

Fecha del CVA

01/08/2025

Parte A. DATOS PERSONALES

Nombre	Peter		
Apellidos	Askjaer		
Sexo (*)	Hombre	Fecha de nacimiento (dd/mm/yyyy)	
DNI, NIE, pasaporte			
Dirección email		URL Web	
Open Researcher and Contributor ID (ORCID) (*)			

* *datos obligatorios*

A.1. Situación profesional actual

Puesto	Investigador Principal (Investigador Científico CSIC) Director CABD		
Fecha inicio	02/2007 (Inv. Científico 02/2021; Director CABD 06/2023)		
Organismo/ Institución	Consejo Superior de Investigaciones Científicas		
Departamento/ Centro	Centro Andaluz de Biología del Desarrollo (CABD)		
País	España	Teléfono	
Palabras clave	Biología Celular; Biología del Desarrollo; Biomedicina,		

A.2. Situación profesional anterior (incluye interrupciones en la carrera investigadora, de acuerdo con lo indicado en la convocatoria, indicar meses totales)

Periodo	Puesto/ Institución/ País / Motivo interrupción
2004-2007	Ramón y Cajal, IRB Barcelona, España
2000-2004	Postdoc, EMBL, Heidelberg, Alemania

A.3. Formación Académica

Grado/Master/Tesis	Universidad/País	Año
Doctor of Natural Sciences	Universidad de Aarhus, Dinamarca	2000
Master of Science	Universidad de Aarhus, Dinamarca	1997
Bachelor of Science	Universidad de Aarhus, Dinamarca	1995

A.4. Evaluaciones favorables

SEXENIOS: 1998-2003, 2004-2009, 2010-2015, 2016-2021

QUINQUENIOS: 2000-2004, 2005-2009, 2010-2014, 2015-2019, 1998-1999+2020-2022

Trayectoria Investigadora Destacada Programa I3: 23/10/2008 (ver CV completo)

Parte B. RESUMEN DEL CV (máx. 5.000 caracteres, incluyendo espacios):

During my PhD studies in Denmark (1996-2000) and postdoctoral training in Germany (2000-2004), I used a combination of biochemical and microscopy-based methods to characterize **nuclear export of RNA and protein** molecules as well as formation of nuclear pore complexes. Also, I demonstrated for the first time in living cells the function of the GTPase Ran in mitosis.

As independent Ramón y Cajal researcher in Barcelona (2004-2008) and since 2008 as CSIC Faculty in Seville ("Científico Titular" 2008-2021; "Investigador Científico" 2021-), I have focused on the **biogenesis and function of the nuclear envelope (NE)**, which consists of nuclear pore complexes, the nuclear lamina and the outer and inner nuclear membranes. My group has identified multiple nuclear pore proteins (nucleoporins) as regulators of NE formation and we have linked several nucleoporins to the mitotic spindle apparatus, including a physical interaction with spindle assembly checkpoint protein MAD1. Searching for proteins involved in NE breakdown, we also identified the protein kinase VRK1 as an essential regulator of NE dynamics and demonstrated that it controls interactions between chromatin and the NE.

It is becoming increasingly clear that proper gene expression in many circumstances correlates with **positioning of chromatin within the nucleus**. In particular, interactions between chromatin and proteins at the NE is important for correct chromatin organization and gene transcription in a tissue-specific manner. For instance, we identified two histone H3 lysine 9 (H3K9) methyl transferases as being responsible for recruitment of heterochromatin to the nuclear periphery in embryonic cells, whereas a H3K36-binding protein is required in differentiated cells. Moreover, we found that the NE proteins emerlin is specifically involved in both chromatin organization and regulation of neuromuscular junction activity, which may contribute to Emery-Dreifuss muscular dystrophy in humans.

Finally, we are interested in understanding the links between **nuclear organization and aging**. We have described how nuclear morphology becomes highly irregular in old *C. elegans* adults, which is reminiscent of the changes observed in humans suffering from particular progeria syndromes. We are currently investigating to which degree these changes correlate with alterations in chromatin structure and gene expression.

My research activities are documented by **63 peer-reviewed manuscripts** (see below), of which 69% are in top 25% most-cited journals (Q1; 45% in D1 journals). These publications have received 3234 citations (Scopus; h-index 28), reflecting their high impact among colleagues. The quality and continuity of my research activity have also been evaluated positively by the CNEAI (**4 consecutive “Sexenios”** 1998-2021). Moreover, I am frequently invited to present our research at other institutes and group members regularly present their projects at international meetings. I have been successful in securing continuous **funding as PI** from the Spanish government (“Plan Nacional”) since 2004 as well as multiple grants from the Andalusian regional government and other sources.

Members of my group and myself participate in numerous **dissemination activities**, science fairs, podcasts, social media, etc. During the years 2012-2015 I was responsible for science dissemination activities at the CABD: coordination of visits of high schools and institutes, participation of the CABD in external events, communication with newspapers, etc.

