The Monash Ramaciotti Centre for Cryo-Electron Microscopy (cryo-EM) is a leading research facility for biological electron microscopy.

Our platform provides expertise in advanced electron microscopy for biomedical discoveries at the molecular and cellular level. We offer a range of bio-EM techniques from scanning electron microscopy (SEM) and transmission electron microscopy (TEM) to immuno electron microscopy, correlative light and electron microscopy, cryo-tomography and structure determination using single particle cryo-EM.

We maintain a suite of advanced electron microscopes, including Australia’s first Titan Krios – currently the most powerful microscope for bio-EM.

**SPECIALIST SERVICES**

- Single particle analysis
- Immuno electron microscopy
- Scanning electron microscopy
- Structural cryo-EM
- Correlative microscopy
- Transmission electron microscopy
- Tomography

**EXPERTISE**

Our platform supports Australian researchers by developing and applying advanced imaging techniques to study the life sciences.

We conduct research into advanced bio EM techniques. The team also provides training and expertise to Australian and international collaborators on advanced EM projects.

**WORKING WITH US**

- Fee for facility access
- Consultancies
- Collaborative research
- Training
KEY INSTRUMENTATION

Transmission electron microscopes (TEM)

Our platform houses three TEMs, including a FEI Titan Krios: Australia’s most powerful biological TEM. The Krios is a 300keV cryo-EM designed for automatic data collection. It is equipped with a highly sensitive Falcon III direct electron detector, an energy filter, phase plate and a K2 Summit direct electron detector. The Krios also has a robotic autoloader capable of holding 12 EM grids under liquid nitrogen conditions. Software packages, EPU for single particle and Tomo 4 for tomography, are available for data collection.

The facility also houses a Tecnai G2 Spirit (120keV) used for cryogenic applications and a Hitachi H-7500 for standard TEM. In 2017, the facility will take delivery of a second high-end TEM.

Scanning electron microscope (SEM)

The platform houses a FEI NanoNano SEM, capable of imaging life science structures in the nanometer range. The SEM runs the MAPS software for scanning large areas and to correlate images with optical microscopy. We will also have a cryo-focussed ion beam SEM, a Helios G4 CX, with a Leica cryo-stage. The latter will be the first of its kind in Australia.

Sample preparation suite

The facility has dedicated equipment to prepare proteins, viruses, bacteria, cells, tissues and small organisms for life sciences EM. The facility houses dedicated cryopreservation and sample preparation equipment.

We have an FEI Vitrobot Mark IV freeze plunger, Leica EMPact2 high pressure freezer, Leica UC7/FC7 cryo-ultramicrotomes and a Leica cryo high vacuum coating unit EM ACE600.