

<b>CV Date</b>	12/01/2023
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## 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		
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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.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. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- 1 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.
- 2 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.
- 3 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.
- 4 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.
- 5 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.
- 6 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.
- 7 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.
- 8 Scientific paper.** C.O.S.; J.M.2022. Cryo-Electron Microscopy: the field of 1,000+ methods J. Structural Biology. 214, pp.107861.
- 9 Scientific paper.** J.L.; J.M.; C.O.S.2022. Emerging themes in cryoEM-SPA Image processing Chemical reviews. 122, pp.13915-13951.
- 10 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.
- 11 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.
- 12 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.
- 13 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.
- 14 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.
- 15 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.
- 16 Scientific paper.** T.; A.J.; J.; et al; C.S.2022. Smart Data Collection for CryoEM J. Structural Biology. 214, pp.107913.

- 17 **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.
- 18 **Scientific paper.** J.R.; R.; P.; et al; J.M.2021. 3DBionotes COVID-19 Edition Bioinformatics. 37, pp.4258-4260.
- 19 **Scientific paper.** C.O.S.; M.A.; F.R.; C.; A.2021. A signal processing approach to pharmacokinetic data analysis Pharmaceutical Research. 38, pp.625-635.
- 20 **Scientific paper.** D.; A.; J.L.; et al; C.O.S.2021. Advances in Xmipp for Cryo-electron Microscopy: From Xmipp to Scipion Molecules. 26, pp.6224.
- 21 **Scientific paper.** C.O.S.; D.; S.C.; et al; J.M.2021. Algorithmic robustness to preferred orientations in Single Particle Analysis by CryoEM J. Structural Biology. 213, pp.107695.
- 22 **Scientific paper.** D.; R.R.; J.; A.; M.; I.; J.M.; C.O.S.2021. Approximating deformation fields for the analysis of continuous heterogeneity of biological macromolecules by 3D Zernike polynomials IUCR J. 8, pp.eh5012.
- 23 **Scientific paper.** J.; U.; P.; et al; M.2021. COVID-19 vaccine candidates based on modified vaccinia virus Ankara expressing the SARS-CoV-2 spike induce robust T- and B-cell immune responses and full efficacy in mice J. Virology. 95, pp.e02260-20.
- 24 **Scientific paper.** D.A.; J.; S.J.; et al; B.D.2021. Cryo-EM Structure of a Tetrameric Photosystem I from Chroococcidiopsis TS-821, a Thermophilic, unicellular, Non-heterocyst-forming Cyanobacteria Plant communications. 2, pp.100248.
- 25 **Scientific paper.** A.; L.; M.; et al; C.O.S.2021. Cryo-EM and Single-Particle Analysis with Scipion J. of Visualized Experiments. 171-e62261.
- 26 **Scientific paper.** E.; M.; R.; R.; E.; P.; J.M.; C.O.S.2021. Cryo-EM density maps adjustment for subtraction, consensus and sharpening J. Structural Biology. 213, pp.107780.
- 27 **Scientific paper.** A.; D.; J.; J.M.; C.O.S.2021. DeepAlign, a 3D alignment method based on regionalized deep learning J. Structural Biology. 213-107712.
- 28 **Scientific paper.** R.; J.; A.; J.M.; C.O.S.; J.2021. DeepEMhancer: a deep learning solution for cryo-EM volume post-processing Communications Biology. 4, pp.874.
- 29 **Scientific paper.** M.; C.O.S.; A.; R.; J.M.; J.2021. ENRICH: a method to improve the quality of heterogeneous macromolecular reconstructions Progress in Biophysics and Molecular Biology. 164, pp.92-100.
- 30 **Scientific paper.** C.E.; B.; M.; et al; S.2021. Enhancement of HIV-1 Env-specific CD8 T cell responses using IFN-Stimulated Gene 15 (ISG15) as an immune adjuvant J. Virology. 95, pp.e01155-20.
- 31 **Scientific paper.** C.E.; B.; L.; et al; M.2021. Enhancement of the HIV-1-specific immune response induced by an mRNA vaccine through boosting with a poxvirus MVA vector expressing the same antigen Vaccines. 9, pp.959.
- 32 **Scientific paper.** E.; D.; Y.; P.; R.; B.; J.M.; C.O.S.2021. FSC-Q: A CryoEM map-to-atomic model quality validation based on the local Fourier Shell Correlation Nature Communications. 12, pp.42.
- 33 **Scientific paper.** M.; M.; E.; et al; M.2021. Neutrophil Subtypes Shape HIV-specific CD8 T Cell Responses After Vaccinia Virus Infection NPJ Vaccines. 6, pp.52.
- 34 **Scientific paper.** C.O.S.; J.M.2021. PCA is limited to low resolution analysis in CryoEM Acta Crystallographica Section D. D77, pp.835-839.
- 35 **Scientific paper.** C.; R.; J.R.; et al; A.2021. Predicting MHC I restricted T cell epitopes in mice with NAP-CNB, a novel online tool Scientific Reports. 11, pp.10780.
- 36 **Scientific paper.** C.O.S.; Y.; M.A.2021. Scipion PKPD: an open-source platform for Biopharmaceutics, Pharmacokinetics and Pharmacodynamics Data Analysis Pharmaceutical Research. 38, pp.1169-1178.
- 37 **Scientific paper.** Y.; J.; K.; B.; C.O.S.; J.M.; J.; I.2021. State-Dependent Sequential Allostery Exhibited by Chaperonin TRiC/CCT Revealed by Network Analysis of Cryo-EM Maps Progress in Biophysics and Molecular Biology. 160, pp.104-120.
- 38 **Scientific paper.** S.; J.; A.; et al; O.2021. Structural analysis of receptors and actin polarity in platelet protrusions Proc. Natl. Acad. Sciences. 118, pp.e2105004118.
- 39 **Scientific paper.** P.; M.A.; T.; A.; J.C.; C.O.S.; M.; J.F.2021. The combined vaccination protocol of DNA/MVA expressing Zika virus structural proteins as efficient inducer of T and B cell immune responses Emerging Microbes & Infections. 10.

