The Collaborative Computational Project for Electron cryo-Microscopy

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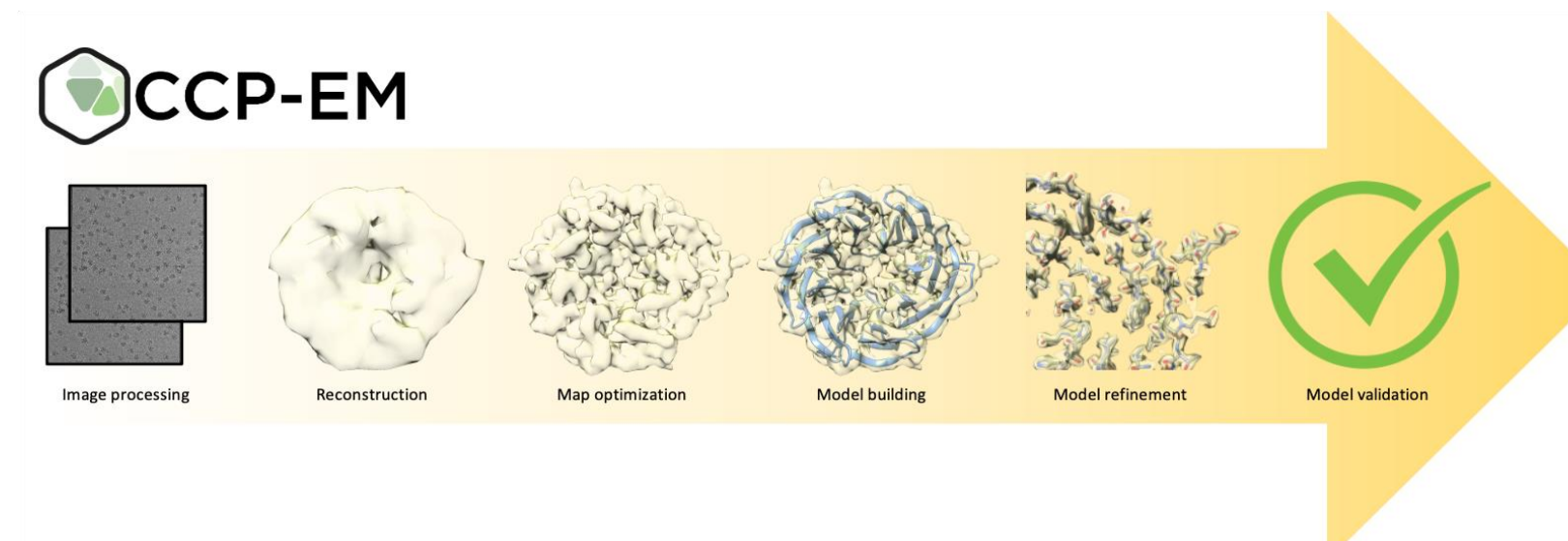
CCP-EM Overview

