



Position Open in image processing for Cryo-Electron Microscopy at BCU

The Biocomputing Unit (BCU) of the Natl. Center of Biotechnology is looking for a candidate with a background in Engineering, Physics, Mathematics or any other data analysis related field. The work is about the development of image processing in Cryo-Electron Microscopy (CryoEM) with a special emphasis on signal processing and efficient implementations. Our laboratory is located at the National Center of Biotechnology in Madrid, a reference institute in Spain in cryo-EM equipped with two microscopes with direct detector (Talos Arctica and CryoARM 300) and a FIB-SEM microscope, providing a very immersive and interdisciplinary environment. Additionally, our group is a world reference in this domain, and the work will be performed in conjunction with an American/Canadian drug discovery company. The goal of the project is to construct the most efficient 3D reconstruction algorithm available for CryoEM.

Recent publications:

FSC-Q: a CryoEM map-to-atomic model quality validation based on the local Fourier shell correlation. Ramírez-Aportela E, Maluenda D, Fonseca YC, Conesa P, Marabini R, Heymann JB, Carazo JM, Sorzano COS. Nat Commun. 12(1):42. 2021.

DOI: <https://doi.org/10.1038/s41467-020-20295-w>

Measuring local-directional resolution and local anisotropy in cryo-EM maps. Vilas JL, Tagare HD, Vargas J, Carazo JM, Sorzano COS. Nat Commun. 11(1):55. 2020.

DOI: <https://doi.org/10.1038/s41467-019-13742-w>

Continuous flexibility analysis of SARS-CoV-2 spike prefusion structures. Melero R, Sorzano COS, Foster B, Vilas JL, Martínez M, Marabini R, Ramírez-Aportela E, Sanchez-Garcia R, Herreros D, Del Caño L, Losana P, Fonseca-Reyna YC, Conesa P, Wrapp D, Chacon P, McLellan JS, Tagare HD, Carazo JM. IUCrJ. 7(Pt 6):1059-69. 2020.

DOI: <https://doi.org/10.1107/S2052252520012725>

Measurement of local resolution in electron tomography. Vilas JL, Oton J, Messaoudi C, Melero R, Conesa P, Ramirez-Aportela E, Mota J, Martinez M, Jimenez A, Marabini R, Carazo JM, Vargas J, Sorzano COS. J Struct Biol X. 4:100016. 2019

DOI: <https://doi.org/10.1016/j.yjsbx.2019.100016>

DeepRes: a new deep-learning- and aspect-based local resolution method for electron-microscopy maps. Ramírez-Aportela E, Mota J, Conesa P, Carazo JM, Sorzano COS. IUCrJ. 6(6): 1054 – 1063. 2019

DOI: <https://doi.org/10.1107/S2052252519011692>

Interested candidates should send their CV's and letter of interest to: blanca@cnb.csic.es