- 40 **Book chapter.** C.O.S.; M.2021. Design of experiments Experimental Design and Reproducibility in Preclinical Animal Studies.
- 41 **Book chapter.** C.O.S.; M.2021. Statistical tests and Sample size calculations Experimental Design and Reproducibility in Preclinical Animal Studies.
- 42 **Book chapter.** C.O.S.; M.2021. Why do we need a statistical experiment design? Experimental Design and Reproducibility in Preclinical Animal Studies.

### C.3. Research projects and contracts

- 1 **Project.** 810057, ERC Synergy: HighResCells: A synergistic approach toward understanding receptor signaling in the cell at very high resolution.. European Union. J.M. Carazo. (Consejo Superior de Investigaciones Científicas). 03/2019-02/2024.
- 2 **Project.** iNext Discovery. Jose Maria Carazo. (Consejo Superior de Investigaciones Científicas). 01/02/2020-31/01/2024. 9.987.744 €.
- 3 **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 €.
- 4 **Project.** 824087, EOSC-Life: Providing an open collaborative space for digital biology in Europe. European Union. J.M. Carazo. (Consejo Superior de Investigaciones Científicas). 03/2019-02/2022.
- 5 **Project.** 731005, Instruct Ultra: Releasing the full potential of Instruct to expand and consolidate infrastructure services for ntegrated structural life science research. European Union. J.M. Carazo. (Consejo Superior de Investigaciones Científicas). 01/2017-01/2021.
- 6 **Project.** BIO2016-76400-R, Flex3D: Análisis en alto rendimiento de flexibilidad estructural tanto por criomicroscopía electrónica como por criomicroscopía de rayos X blandos. Ministerio de Economía y competitividad. C.O.S. Sorzano. (Consejo Superior de Investigaciones Científicas). 12/2016-12/2019.
- 7 **Project.** 739563, EOSCpilot: European Open Science Cloud Pilot. European Union. C.O.S. Sorzano. (Consejo Superior de Investigaciones Científicas). 07/2017-12/2018.
- 8 **Contract.** Towards enhancing throughput in streaming cryo E/ectron Microscopy Image Processing Gandeeva Therapeutics. 13/01/2022-13/01/2023. 128.000 €.
- 9 **Contract.** Image processing challenges and advanced light microscopy Benevolent AI. 22/04/2021-22/04/2022.