CV Date	04/12/2024

Part A. PERSONAL INFORMATION

First Name	Carlos Oscar		
Family Name	Sorzano Sánchez		
Sex	Male	Date of Birth	09/02/1973
ID number Social Security, Passport	25669302Z		
URL Web	http://i2pc.es/coss		
Email Address	coss@cnb.csic.es		
Open Researcher and Contributor ID (ORCID)	0000-0002-9473-283X		

A.1. Current position

Job Title	Investigador Científico		
Starting date	2022		
Institution	Consejo Superior de Investigaciones Científicas		
Department / Centre	Estructura de Macromoléculas / Centro Nacional de Biotecnología		
Country		Phone Number	
Keywords			

A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
2017 - 2022	Científico Titular / Consejo Superior de Investigaciones Científicas
2009 - 2017	Investigador Ramón y Cajal / Centro Nacional de Biotecnología
2008 - 2009	Investigador doctor / Centro Nacional de Biotecnología
2004 - 2009	Profesor adjunto / Universidad San Pablo CEU
2001 - 2004	Profesor colaborador / Universidad San Pablo CEU
2003 - 2004	Asistente de investigación / Swiss Federal Institute of Technology Lausanne (EPFL)
2002 - 2003	Becario postdoctoral / Centro Nacional de Biotecnología
1997 - 2002	Becario predoctoral / Centro Nacional de Biotecnología

A.3. Education

Degree/Master/PhD	University / Country	Year
Dr. Farmacia	Universidad San Pablo CEU	2015
Licenciado en Ciencias Matemáticas Especialidad Estadística e Investigación Operativa	Universidad Nacional de Educación a Distancia	2006
Dr. Ingeniería de telecomunicación	Universidad Politécnica de Madrid	2002
Ingeniero Técnico en Informática de Sistemas	Universidad de Málaga	2000
Ingeniero de Telecomunicación	Universidad de Málaga	1997
Graduado o Graduada en Farmacia	Universidad Complutense de Madrid	

Part B. CV SUMMARY

4 Sexenios de Investigación 1998-2021. Credited as Catedrático de Universidad since 2013. Co-founder of KineStat Pharma. Ranked as 1st of all electrical engineers entering in Málaga in the year 1991-1992. Head of the Bioengineering Laboratory between 2007-2008. IEEE Senior member since 2008. Member of the IEEE Bio Imaging and

Signal Processing Technical Committee (2013-2014, 2019-2021). Promoter of Biomedical Engineering in Univ. San Pablo - CEU in 2011. Associate editor of IEEE Signal Processing Magazine Life Science Column between 2011-2013. Associate editor of Biomedical Imaging from 2020. Profesor agregado since 2009. Credited as Profesor Titular de Universidad since 2009. Technical director of the INSTRUCT Image Processing Centre since 2010.
Member of the Ethical Committee for Animal Experimentation of the Natl. Centre of Biotechnology since 2011. Representative at the "Junta de Escuela" of the EPS-Univ. San Pablo between 2009 and 2010. Coordinator of the Signal and Communication Theory Area between 2004 and 2010. Secretary of the Department of Electronic and Telecommunication Systems between 2005 and 2008. Co-director of the Official Master in Computational Biology between 2007 and 2009. Director of the summerschool "Advanced Data Analysis and Modelling" (Escuela Politécnica Superior, Univ. San Pablo CEU) between 2006 and 2009. Recipient of the Ángel Herrera Research Prize for the academic year 2005/2006. Member of FELASA Working Group on Experimental Design in Education and Training

