

Stanford



Steven Boeynaems

Postdoctoral Research Fellow, Genetics

Bio

BIO

My work focuses on our understanding of how cells and organisms maintain proteostasis in changing environments, which remains a poorly understood area of cell biology. Over the years, this has led me to study the cellular stress response in health and disease with an emphasis on the role of tandem repeats, intrinsically disordered domains and biomolecular phase separation. My goal is to translate fundamental biological insights into novel therapeutic approaches for human disease and tools for synthetic biology.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Katholieke Universiteit Leuven (2017)
- Bachelor of Science, Katholieke Universiteit Leuven (2010)
- Master of Science, Katholieke Universiteit Leuven (2012)

LINKS

- www.stevenboeynaems.com: www.stevenboeynaems.com
- www.designercondensates.org: www.designercondensates.org
- Google Scholar: <https://scholar.google.com/citations?user=Zlrl7WgAAAAJ&hl=en>
- TEDx: https://www.youtube.com/watch?v=oCBkzNi9kT4&ab_channel=TEDxTalks

Publications

PUBLICATIONS

- **Designer condensates: a toolkit for the biomolecular architect.** *Journal of molecular biology*
Hastings, R. L., Boeynaems, S. n.
2021: 166837
- **ATXN1 repeat expansions confer risk for amyotrophic lateral sclerosis and contribute to TDP-43 mislocalization.** *Brain communications*
Tazelaar, G. H., Boeynaems, S. n., De Decker, M. n., van Vugt, J. J., Kool, L. n., Goedee, H. S., McLaughlin, R. L., Sproviero, W. n., Iacoangeli, A. n., Moisse, M. n., Jacquemyn, M. n., Daelemans, D. n., Dekker, et al
2020; 2 (2): fcaa064
- **Symmetric dimethylation of poly-GR correlates with disease duration in C9orf72 FTLD and ALS and reduces poly-GR phase separation and toxicity.** *Acta neuropathologica*
Gittings, L. M., Boeynaems, S., Lightwood, D., Clargo, A., Topia, S., Nakayama, L., Troakes, C., Mann, D. M., Gitler, A. D., Lashley, T., Isaacs, A. M.
2019
- **Spontaneous driving forces give rise to protein-RNA condensates with coexisting phases and complex material properties** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

- Boeynaems, S., Holehouse, A. S., Weinhardt, V., Kovacs, D., Van Lindt, J., Larabell, C., Van Den Bosch, L., Das, R., Tompa, P. S., Pappu, R., Gitler, A. D.
2019; 116 (16): 7889–98
- **Spontaneous driving forces give rise to protein-RNA condensates with coexisting phases and complex material properties.** *Proceedings of the National Academy of Sciences of the United States of America*
Boeynaems, S., Holehouse, A. S., Weinhardt, V., Kovacs, D., Van Lindt, J., Larabell, C., Van Den Bosch, L., Das, R., Tompa, P. S., Pappu, R. V., Gitler, A. D.
2019; 116 (16): 7889–98
 - **Axons Gonna Ride 'til They Can't No More.** *Neuron*
Boeynaems, S. n., Gitler, A. D.
2019; 104 (2): 179–81
 - **C9orf72-generated poly-GR and poly-PR do not directly interfere with nucleocytoplasmic transport.** *Scientific reports*
Vanneste, J. n., Vercruyse, T. n., Boeynaems, S. n., Sicart, A. n., Van Damme, P. n., Daelemans, D. n., Van Den Bosch, L. n.
2019; 9 (1): 15728
 - **Pour Some Sugar on TDP(-43).** *Molecular cell*
Boeynaems, S., Gitler, A. D.
2018; 71 (5): 649–51
 - **Pour Some Sugar on TDP(-43) MOLECULAR CELL**
Boeynaems, S., Gitler, A. D.
2018; 71 (5): 649–51
 - **Molecular Dissection of FUS Points at Synergistic Effect of Low-Complexity Domains in Toxicity** *CELL REPORTS*
Bogaert, E., Boeynaems, S., Kato, M., Guo, L., Caulfield, T. R., Steyaert, J., Scheveneels, W., Wilmans, N., Haeck, W., Hersmus, N., Schymkowitz, J., Rousseau, F., Shorter, et al
2018; 24 (3): 529+
 - **Protein Phase Separation: A New Phase in Cell Biology** *TRENDS IN CELL BIOLOGY*
Boeynaems, S., Alberti, S., Fawzi, N. L., Mittag, T., Polymenidou, M., Rousseau, F., Schymkowitz, J., Shorter, J., Wolozin, B., Van den Bosch, L., Tompa, P., Fuxreiter, M.
2018; 28 (6): 420–35
 - **Phosphorylation Leads the Way for Protein Aggregate Disassembly** *DEVELOPMENTAL CELL*
Boeynaems, S., Gitler, A. D.
2018; 45 (3): 279–81
 - **A zebrafish model for C9orf72 ALS reveals RNA toxicity as a pathogenic mechanism** *ACTA NEUROPATHOLOGICA*
Swinnen, B., Bento-Abreu, A., Gendron, T. F., Boeynaems, S., Bogaert, E., Nuyts, R., Timmers, M., Scheveneels, W., Hersmus, N., Wang, J., Mizielinska, S., Isaacs, A. M., Petrucelli, et al
2018; 135 (3): 427–43
 - **ANTERIOR INTEROSSEOUS MONONEUROPATHY ASSOCIATED WITH HEV INFECTION** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION*
Swinnen, B., Boeynaems, S., Schrooten, M., Saegeman, V., Claeys, K. G., Van Damme, P.
2018; 5 (2): e429
 - **Phasing in on the cell cycle** *CELL DIVISION*
Boeynaems, S., Tompa, P., Van den Bosch, L.
2018; 13: 1
 - **Arginine-rich Peptides Can Actively Mediate Liquid-liquid Phase Separation** *BIO-PROTOCOL*
Boeynaems, S., De Decker, M., Tompa, P., Van Den Bosch, L.
2017; 7 (17)
 - **Phase Separation of C9orf72 Dipeptide Repeats Perturbs Stress Granule Dynamics** *MOLECULAR CELL*
Boeynaems, S., Bogaert, E., Kovacs, D., Konijnenberg, A., Timmerman, E., Volkov, A., Guharoy, M., De Decker, M., Jaspers, T., Ryan, V. H., Janke, A. M., Baatsen, P., Vercruyse, et al
2017; 65 (6): 1044+