I have extensive **training experience** since establishing my group: 5 postdocs (1 is now independent PI), 9 PhD students (8 graduated with maximum grade; 1 ongoing), 9 Master students, 35 BSc students and 13 technician students. The constant incorporation on new people in the lab ensures a dynamic environment where experienced researchers also participate in and gain from training of younger researchers. I use my expertise as reviewer for national and foreign research agencies, a significant number of international journals and as editor. I serve as **Scientific Supervisor** of the CABD Bioinformatics Unit since January 2022. I was CABD Vice Director from June 2022 until I started as **CABD Director** in June 2023.

Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES.

C.1. 10 publicaciones recientes y más importantes en revistas con “peer review”.

(lista completa: <https://orcid.org/0000-0003-3192-4428>).

63. Breusegem SY, Houghton J, Romero-Bueno R, Fragoso-Luna A, Kentistou KA, Ong KK, Janssen AFJ, Bright NA, Riedel CG, Perry JRB, Askjaer P, Larrieu D. (2025). A multiparametric anti-aging CRISPR screen uncovers a role for BAF in protein synthesis regulation. *Nat Commun.* 16:1681. doi: 10.1038/s41467-025-56916-5.

61. Romero-Bueno R, Fragoso-Luna A, Ayuso C, Kavsek A, Riedel CG, Ward JD, Askjaer P. (2024). A human progeria-associated BAF-1 mutation modulates gene expression and accelerates aging in *C. elegans*. *EMBO J.* 43:5718-5746. doi: 10.1038/s44318-024-00261-8.

60. Nkoula SN, Velez-Aguilera G, Ossareh-Nazari B, Van Hove L, Ayuso C, Legros V, Chevreux G, Thomas L, Seydoux G, Askjaer P, Pintard L. (2023). Mechanisms of Nuclear Pore Complex disassembly by the mitotic Polo-Like Kinase 1 (PLK-1) in *C. elegans* embryos. *Sci Adv.* 9(29):eadf7826. doi: 10.1126/sciadv.adf7826.

59. Cruz Ruiz P, Rodríguez-Palero MJ, Askjaer P[§], Artal-Sanz M[§]. (2023). Tissue-specific chromatin binding patterns of *C. elegans* heterochromatin proteins HPL-1 and HPL-2 reveal differential roles in the regulation of gene expression. *Genetics, iyad081*, doi: 10.1093/genetics/iyad081 ([§]corresponding authors).

57. Thomas L, Ismail BT, Askjaer P, Seydoux G. (2023). Nucleoporin foci are stress-sensitive condensates dispensable for *C. elegans* nuclear pore assembly. *EMBO J.* **42**(13):e112987. doi: 10.15252/embj.2022112987.
56. Fragoso-Luna A, Askjaer P. (2023). The nuclear envelope in ageing and progeria. In *Biochemistry and Cell Biology of Ageing: Part III, Biomedical Science*, edited by Harris JR & Korolchuk VI. *Subcell Biochem.* **102**:53-75. doi: 10.1007/978-3-031-21410-3_3
55. Fragoso-Luna A, Romero-Bueno R, Eibl M, Ayuso C, Muñoz-Jiménez C, Benes V, Cases I, Askjaer P. (2023). Expanded FLP toolbox for spatiotemporal protein degradation and transcriptomic profiling in *C. elegans*. *Genetics* **223**:iyac166. doi: 10.1093/genetics/iyac166.
52. Askjaer P[§], Harr JC[§]. (2021). Genetic approaches to discerning nuclear architecture. *Curr Opin Genet Dev.* **67**:52-60. doi: 10.1016/j.gde.2020.11.001. (§corresponding authors).
50. Harr JC, Schmid CD, Muñoz-Jiménez CM, Romero-Bueno R, Kalck V, Gonzalez-Sandoval A, Hauer MH, Padeken J, Askjaer P, Mattout A, Gasser SM. (2020). Loss of a heterochromatin anchor rescues altered genome organization and muscle defects of an Emery Dreifuss Muscular Dystrophy-linked mutation in lamin. *Genes Dev.* **34**:560-579. doi: 10.1101/gad.332213.119.
47. Cabianca DS, Muñoz-Jiménez CM, Kalck V, Gaidatzis D, Padeken J, Seeber A, Askjaer P, Gasser SM. (2019). Active chromatin marks drive spatial sequestration of heterochromatin in differentiated cells. *Nature.* **569**:734-739. doi: 10.1038/s41586-019-1243-y.

C.2.1 Conferencias invitadas (últimos 7 años)