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

1 **Scientific paper**. F.P.; J.L.; J.M.; C.O.S.2024. A deep learning approach to the automatic detection of alignment errors in cryo-electron tomographic reconstructions. J. Structural Biology. 216, pp.108056.
2 **Scientific paper**. E.M.; P.; K.; et al; M.2024. Allosteric modulation of the CXCR4:CXCL12 axis by targeting receptor nanoclustering via the TMV-TMVI domain. eLife. 13, pp.RP93968.
3 **Scientific paper**. B.; E.; L.; et al; C.E.2024. B and T cell bi-cistronic multiepitopic vaccine induces broad immunogenicity and provides protection against SARS-CoV-2. Vaccines. 12, pp.1213.
4 **Scientific paper**. G.J.; P.D.; S.J.; et al; S.2024. Community recommendations on cryoEM data archiving and validation. IUCR J. 11, pp.1-12.
5 **Scientific paper**. L.; J.; L.; L.; D.; C.O.S.; F.2024. Discrimination of etiologically different cholestasis by machine learning-based modeling of proteomics datasets. Intl. J. Molecular Sciences. 25, pp.3684.
6 **Scientific paper**. L.; B.; M.; et al; C.E.2024. Heterologous mRNA/MVA delivering trimeric RBD as effective combined vaccination regimen against SARS-CoV-2: COVARNA Consortium. Emerging Microbes & Infections. 13, pp.2387906.
7 **Scientific paper**. L.; B.; S.; et al; C.E.2024. Modulating the Immune Response to SARS-CoV-2 by Different Nanocarriers Delivering a mRNA Expressing Trimeric RBD of the Spike Protein: COVARNA Consortium. NPJ Vaccines. 9, pp.53.
8 **Scientific paper**. C.O.S.; I.; A.2024. Statistical design for health monitoring in laboratory animal facilities using sentinel animals. Laboratory animals. 58, pp.345-353.
9 **Scientific paper**. E.; A.; S.; D.; C.B.; C.; C.O.S.; N.2024. Unlocking the puzzle: Non-defining mutations in SARS-CoV-2 proteome may affect vaccine effectiveness. Frontiers in Public Health. 12, pp.1386596.
10 **Scientific paper**. E.; M.; R.; D.; R.; J.M.; C.O.S.2023. A new algorithm to eliminate unwanted signals in single particle analysis. J. Structural Biology. 215, pp.108024.
11 **Scientific paper**. M.; B.; R.; et al; S.2023. An MVA-based vector expressing-free-ISG15 increase IFN-I and improves HIV-1-specific CD8+ T cell immune response. Frontiers in Cellular and Infection Microbiology. 13, pp.1187193.
12 **Scientific paper**. A; C.O.S.; P.; M.; N.E.; X.P.2023. Cryo-EM structure of Shiga toxin 2 in complex with the native ribosomal P-stalk reveals residues involved in the binding interaction. J. Biological Chemistry. 299, pp.102795.

