

## David Vilchez

### Personal Data

Title	Prof. Dr.
First name	David
Name	Vilchez
Current position	Professor, permanent
Current institution(s)/site(s), country	Institute for Integrated Stress Response Signaling / CECAD Faculty of Medicine, University of Cologne, Germany
Identifiers/ORCID	0000-0002-0801-0743

### Qualifications and Career

Stages	Periods and Details
Doctorate	2003–2008, Prof. Joan Guinovart, Institute for Research in Biomedicine (IRB Barcelona), University of Barcelona, Spain
Research Proficiency (equivalent to Master of Science)	Biochemistry and Molecular Biology, 2003–2005, University of Barcelona, Spain
Research Collaborator	2002, Prof. Coral Sanfeliu, IDIBAPS-CSIC, Barcelona, Spain
Bachelor	Biology, 1996–2001, University of Barcelona, Spain

### Stages of Academic/Professional Career

Associate Professor (W2)	2021–present, University of Cologne, Germany
Research Group Leader	2014–2021, Institute for Genetics/CECAD, University of Cologne, Germany
Associate Specialist	2012–2013, Prof. Andrew Dillin, Li Ka Shing Center/Department of Molecular and Cell Biology, University of California, Berkeley, CA, USA
Postdoctoral Fellow	2009–2012, Prof. Andrew Dillin, Molecular and Cell Biology Laboratory, The Salk Institute for Biological Research, San Diego, CA, USA

### Activities in the Research System

#### Institutional Responsibilities (selected)

2023–present	Vice Spokesperson and Spokesperson (since 2024), RU 5762 Initiative (DFG) “Cell non-autonomous regulation of organismal proteostasis”, University of Cologne, Germany
2023–present	Coordinator, Research Area 1 “Cell Autonomous Control of Homeostatic Mechanisms and Cellular Stress Responses in Aging and Aging-associated Diseases”, Cologne Excellence Cluster EXC 2030 (DFG) “Cellular Stress Responses in Aging-associated Diseases” (CECAD), Cologne, Germany
2020–present	Steering Committee Member, Cologne Graduate School of Ageing Research (CGA), CECAD / MPI AGE, Cologne, Germany
2018–present	Member, CECAD Proteomics Facility User Board, University of Cologne, Germany

2016 Organization Committee Member, 2<sup>nd</sup> Cologne Ageing Conference, Cologne, Germany

#### Service to the Scientific Community (selected)

2018 Expert Review Panel Member, “La Caixa” Foundation Health Research Call, Barcelona, Spain

2015–present Scientific Evaluation Member, German-Israeli Foundation for Scientific Research and Development, Germany and Israel

2014–present Scientific Evaluation Member, National Science Foundation, USA

2014–present Scientific Evaluation Member, Agencia Nacional de Evaluacion y Prospectiva (ANEP), Ministerio de Economía y Competitividad, Spain

2014–present Editorial Board Member, Frontiers in Molecular Biosciences (Frontiers in Protein Folding, Misfolding and Degradation section), Switzerland

### Scientific Results

#### Category A

Lee, H.J., Alirzayeva, H., Koyuncu, S., Khodakarami, A., Noormohammadi, A., and **Vilchez, D.** (2023). Cold temperature extends longevity and prevents disease-related protein aggregation through PA28 $\gamma$ -induced proteasomes. **Nat Aging** 3:545–566. doi: 10.1038/s43587-023-00383-4. (open access)

Llamas, E., Koyuncu, S., Lee, H.J., Wehrmann, M., Gutierrez-Garcia, R., Dunken, N., Charura, N., Torres-Montilla, S., Schlimgen, E., Mandel, A.M., Boelen-Theile, E., Grossbach, J., Wagle, P., Schermer, B., Benzing, T., Beyer, A., Pulido, P., Rodriguez-Concepcion, M., Zuccaro, A., and **Vilchez, D.** (2023). In planta expression of human polyQ-expanded huntingtin fragment reveals mechanisms to prevent disease-related protein aggregation. **Nat Aging** 3:1345–1357. doi: 10.1038/s43587-023-00502-1. (open access)

Calculli, G., Lee, H.J., Shen, K., Pham, U., Herholz, M., Trifunovic, A., Dillin, A., and **Vilchez, D.** (2021). Systemic regulation of mitochondria by germline proteostasis prevents protein aggregation in the soma of *C. elegans*. **Sci Adv** 7:eabg3012. doi: 10.1126/sciadv.abg3012. (open access)

Koyuncu, S., Loureiro, R., Lee, H.J., Wagle, P., Krüger, M., and **Vilchez, D.** (2021). Rewiring of the ubiquitinated proteome determines ageing in *C. elegans*. **Nature** 596:285–290. doi: 10.1038/s41586-021-03781-z. (open access)

Lee, H.J., Noormohammadi, A., Koyuncu, S., Calculli, G., Simic, M.S., Herholz, M., Trifunovic, A., and **Vilchez, D.** (2019). Prostaglandin signals from adult germline stem cells delay somatic ageing of *Caenorhabditis elegans*. **Nat Metab** 1:790–810. doi: 10.1038/s42255-019-0097-9. (open access)