- *Collaborative Computational Project for Electron cryo-Microscopy*
- **Founded in 2012 and based in the Molecular and Cellular Electron Microscopy group of the Science and Technology Facilities Council and located at the Rutherford Appleton Laboratory in Oxfordshire, UK**
- *Software*: **produce a suite of tools for end-to-end cryoEM data processing through collaborations with 10+ groups**
- *Community*: **support users and developers in computational aspects of biological EM in UK and internationally**
- **Core funded by the MRC since 2012 with further support from STFC ALC, CoSeC & BID, DSET, BEIS, Wellcome and BBSRC**
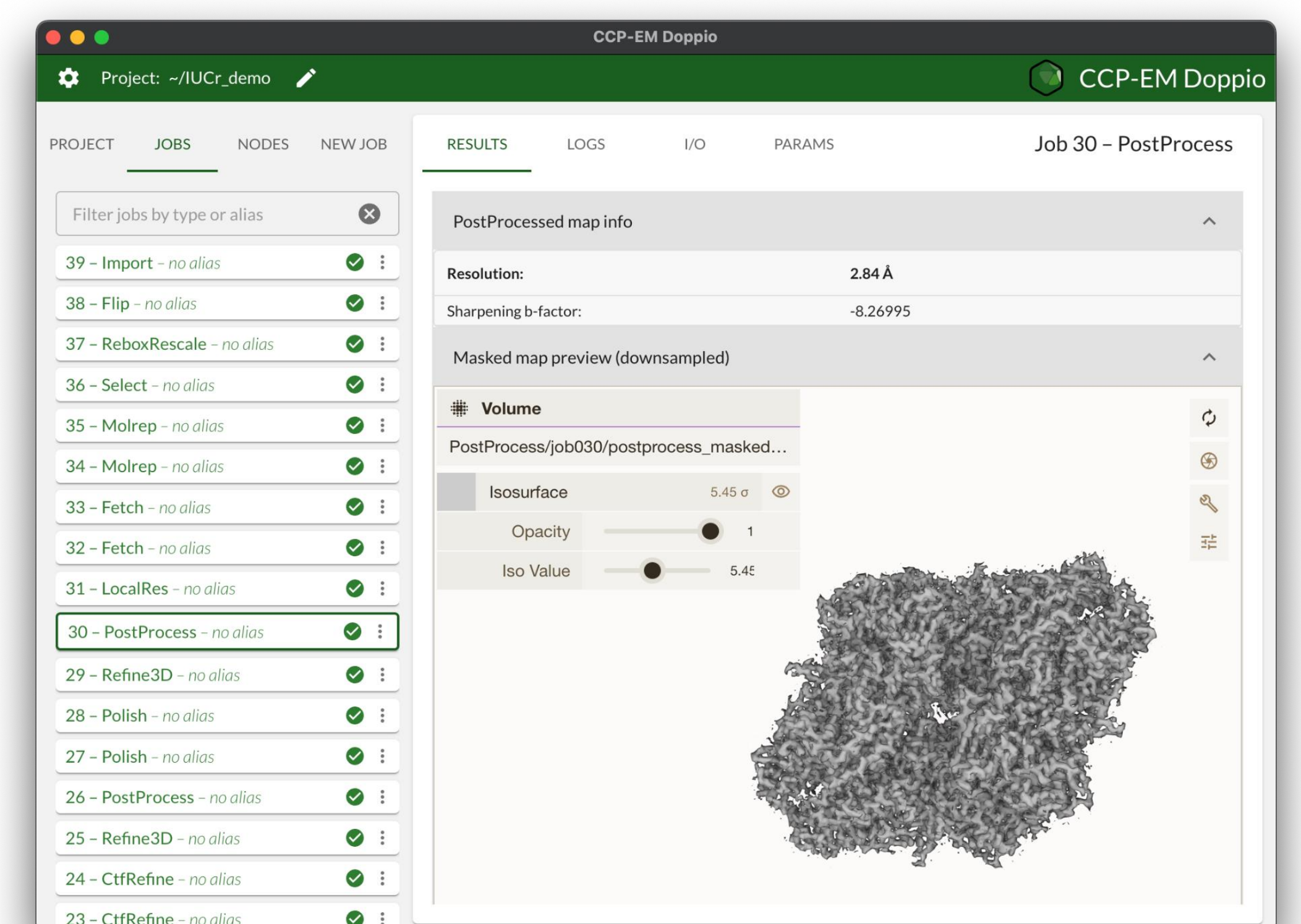
CCP-EM Software

CCP-EM Doppio

- *CCP-EM Software Suite v2: Doppio*
- Tools for complete cryoEM SPA processing from image processing through to atomic model building
- STFC dual licence: free for academic users, fee for commercial users
- ~40 commercial licence holders providing an annual income used to support core team and training program
- Available for Linux and Mac platforms
- >1000 downloads / release
- JavaScript front end and Python back end
- CCP-EM tools integrated in eBIC data processing pipeline in collaboration with DLS

New developments

- Subtomogram averaging pipeline based on Relion 5 to study proteins *in situ*
- Integrating tools to study conformational and compositional hetereogenity via heterogenous reconstruction (CryoDRGN and DynaMight)
- ML based tools for denoising and classification

CCP-EM Community

CCP-EM Spring Symposium

- The national annual cryoEM conference
- Highlights new method developments and exemplar applications
- First held in 2015 at RAL with 100 delegates
- 2000+ online delegates in 2020
- 10th Anniversary May 2024 at Nottingham University with 365 in-person and 800+ online delegates
- 10 years of talks available on YouTube (www.ccpem.ac.uk/symposium.php)
- Includes the DLS Biological Cryo-Imaging User Meeting for eBIC & B24 since 2019

CCP-EM Training Program

- Teach best practises and new methods for cryoEM data processing using our and others software tools
- 40+ workshops organised or co-organised since 2013 teaching 1200+ researchers
- Use Scientific Computing's DAaaS Cloud service to provide cloud compute virtual machines for delegates
- Organise hackathons for collaborating developers
- *If you are interested in hosting a CCP-EM workshop at your institute for SPA, STA or atomic model building please get in touch!*