglial response* Stroke, **45**, Abstr. A192
- Zhuravleva, M.**, Rizvanov, A. and Mukhamedshina, Y. (2016) *Effect of GDNF on morphology, proliferation, and phagocytic activity of rat neonatal cortex isolated microglia* BioNanoSci., **6**, 379–383

### Neural progenitor cells

- Pathania, M.**, De Jay, N., Maestro, N., Harutyunyan, A.S., Nitarska, J., Pahlavan, P., Henderson, S., Mikael, L.G., Richard-Londt, A, et al (2017) *H3.3K27M Cooperates with Trp53 loss and PDGFRA gain in mouse embryonic neural progenitor cells to induce invasive high-grade gliomas* Cancer Cell, **32**, 684–700

### Oligodendrocytes

- Cassiani-Ingoni, R.**, Greenstone, H.L., Donati, D., Fogdell-Hahn, A., Martinell, E., Refai, D., Martin, R., Berger, E.A. and Jacobson, S. (2005) *CD46 on glial cells can function as a receptor for viral glycoprotein-mediated cell–cell fusion* Glia, **52**, 252-258
- Chari, D.M.**, Phil, A., Crang, A.J. and Blakemore, W.F. (2003) *Decline in rate of colonization of oligodendrocyte progenitor cell (OPC)-depleted tissue by adult OPCs with age* J. Neuropathol. Exp. Neurol., **62**, 908-816
- Li, G.**, Crang, A.J., Rundle, J.L. and Blakemore, W.F. (2002) *Oligodendrocyte progenitor cells in the adult rat CNS express myelin oligodendrocyte glycoprotein (MOG)* Brain Pathol., **12**, 463-471
- O'Mahony, A.**, Raber, J., Montano, M., Foehr, E., Han, V., Lu, S-m., Kwon, H. et al (2006) *NF-κB/Rel regulates inhibitory and excitatory neuronal function and synaptic plasticity* Mol. Biol. Cell., **26**, 7283-7298
- Sotnikov, I.**, Veremeyko, T., Starossom, S.C., Barteneva, N., Weiner, H.L. and Ponomarev, E.D. (2013) *Platelets recognize brain-specific glycolipid structures, respond to neurovascular damage and promote neuroinflammation* PLoS One, **8**: e58979

## 5. Recently published papers

### Amyotrophic lateral sclerosis; 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 Schizas, 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

**Prefrontal cortex (mouse brain); neuropsychiatric disease**

**Bhattacharjee, 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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