



Australian Government

Department of the Environment and Energy

Australian Antarctic Division



AUSTRALIAN
ANTARCTIC
PROGRAM

Australian Antarctic Division Science Laboratories



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Australian Antarctic Division Science Laboratories

Kingston, Tasmania

The Australian Antarctic Division Laboratories are located at the Australian Antarctic Division in Kingston, Tasmania on the ground floor of the Wild Building. In addition to the main laboratory complex there are 7 facilities located a short walk away from the Wild building. These are: the Terrestrial Ecology Laboratory, Molecular Biology Laboratory, Smelly lab, Electron Microscope Unit, radiation van (mobile shipping container), Cold Store Facility and the Marine Research Facility.

- The AAD facility has an Approved Arrangements Biosecurity Classification.
- The AAD facilities are managed by a lab manager and lab technician.
- The AAD facility holds an ARPANSA licence for work with radiation.
- The AAD facility complies with Safe Work Australia WHS standards and has regularly tested safety shower/eyewash stations, safety shut off valves & firefighting equipment.
- All laboratory equipment e.g. pipettes, balances and specialist equipment are calibrated and serviced regularly.
- The AAD has dedicated sample storage facilities (flammable/-18°C/+4°C/-135°C /-85°C)
- Laboratory glassware, PPE and some consumables are available for use.

The AAD also maintains dedicated Science laboratories at each of the Australian stations in Antarctica, Davis, Casey, Mawson and on Macquarie Island.

The capability of each laboratory is outlined on the following pages with specialist equipment detailed further.



General Laboratory Equipment

| | HPLC LAB + CHROMO LAB | MAIN LAB + 11 INTERNAL LABS | SMELLY, RISC & SEM LABS | GENETICS LAB | RADIATION VAN | CASEY STATION | DAVIS STATION | MAWSON STATION |
|---|--------------------------|---|----------------------------------|----------------------------------|------------------|---|---|--------------------------|
| Autoclave | | 1 | | 1 | | 1 | 1 | |
| Balances (Top pan & Analytical) | 1 | 6 | 1 | 1 | | 6 | 3 | 2 |
| Bench space (all benches 600mm deep) | 6 m (over 2 rooms) | 45m (over 10 rooms) | 24m (over 3 rooms) | 8m | 2m | 32m (over 6 rooms) | 45m (over 10 rooms) | 4m |
| Biosecurity rating | 5.1 | 5.2 | 5.1 | 5.1 | | n/a | n/a | n/a |
| Centrifuge | | 2 x Large refrigerated | 2 | 7 | 1 | 1 | 3 (1 x large refrigerated) | 1 |
| Chemical Storage Cabinets | Flammables | Flammables Corrosives Toxics Oxidizers | Flammables Corrosives | Flammables Corrosives | | Flammables Corrosives Toxics Oxidizers | Flammables Corrosives Toxics Oxidizers | Flammables Corrosives |
| Conductivity Meter | | 3 | | | | 2 | 1 | 1 |
| Dishwasher | | 1 | | | | 1 | 1 | |
| Fridge | | Walk-in fridge 4 x fridges 6 x culture cabinets | 2 | 4 | 1 | 5 | 5 | 1 |
| Freezer | 1 | Walk-in freezer 3 x freezers | 1 | 4 | | 4 (incl. -85°C) | 7 (incl. -85°C) | 1 |
| Fume Cupboard/s | 1 | 7 | 2 | 1 | 1 | 5 | 6 | 1 |
| Gases (Inline) + LPG | yes | yes | | | | yes | yes | |
| Laminar Flow | | 2 | | 1 | | 1 | 1 | 1 |
| Stirrer/ mixer | 1 | 5 | 1 | 3 (orbital) | | 5 | 2 | 1 |
| Microscopes | | Dissecting (x8) Compound (x4) Inverted (x1) | Dissecting (x4) Compound (x2) | Dissecting (x2) Compound (x1) | | Dissecting (x3) Compound (x1) | Dissecting (x2) Compound (x2) Inverted (x1) | |
| MilliQ Water Purifier | | 1 | | 1 | | 1 | 1 | 1 |
| Muffle furnace | | 1 | | | | 1 | 1 | |
| Oven (drying) | | 3 | 2 | | | 3 | 3 | 1 |
| pH meter | 1 | 3 | 2 | | | 1 | 2 | 1 |
| Seawater (inline) | | Yes | | | | | | |
| Sink/hot/cold water | 2 | 18 | 5 | 2 | | 5 | 5 | 1 |
| Vacuum (inline) | Yes | Yes | | | | | Yes | |
| Vortex Mixer | 1 | 4 | | 2 | 1 | 1 | 1 | 1 |
| Water Bath/ultrasonic | 3 | 9 | 3 | 2 | 1 | 5 | 1 | |

