

Ph.D. Natalia Rodriguez-Muela
Academic Staff

Selective neuronal vulnerability in neurodegenerative diseases (Junior Research Group)

German Center for Neurodegenerative Diseases, Dresden site (Partner: DZNE of the Helmholtz Association)

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Research interests

Neuroscientist trained in stem cell biology, neurodegeneration and proteostasis

Qualifications

Biomedicine, PhD, Complutense University

Award Date: 22 Jun 2011

Employment

Research Group Leader

Academic Staff

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Technische Universität Dresden

1 Aug 2019 → present

Research Group Leader

Academic Staff

German Center for Neurodegenerative Diseases, Dresden site (Partner: DZNE of the Helmholtz Association)

Technische Universität Dresden

1 Aug 2019 → present

Research Group Leader

Max Planck Institute of Molecular Cell Biology and Genetics

Dresden, Germany

1 Aug 2019 → present

Research outputs

An isogenic human iPSC model unravels neurodevelopmental abnormalities in SMA

Grass, T., Rosignol, I., Thomas, J., Buchner, F., Dokuzluoglu, Z., Dalinskaya, A., Becker, J., & 2 others Wirth, B. & Rodriguez-Muela, N., 3 Jan 2023, 37 p.

Activated Endolysosomal Cation Channel TRPML1 Facilitates Maturation of α -Synuclein-Containing Autophagosomes

Pollmanns, M. R., Beer, J., Rosignol, I., Rodriguez-Muela, N., Falkenburger, B. H. & Dinter, E., 6 Jul 2022, In: *Frontiers in cellular neuroscience*. 16, 19 p., 861202.

Correction of a Factor VIII genomic inversion with designer-recombinases

Lansing, F., Mukhametzyanova, L., Rojo-Romanos, T., Iwasawa, K., Kimura, M., Paszkowski-Rogacz, M., Karpinski, J., & 10 others Grass, T., Sonntag, J., Schneider, P. M., Günes, C., Hoersten, J., Schmitt, L. T., Rodriguez-Muela, N., Knöfler, R., Takebe, T. & Buchholz, F., 20 Jan 2022, In: *Nature communications*. 13, 1, 15 p., 422.

Correction of a Factor VIII genomic inversion with designer-recombinases

Lansing, F., Mukhametzhanova, L., Rojo-Romanos, T., Iwasawa, K., Kimura, M., Paszkowski-Rogacz, M., Karpinski, J., & 10 others Grass, T., Sonntag, J., Schneider, P. M., Günes, C., Hoersten, J., Schmitt, L. T., Rodriguez-Muela, N., Knöfler, R., Takebe, T. & Buchholz, F., 2 Nov 2020, 43 p.

Genetic modifiers ameliorate endocytic and neuromuscular defects in a model of spinal muscular atrophy

Walsh, M. B., Janzen, E., Wingrove, E., Hosseinibarkooie, S., Muela, N. R., Davidow, L., Dimitriadi, M., & 4 others Norabuena, E. M., Rubin, L. L., Wirth, B. & Hart, A. C., 16 Sep 2020, In: BMC biology. 18, 1, 127.

Age related retinal Ganglion cell susceptibility in context of autophagy deficiency

Bell, K., Rosignol, I., Sierra-Filardi, E., Rodriguez-Muela, N., Schmelter, C., Cecconi, F., Grus, F., & 1 others Boya, P., 2020, In: Cell death discovery.

Autophagy in motor neuron diseases

Rodríguez-Muela, N., 2020, *Progress in Molecular Biology and Translational Science*.

The mito-QC reporter for quantitative mitophagy assessment in primary retinal ganglion cells and experimental glaucoma models

Rosignol, I., Villarejo-Zori, B., Teresak, P., Sierra-Filardi, E., Pereiro, X., Rodríguez-Muela, N., Vecino, E., & 3 others Vieira, H. L. A., Bell, K. & Boya, P., 2020, In: International journal of molecular sciences. 21, 5, 1882.

Blocking p62-dependent SMN degradation ameliorates spinal muscular atrophy disease phenotypes

Rodríguez-Muela, N., Parkhitko, A., Grass, T., Gibbs, R. M., Norabuena, E. M., Perrimon, N., Singh, R., & 1 others Rubin, L. L., 2 Jul 2018, In: Journal of Clinical Investigation. 128, 7, p. 3008–3023 16 p.