Koyuncu, S.\*, Saez, I.\*, Lee, H.J., Gutierrez-Garcia, R., Pokrzywa, W., Fatima, A., Hoppe, T., and **Vilchez, D.** (2018). The ubiquitin ligase UBR5 suppresses proteostasis collapse in immortal pluripotent stem cells from Huntington’s disease patients. **Nat Commun** 9:2886. doi: 10.1038/s41467-018-05320-3. (open access)

Lee, H.J., Bartsch, D., Xiao, C., Guerrero, S., Ahuja, G., Schindler, C., Moresco, J.M., Yates III, J.R., Gebauer, F., Bazzi, H., Dieterich, C., Kurian, L., and **Vilchez, D.** (2017). A post-transcriptional program coordinated by CSDE1 prevents intrinsic neural differentiation of human embryonic stem cells. **Nat Commun** 8:1456. doi: 10.1038/s41467-017-01744-5. (open access)

Noormohammadi, A.\*, Khodakarami, A.\*, Gutierrez-Garcia, R., Lee H.J., Koyuncu, S., König, T., Schindler, C., Saez, I., Fatima, A., Dieterich, C., and **Vilchez, D.** (2016). Somatic increase of CCT8 mimics proteostasis of human pluripotent stem cells and extends *C. elegans* lifespan. **Nat Commun** 28:13649. doi: 10.1038/ncomms13649. (open access)

**Vilchez, D.**, Boyer, L., Morantte, I., Lutz, M., Merkwirth, C., Joyce, D., Spencer, B., Page, L., Masliah, E., Gage, F.H., and Dillin, A. (2012). Increased proteasome activity in human embryonic stem cells is regulated by PSMD11. *Nature* 489:304–308. doi: 10.1038/nature11468. (open access)

**Vilchez, D.**, Morantte, I., Liu, Z., Douglas, P.M., Merkwirth, C., Rodrigues, A.P., Manning, G., and Dillin, A. (2012). RPN-6 determines *C. elegans* longevity under proteotoxic stress conditions. *Nature* 489:263–268. doi: 10.1038/nature11315. (open access)

\* shared first authorship, # shared corresponding authorship

## Category B

### *Preprints, Reviews, and Commentaries (Non-peer-reviewed, selected)*

Charura, N.M., Llamas, E., De Quattro, C., **Vilchez, D.**, Nowack, M.K., and Zuccaro, A. (2024). Root cap cell corpse clearance limits microbial colonization in *Arabidopsis thaliana*. *bioRxiv*. doi: 10.1101/2023.02.03.526420.

Hermeling, J., Pavlenko, V., Herholz, M., Baumaann, L., Zecic, A., Kukat, A., Popovic, M., Szczepanowska, K., Cepeda Cores, E., **Vilchez, D.**, Kurian, L., and Trifunovic, A. (2023). SPTF-3/SP1 orchestrates mitochondrial biogenesis upon ribosomal stress and acute starvation. *bioRxiv*. doi: 10.1101/2023.08.18.553493.

Llamas, E., Koyuncu, S., Lee, H.J., Gutierrez-Garcia, R., Dunken, N., Charura, N., Torres-Montilla, S., Schlimgen, E., Pulido, P., Rodriguez-Concepcion, M., Zuccaro, A., and **Vilchez, D.** (2022). Chloroplast protein import regulates plant proteostasis and retrograde signaling. *bioRxiv*. doi: 10.1101/2022.03.19.484971.

### *Books and Book Chapters*

**Vilchez, D.**, Rodríguez de Córdoba, S. and Guinovart, J.J. (2009). Enfermedad de Lafora: epilepsia y regulación del metabolismo del glucógeno por laforina y malina in *Avances en Neurociencia: Neurotransmisores y Patologías Nerviosas* (Monografías de la Real Academia de Farmacia, Monografía XXV: 315–343, Real Academia Nacional de Farmacia, Madrid

### *Patents*

Inventors: Llamas, E., Zuccaro, A., and **Vilchez, D** (University of Cologne, Germany)

No.: US 63/447,903 (2023)

Title: Plantman: The plant-derived synthetic SPP protein as a treatment against Huntington's disease and other neurodegenerative disorders that involve protein aggregation to extend human healthy aging

Inventors: **Vilchez, D.** and Dillin, A. (Salk Institute for Biological Studies, La Jolla, CA, USA)

No.: US 2013/0065834 A1 (2013)

Title: Modulators of proteasome activity

### Academic Distinctions

2023, 2021	Longevity Impetus Grants
2016	IRB Alumni Excellence Award, Barcelona, Spain
2015	ERC Starting Grant
2014	Marie Curie Career Integration Grant, EU
2013	Ranked as number 1 in Ramon y Cajal grant in Life Sciences by the Ministerio de Economía y Competividad, Spain
2010	Postdoctoral Scholar Award, F.M. Kirby Foundation Inc., USA



- 2008                    Josep Trueta Award for the best research, L'Acadèmia de Ciències  
Mèdiques i de la Salut de Catalunya i de Balears, Spain
- 2008                    Award for Young Scientists "Promega Biotech Ibèrica", Spanish Society of  
Biochemistry and Molecular Biology (SEBBM), Spain