**Note Macquarie Island Science Laboratories are closed until the completion of station rebuild.

Facility Details

| APPROVED ARRANGEMENT (AA) | FACILITY NAME (MAIN ACCESS DOOR CODE) | BIOSECURITY CONTROL LEVEL | AA CLASS |
|---------------------------|---|---------------------------|-----------|
| T0068 | Wild Building General Laboratories (G015) | BC2 | Class 5.2 |
| T1238 | Wild Building HPLC & Chromatography Laboratories (G031) | BC1 | Class 5.1 |
| T1239 | Cold Storage Facility (W001) | BC2 | Class 2.5 |
| T1240 | Marine Research Facility (H034 & H035) | BC1 | Class 7.7 |
| T1241 | Davis Building Molecular Biology Laboratory (C112A) | BC1 | Class 5.1 |
| T1242 | Davis Building Electron Microscopy Unit (C010) | BC1 | Class 5.1 |
| T1243 | Harrison Building Terrestrial Ecology Laboratory (H017) | BC1 | Class 5.1 |
| T1244 | Smelly Laboratory (ZD166) | BC1 | Class 5.1 |

Specialised Laboratory Equipment

| MAIN LAB | Brand/Model | Quantity | Year Purchased |
|--|---------------------------|----------|----------------|
| Accelerated solvent extractor + solvent controller | Dionex, ASE 200 | 1 | 2008 |
| Gas Chromatograph | Agilent, 7890B | 1 | 2014 |
| Thermal Desorption Tower | CDS Analytical, CDS7500 | 1 | 2014 |
| Thermal Desorption Autosampler | CDS Analytical | 1 | 2014 |
| Purge and Trap Concentrator | CDS Analytical, CDS 7000E | 1 | 2014 |
| Soil and Water Tower | CDS Analytical, CDS 7400 | 1 | 2014 |
| Incubator: Oxitop box | | 1 | N/A |
| Quanti-tray sealer | IDEXX 2x | 1 | N/A |
| Environmental Gas Monitor | PP Systems, EGM-4 | 1 | 2009 |
| Oxygen Meter | WTW, Oxi 330i | 1 | N/A |
| Homegenizer | Pro Scientific, Pro 200 | 1 | N/A |
| Suspension Mixer | Ratek, RSM7DC | 2 | N/A |
| Turbidity Meter | Hach 2100p | 1 | N/A |
| Blender - laboratory | Waring Commercial, CB15VE | 1 | 2017 |
| Roller Mixer | Ratek, BTR10P-12V | 1 | 2017 |
| Automatic Titrator | Metrohm SM Titrino | 1 | 2006 |