13 **Scientific paper**. D.; R.R.; J.; et al; C.O.S.2023. Estimating conformational landscapes from CryoEM particles by 3D Zernike polynomials. Nature Communications. 14, pp.154.
14 **Scientific paper**. B.; R.; P.; et al; M.2023. Growth hormone remodels the 3D-structure of the mitochondria of inflammatory macrophages and promotes metabolic reprogramming. Frontiers in Immunology. 14, pp.1200259.
15 **Scientific paper**. B.; L.; M.; et al; C.E.2023. Immunogenicity and efficacy of a novel multi-patch SARS-CoV-2/COVID-19 vaccine candidate. Frontiers in Immunology. 14, pp.1160065.
16 **Scientific paper**. E.; J.M.; C.O.S.2023. Local defocus estimation in Single Particle Analysis in Cryo-Electron Microscopy. J. Structural Biology. 215, pp.108030.
17 **Scientific paper**. D.; D.; J.M.; C.O.S.2023. Performance and quality comparison of movie alignment software for Cryo-EM. Micromachines. 14, pp.1835.
18 **Scientific paper**. B.; A.; C.E.; et al; R.2023. Potency and durability of T and B cell immune responses after homologous and heterologous vector delivery of a trimer-stabilized, membrane-displayed HIV-1 clade ConC Env protein. Frontiers in Immunology. 14, pp.1270908.
19 **Scientific paper**. A.G.; L.; C.; C.O.S.; J.2023. Quantitative characterisation of membrane-protein reversible association using FCS. Biophysical J.122, pp.1-16.
20 **Scientific paper**. A.; P.; A.; J.A.; C.O.2023. Real-Time Correction of Chromatic Aberration in Optical Fluorescence Microscopy. Methods and Applications in Fluorescence. 11, pp.045001.
21 **Scientific paper**. D.; J.; Y.; et al; C.O.S.2023. Scipion Flexibility Hub: An integrative framework for advanced conformational heterogeneity analysis in CryoEM. Acta Crystallographica D. 79, pp.569-584.
22 **Scientific paper**. D.; A.; E.; N.; C.O.S.2023. Scipion-chem: an open platform for Virtual Drug Screening. J. Chemical Information and Modelling. 63, pp.7873-7885.
23 **Scientific paper**. P.; A.; A.; et al; C.O.S.2023. Scipion3: a workflow engine for cryoelectron microscopy image processing and structural biology. Biological Imaging. 3, pp.e13.
24 **Scientific paper**. A.; E.; J.A.; S.R.; J.M.; M.; C.O.S.2023. TrackAnalyzer: A Toolbox for a holistic analysis of Single-Particle Tracks. Biological Imaging. 3, pp.e18.
25 **Scientific paper**. D.; J.; E.; J.; J.M.; C.O.S.2023. ZART: A novel multiresolution reconstruction algorithm with motion-blur correction for single particle analysis.J. Molecular Biology. 435, pp.168088.
26 **Scientific paper**. M.; S.; D.; et al; S.2022. PDBe-KB: collaboratively defining the biological context of structural data. Nucleic Acids Research. 50, pp.gkab988.
27 **Scientific paper**. C.O.S.; M.A.; J.L.2022. An analytical solution for saturable absorption in pharmacokinetics models. Pharmaceutical Research. pp.s11095-022-03455-z.
28 **Scientific paper**. J.; A.; C.O.S.2022. Automatic determination of the handedness of Single-Particle maps of macromolecules solved by CryoEM. J. Structural Biology. 214, pp.107915.
29 **Scientific paper**. R.; J.R.; C.O.S.; J.M.; J.2022. BIPSPI+: Mining type-specific datasets of protein complexes to improve protein binding site prediction. J. Molecular Biology. 434, pp.167556.
30 **Scientific paper**. A.; J.M.; A.M.; C.O.S.2022. Cell-TypeAnalyzer: A flexible Fiji/ImageJ plugin to classify cells according to user-defined criteria. Biological Imaging. 2, pp.e5.
31 **Scientific paper**. C.O.S.; J.M.2022. Cryo-Electron Microscopy: the field of 1,000+ methods. J. Structural Biology. 214, pp.107861.
32 **Scientific paper**. J.L.; J.M.; C.O.S.2022. Emerging themes in cryoEM-SPA Image processing. Chemical reviews. 122, pp.13915-13951.
33 **Scientific paper**. E.; J.M.; C.O.S.2022. Higher resolution in CryoEM by the combination of macromolecular prior knowledge and image processing tools. IUCR J. 9, pp.632-638.
34 **Scientific paper**. C.O.S.; J.L.; E.; et al; J.M.2022. Image processing tools for the validation of CryoEM maps. Faraday Discussions. 240, pp.210-227.
35 **Scientific paper**. M.A.; I.; A.; et al; C.2022. New insights into the role of endosomal proteins for African swine fever virus infection. PLOS Pathogens. 18, pp.e1009784.

36 **Scientific paper**. C.O.S.; A.; D.; et al; J.M.2022. On bias, variance, overfitting, gold standard and consensus in Single Particle Analysis by Cryo-electron microscopy. Acta Crystallographica Section D. D78, pp.410-423.

37 **Scientific paper**. J.; C.O.S.; J.M.; I.2022. Protein Dynamics Developments for Large Scale and CryoEM: Case Study of ProDy 2.0. Acta Crystallographica Section D. D78, pp.S2059798322001966.

38 **Scientific paper**. J.; P.; Y.; et al; J.M.2022. ScipionTomo: towards cryo-electron tomography software integration, reproducibility, and validation. J. Structural Biology. 214, pp.107872.

39 **Scientific paper**. T; A.J.; J.; et al; C.S.2022. Smart Data Collection for CryoEM. J. Structural Biology. 214, pp.107913.

40 **Scientific paper**. T.; M.; C.P.; et al; C.2022. The structural role of SARS-CoV-2 genetic background in the emergence and success of spike mutations: the case of S:A222V. PLOS Pathogens. 18, pp.e1010631.

C.3. Research projects and contracts

1 **Project**. iNext Discovery. Jose Maria Carazo. (Consejo Superior de Investigaciones Científicas). 01/02/2020-31/01/2024. 9.987.744 €.

2 **Project**. AIM CryoEM: Procesamiento de imagen avanzado orientado al análisis de partículas individuales en microscopía electrónica en condiciones criogénicas. (Consejo Superior de Investigaciones Científicas). 01/06/2020-31/05/2023. 260.000 €.

3 **Contract**. Towards enhancing throughput in streaming cryo E/ectron Microscopy Image Processing Gandeeva Therapeutics. 13/01/2022-13/01/2023. 128.000 €.

4 **Contract**. Image processing challenges and advanced light microscopy Benevolent AI. 22/04/2021-22/04/2022.