- “The nuclear envelope in development and disease”, 1st CRESCO Conference, Oslo, Norway. Host Dr. Arne Klungland. Sept 2023
- “*C. elegans* as model to study nuclear envelope dynamics”, 24th International *C. elegans* Conference, Glasgow, Scotland. Host Genetics Society of America. June 2023
- “The nuclear lamina in health and disease”, University of Zurich, Switzerland. Host Dr. Alex Hajnal. June 2022.
- “The nuclear lamina in health and disease”, IRB, Barcelona, Spain. Host Dr. Ferran Azorin. Oct. 2021.
- “Principles and consequences of spatial organisation of the genome”, CABIMER, Seville, Spain. Host Dr. Cristina González Aguilera. July 2021.
- “Principles and consequences of spatial organisation of the genome”, SMU Biological Sciences, Dallas, USA. Host Dr. Adam Norris. April 2021.
- “The nuclear envelope in gene expression and genome organisation”. The Joint Meeting of SPBD, SEBD and SFB. Porto, Portugal. Hosts Dr. Miguel Manzanares and Dr. Victor Borrell. Nov. 2018.
- “The nuclear envelope in gene expression and genome organisation”. EMBL Alumni Meeting. CBM-SO, Madrid, Spain. Host Dr. Jose M. Almendral. Oct. 2018.
- “Nuclear Organisation and Chromatin in *C. elegans*”. The Friedrich Miescher Institute (FMI), Basel, Switzerland. Host Dr. Susan Gasser. Sept. 2018.
- “The function of nuclear pore proteins in nuclear assembly and chromatin organisation”. Wellcome Centre for Cell Biology, Edinburgh, Scotland. Host Dr. Eric Schirmer. May 2018.
- “Nuclear envelope proteins as regulators of chromatin organisation and gene expression”. University of Zurich, Switzerland. Host Dr. Alex Hajnal. March 2018.

C.2.2 Congresos, (últimos 3 años).

- “European Worm Meeting”. 1 poster and 1 oral presentation from my group. Utrecht, The Netherlands. July 2024.
- “24th International *C. elegans* Conference”, Glasgow, Scotland. 3 presentations from my group (2 oral; 1 poster). June 2023.

“4th International Meeting on Laminopathies”, Madrid, Spain. 1 oral presentation from my group. May 2023.

“Cell Symposia: Multifaceted Mitochondria”, Seville, Spain. 1 poster presentation from my group. Nov 2022.

“VIII Spanish Worm Meeting”, Logroño, Spain. 2 oral presentations from my group. Oct 2022.

“19th International Congress of Developmental Biology”. 2 poster presentations from my group. Algarve, Portugal. October 2022.

C.3. Proyectos o líneas de investigación en los que ha participado (últimos 6 años).

‘Pathological links from the nuclear envelope to the cytoplasm’. 3-year research grant from the Spanish State Agency of Research; 218,750€ (PID2022-137162NB-I00). PI: Peter Askjaer. 01/09/2023-31/08/2026.

‘The role of chromatin regulation in mitochondrial stress response and longevity’. 2-year research grant from the Regional Government ‘Junta de Andalucía’; 80,000€ (P20_00873). PI: Marta Artal. Role: co-PI. 01/06/2021-31/12/2022.

‘The role of nuclear organisation in progeria’. 3-year research grant from the Spanish Ministry of Science and Innovation; 193,600€ (PID2019-105069GB-I0). PI: Peter Askjaer. 01/06/2020-30/06/2023.

‘Characterization of emerin in nuclear organization and neuromuscular junction activity’. Ayudas extraordinarias del CSIC; 25,621.69€ (2019AEP142). PI: Peter Askjaer. 01-06/2020.

‘Acquisition of scientific infrastructure for the Functional Genomics Facility of the Andalusian Center for Developmental Biology’. Equipment grant from the Spanish Ministry of Science, Innovation and Universities and FEDER; 103,156.39€ (EQC2018-004337-P). PI: Peter Askjaer. 01/10/2018-31/12/2019.

‘Implementation of Advanced Microscope Technologies in the CABD’. Equipment grant from the Spanish Ministry of Economy and Competitiveness and FEDER; 115,179.40€ (UNPO15-CE-3235). PI: Peter Askjaer. 01/12/2016-31/12/2018.

‘Characterization of emerin in nuclear organization and neuromuscular junction activity’. 3-year research grant from the Spanish Ministry of Economy and Competitiveness; 254,100€ + 1 PhD fellowship (BFU2016-79313-P). PI: Peter Askjaer. 30/12/2016-29/12/2019.

‘GENiE – collaborative European network of *C. elegans* early-stage researchers and young principal investigators’ European Commission COST Program; ~100.000€/year (BM1408). PI: Sophie Jarriault. 05/2015-04/2019. Role: Management Committee member.

C.4. Participación en actividades de transferencia de tecnología/conocimiento (últimos 8 años).

Section Editor at Cells: an open access journal indexed in PubMed and JCR in the category ‘Cell Biology’. 2018-present

Associate Editor at Frontiers in Cell and Developmental Biology; an open access journal indexed in PubMed and JCR in the categories ‘Cell Biology’ and ‘Developmental Biology’. 2021-present.

Co-organiser for the “CABD 20th Anniversary Meeting”, Seville, Spain. June 2023.

Co-organiser for the “EMBL in Spain 2022” meeting, Seville, Spain. November 2022.

Co-organiser for the “Spatiotemporal control of gene expression and protein levels” workshop at the 23rd International *C. elegans* Conference (virtual). June 2021.

Co-organizer for the María de Maeztu Unit of Excellence “Decisions in Cell Collectives” launching meeting, Carmona, Spain. April 2018.

Co-organizer for the “New Frontiers in the *C. elegans* nucleus” workshop at the 21st International *C. elegans* Conference, Los Angeles, USA. June 2017.