MAIN LAB

| HPLC LAB (High Performance Liquid Chromatography) | Brand/Model | Quantity | Year Purchased |
|--|-----------------------------|----------|----------------|
| HPLC Pump | Waters 1525 | 1 | 2015 |
| PDA Detector | Waters, 2998 | 1 | 2016 |
| Liquid Handler | Gilson, GX271 | 1 | 2016 |
| Fluorescence Detector | Waters, 2475 | 1 | 2007 |
| Syringe Pump | Gilson 402 | 1 | 2000 |
| Sonicator (wand) | Ultra sonic power 51-05-275 | 1 | 2005 |
| Mini Bead Beater | Sigma Aldrich | 1 | 2005 |
| Auto Dispenser | Hamilton, Microlab 500 | 1 | 2005 |

| FTIR LAB | Brand/Model | Quantity | Year Purchased |
|--|--------------|----------|----------------|
| Fourier Transform Infrared Spectrophotometer | Spectrum 100 | 1 | 2008 |
| Bead Beater | Biospec | 1 | 2013 |

| RADIATION LAB | | Quantity | Year Purchased |
|--|--|----------|----------------|
| Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) | Varian 720ES | 1 | 2008 |
| Sample Preparation System | Varian | 1 | 2008 |
| Radiation Meters (hand held) | Victoreen 190 Gammasonics Mini 8-in-1 | 2 4 | N/A |

| GROWTH LAB | Brand/Model | Quantity | Year Purchased |
|------------------------|--------------------------------|----------|--------------------|
| Culture Cabinets | Arrowsmith & Grant Williams | 2 5 | 2015; 2017 2016 |
| Muffle Furnace | ModuTemp WE342BM91 | 1 | N/A |
| Ice Machine | Ice -O-Matic | 1 | N/A |
| Freeze Drier | Dynavac FD-5 | 1 | 2005 |
| Ball Mill | Fritsch Pulverisette 6 | 1 | 2017 |
| Flurometer, Diving PAM | Walz, N970803 | 1 | 2005 |



CULTURE LAB



MARINE LAB



HPLC LAB



FTIR LAB



RADIATION LAB



GROWTH LAB

| TOC LAB | Brand/Model | Quantity | Year Purchased |
|-------------------------------|-------------------|----------|----------------|
| Total Organic Carbon Analyser | SHIMADZU TOC-VCSH | 2 | 2008 |

| FLOW LAB | Brand/Model | Quantity | Year Purchased |
|-----------------------------|-------------------------------|----------|----------------|
| Flow cytometers | Becton Dickinson Facscan | 1 | 2005 |
| | Becton Dickinson, FacsCalibur | 1 | 2008 |
| Flow Cam –particle analyser | Fluid Imaging | 1 | 2013 |

| CHROMO LAB | Brand/Model | Quantity | Year Purchased |
|-------------------------------------|----------------------|----------|----------------|
| UV-Vis Spectrophotometer | GBC, 916 | 1 | 2005 |
| | Mettler Toledo, UV5 | 2 | 2017 |
| Dissolved Inorganic Carbon Analyser | Waters, 2998 | 1 | 2013 |
| Automatic Titrator | 809 titrando | 1 | 2008 |
| | Maetroholm SM Titino | 1 | 2005 |
| Bead Beater | Biospec | 1 | 2013 |

| MOLECULAR BIOLOGY LABORATORY | Brand/Model | Quantity | Year Purchased |
|------------------------------|----------------------|----------|----------------|
| PCR machine | Eppendorf | 2 | 2009 |
| Genetic Analyser | Hitachi, AB3130 | 1 | 2009 |
| Light Cycler | Roche, LC480 II | 1 | 2009 |
| DNA Robot | Maxwell 16 | 1 | 2008 |
| | Maxwell RSC 48 | 1 | |
| Bioanalyser | 2100 Electrophoresis | 1 | N/A |
| Cooled gradient Palm cycler | 9600-00 | 1 | 2007 |
| PCR Workstation | Aura | 2 | 2009 |
| Homogeniser | MP fast prep 24 | 1 | 2017 |
| Homogeniser | Pro 200 | 1 | N/A |
| Flurometer | Qubit | 1 | N/A |