- **Inside out: the role of nucleocytoplasmic transport in ALS and FTLD** *ACTA NEUROPATHOLOGICA*
Boeynaems, S., Bogaert, E., Van Damme, P., Van Den Bosch, L.
2016; 132 (2): 159–73
- **Drosophila screen connects nuclear transport genes to DPR pathology in c9ALS/FTD** *SCIENTIFIC REPORTS*
Boeynaems, S., Bogaert, E., Michiels, E., Gijselinck, I., Sieben, A., Jovicic, A., De Baets, G., Scheveneels, W., Steyaert, J., Cuijt, I., Verstrepen, K. J., Callaerts, P., Rousseau, et al
2016; 6
- **Drosophila screen connects nuclear transport genes to DPR pathology in c9ALS/FTD.** *Scientific reports*
Boeynaems, S., Bogaert, E., Michiels, E., Gijselinck, I., Sieben, A., Jovicic, A., De Baets, G., Scheveneels, W., Steyaert, J., Cuijt, I., Verstrepen, K. J., Callaerts, P., Rousseau, et al
2016; 6: 20877-?
- **Modifiers of C9orf72 dipeptide repeat toxicity connect nucleocytoplasmic transport defects to FTD/ALS** *NATURE NEUROSCIENCE*
Jovicic, A., Mertens, J., Boeynaems, S., Bogaert, E., Chai, N., Yamada, S. B., Paul, J. W., Sun, S., Herdy, J. R., Bieri, G., Kramer, N. J., Gage, F. H., Van Den Bosch, et al
2015; 18 (9): 1226-?
- **Modifiers of C9orf72 dipeptide repeat toxicity connect nucleocytoplasmic transport defects to FTD/ALS.** *Nature neuroscience*
Jovicic, A., Mertens, J., Boeynaems, S., Bogaert, E., Chai, N., Yamada, S. B., Paul, J. W., Sun, S., Herdy, J. R., Bieri, G., Kramer, N. J., Gage, F. H., Van Den Bosch, et al
2015; 18 (9): 1226-1229
- **Variable Glutamine-Rich Repeats Modulate Transcription Factor Activity** *MOLECULAR CELL*
Gemayel, R., Chavali, S., Pougach, K., Legendre, M., Zhu, B., Boeynaems, S., van der Zande, E., Gevaert, K., Rousseau, F., Schymkowitz, J., Babu, M., Verstrepen, K. J.
2015; 59 (4): 615–27