Autophagy in stem cells: repair, remodelling and metabolic reprogramming

Boya, P., Codogno, P. & Rodríguez-Muela, N., 15 Feb 2018, In: Development. 145, 4

Reactive Astrocytes Promote ALS-like Degeneration and Intracellular Protein Aggregation in Human Motor Neurons by Disrupting Autophagy through TGF-beta 1

Tripathi, P., Rodríguez-Muela, N., Klim, J. R., de Boer, A. S., Agrawal, S., Sandoe, J., Lopes, C. S., & 6 others Ogliaari, K. S., Williams, L. A., Shear, M., Rubin, L. L., Eggan, K. & Zhou, Q., 2017, In: Stem cell reports. 9, 2

Single-Cell Analysis of SMN Reveals Its Broader Role in Neuromuscular Disease

Rodríguez-Muela, N., Litterman, N. K., Norabuena, E. M., Mull, J. L., Galazo, M. J., Sun, C., Ng, S-Y., & 7 others Makhortova, N. R., White, A., Lynes, M. M., Chung, W. K., Davidow, L. S., Macklis, J. D. & Rubin, L. L., 2017, In: Cell reports. 18, 6

Standard assays for the study of autophagy in the ex vivo retina

Gómez-Sintes, R., Villarejo-Zori, B., Serrano-Puebla, A., Esteban-Martínez, L., Sierra-Filardi, E., Ramírez-Pardo, I., Rodríguez-Muela, N., & 1 others Boya, P., 2017, In: Cells. 6, 2

Subtly Modulating Glycogen Synthase Kinase 3 beta: Allosteric Inhibitor Development and Their Potential for the Treatment of Chronic Diseases

Palomo, V., Perez, D. I., Roca, C., Anderson, C., Rodríguez-Muela, N., Perez, C., Morales-Garcia, J. A., & 7 others Reyes, J. A., Campillo, N. E., Perez-Castillo, A. M., Rubin, L. L., Timchenko, L., Gil, C. & Martinez, A., 2017, In: Journal of medicinal chemistry. 60, 12

Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition)

0000-0003-1065-1870, 2016, In: Autophagy. 12, 1, p. 1-222 222 p.

Genome-wide RNA-Seq of Human Motor Neurons Implicates Selective ER Stress Activation in Spinal Muscular Atrophy

Ng, S-Y., Soh, B. S., Rodríguez-Muela, N., Hendrickson, D. G., Price, F., Rinn, J. L. & Rubin, L. L., 2015, In: Cell Stem Cell. 17, 5

Lysosomal membrane permeabilization and autophagy blockade contribute to photoreceptor cell death in a mouse model of retinitis pigmentosa

Rodríguez-Muela, N., Hernández-Pinto, A., Serrano-Puebla, A., García-Ledo, L., Latorre, S. H., de la Rosa, E. J. & Boya, P., 2015, In: Cell death and differentiation. 2014, 22

Balance between autophagic pathways preserves retinal homeostasis

Rodríguez-Muela, N., Koga, H., García-Ledo, L., de la Villa, P., de la Rosa, E. J., Cuervo, A. M. & Boya, P., 2013, In: Aging cell. 12, 3

Autophagy promotes survival of retinal ganglion cells after optic nerve axotomy in mice

Rodríguez-Muela, N., Germain, F., Marino, G., Fitzee, P. S. & Boya, P., 2012, In: Cell death and differentiation. 2011, 19, p. 162-169

Axonal damage, autophagy and neuronal survival

Rodríguez-Muela, N. & Boya, P., 2012, In: Autophagy. 8, 2, p. 286-288

Lysosomal membrane permeabilization in Parkinson disease

Vila, M., Bove, J., Dehay, B., Rodríguez-Muela, N. & Boya, P., 2011, In: Autophagy. 7, 1, p. 98-100

Pathogenic Lysosomal Depletion in Parkinson's Disease

Dehay, B., Bove, J., Rodríguez-Muela, N., Perier, C., Recasens, A., Boya, P. & Vila, M., 2010, In: Journal of Neuroscience. 30, 37

Attenuation of vision loss and delay in apoptosis of photoreceptors induced by proinsulin in a mouse model of retinitis pigmentosa

Corrochano, S., Barhoum, R., Boya, P., Arroba, A. I., Rodríguez-Muela, N., Gomez-Vicente, V., Bosch, F., & 3 others de Pablo, F., de la Villa, P. & de la Rosa, E. J., 2008, In: Investigative ophthalmology & visual science : IOVS. 49, 9, p. 4188-4194 7 p.

Neuroplasticity changes in Alzheimer's and Creutzfeldt-Jakob's diseases. Relationships to involutive phenomena, Alteraciones de los fenómenos de neuroplasticidad en las enfermedades de Alzheimer y Creutzfeldt-Jakob. Interrelaciones con fenómenos involutivos

Toledano, A., Álvarez, M. I. & Rodríguez-Muela, N., 2006, In: Mapfre Medicina. 17, 4

Activities

Frontiers in Regeneration: "Protein homeostasis in degeneration and regeneration of the nervous system"

Hornstein, E. (Participant), Uechi, H. (Participant), Kirstein, J. (Participant), Rosa, A. (Participant), Rodríguez-Muela, N. (Organiser), Sternecker, J. L. (Organiser), Tripathy, V. (Participant), Nijssen, J. (Participant)
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