MICROSCOPE LAB



PREP ROOM



TOC LAB



FLOW LAB



CHROMO LAB



MOLECULAR BIOLOGY LABORATORY

| ELECTRON MICROSCOPE UNIT | Brand/Model | Quantity | Year Purchased |
|---|-------------------------------------|----------|----------------|
| Scanning Electron Microscope | JOEL SEM JSM 6701F | 1 | 2009 |
| Transmission Electron Microscope | Phillips CM100 | 1 | 2005 |
| Knifemaker | LKB BROMMA 7800 | 1 | 2005 |
| Sputter coater | Cressington 208 HR Dynavac cs300 | 1 1 | 2010 N/A |
| Critical point drier | Autosamdri -815 | 1 | 2011 |
| Freeze substitution system for flat embedding | Leica emafs | 1 | 2005 |

| SMELLY LAB | Brand/Model | Quantity | Year Purchased |
|-----------------|----------------|----------|----------------|
| Low Speed Saw | Buehler isomet | 3 | N/A |
| Polishing wheel | Inland | 1 | N/A |

| RADIATION VAN | Brand/Model | Quantity | Year Purchased |
|------------------------------|-------------------------------------|----------|----------------|
| Liquid Scintillation Counter | Tri Carb 2910TR | 1 | 2013 |
| Light Incubator | | 1 | 2013 |
| Light meter | Biospherical instruments QSL 101-A1 | 1 | 2005 |

| MARINE RESEARCH FACILITY | Brand/Model | Quantity | Year Purchased |
|------------------------------------|-------------|----------|----------------------|
| 8000L Krill Aquarium | | | Continually upgraded |
| 120 L phytoplankton culture system | | 14 | Continually upgraded |

Sample storage capacity

We have several sample storage options available for samples including those under biosecurity control:

- -135°C Chest Freezers (X4)
- -85°C Upright Freezers (X7)
- Liquid Nitrogen Dewers (x 10)
- Dry Shippers (x 2)
- Cold Store Facility Building 4°C; -18°C
- Ethanol/flammable sample store
- Walk in Culture room (temperature programmable)



CASEY SCIENCE BUILDING



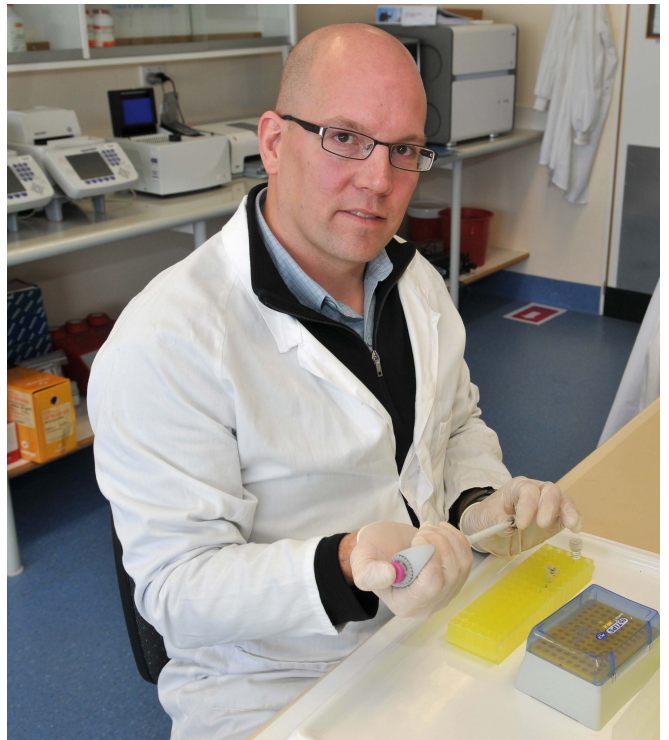
SEM LAB



SMELLY LAB



MARINE RESEARCH FACILITY



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