Department of Biology & Biochemistry Postgraduate Research Handout 2017/18

1. Welcome to the Department

1.1 Department of Biology & Biochemistry

Dear All,
Welcome to the Department of Biology & Biochemistry! We will endeavour to make the next few years some of the most exciting and challenging of your scientific career.

This handbook is issued to all year one postgraduate research students and contains important information that you should be aware of. It includes contact information for your fellow postgraduates, and department staff and administrators. It provides an overview and source of reference for essential elements in your training including progression procedures, safety, skills training, seminars and conferences, technical services, information for demonstrators and extracts from the University Quality Assurance Code of Practice. Please note that some of this information is also available on the University Web pages and that it is in your interests to check these regularly for updates.

The Department of Biology and Biochemistry is a dynamic Department with around 50 academic staff and over 90 postgraduate students. The Department is one of the largest and most successful in the University and was recently ranked nationally this year by The Complete University Guide as 9th for BioSciences. In addition, we won The Sunday Times University of the Year 2011-12. The Department is firmly committed to excellence both in research and teaching. Our research is diverse and in the 2014 Research Assessment Exercise, nearly a third (31%) of our Department of Biology & Biochemistry outputs were rated world-leading, the highest possible ranking for originality, significance and rigour, and an additional 52% were judged internationally excellent. The Department also scored a maximum of 24 points in the 1999 national Teaching Quality Assurance review

Approximately 125 papers are published in peer reviewed journals each year with our current research grant portfolio in excess of £10 million. The Department has adopted an integrated approach embracing the view that tomorrow's breakthroughs are likely to occur at the interfaces of traditional biological subdivisions. This aim is well served by the Department's two research buildings, 3 South and 4 South, and the provision of a new (2005) £3M Biology Annexe.

As a member of the postgraduate community you are one of the department's most valuable resources and we hope you find it a stimulating environment to pursue your training and a rewarding experience.

Dr James Doughty
Director of Postgraduate Studies, Research

2. Department Structure

2.1. Who's Who in the Department

See http://www.bath.ac.uk/bio-sci/contacts/ for a full list of Department staff. Some contacts most relevant to PG students are:

Head of Department	Prof Rod Scott
Director of Postgraduate Studies - Research	Dr James Doughty
Department Coordinators	Ms Rebecca Knight
	Ms Anna Franklin

2.2 Research Areas in the Department

Research is carried out on animals, plants and microorganisms at the level of molecules, cells, organisms and populations. The combination of first-class physical facilities, a stimulating intellectual environment and a structured graduate training programme makes the Department an outstanding centre for postgraduate studies. Among the extensive range of facilities available are:

- X-ray crystallography
- 600MHz NMR facility
- phosphorimaging service
- fully supported, modern electron microscopy suite
- BioImaging suite
- DNA / RNA sequencing
- CD spectroscopy
- dedicated molecular biology server
- micro-array reader
- transgenic mouse and *Xenopus* facilities
- tissue culture for plant and mammalian cells
- state-of-the-art *Xenopus* and zebrafish aquaria
- insectaries
- extensive glasshouses, including a GM glasshouse
- constant temperature and plant growth rooms

The Department's research is organised into four themes:

- Cell and developmental biology
- Evolution and biodiversity
- Infection and immunity
- Medical and industrial biotechnology

These provide a focus for academic research groups and are structured in areas where we have state of the art facilities, critical mass, and can compete most effectively in the global research environment. Our strategy is to strive for excellence by investing in people and resources, and position our research so that it will continue to lead bioscience research internationally.

These foci serve to concentrate resources in areas of excellence while providing a coherent and overlapping coverage of a wide range of biological problems. The current grant portfolio includes funding from the Research Councils, Wellcome and Leverhulme Trusts, the EU and industry. The Department participates in five inter-departmental Centres: the Centre for Mathematical Biology, the Centre for Extremophile Research, the Centre for Regenerative Medicine, the Centre for Biometric and Natural Technologies, and the Centre for Molecular Microbiology. These are run in conjunction with other departments in the faculties of Science, Engineering & Design and the School for Health.

3. Technical Information

3.1 Technical Services Guide

The Departmental Technical Services cover:

- Security, safety and first-aid
- Waste disposal
- Ordering and financial
- Central facilities
- Lab washing-up and cleaning
- Refrigerants and gases
- Laboratory coats
- Workshops and IT support

Lab Washing Up and Laboratory Cleaning
Laboratory and office floors are cleaned by the portering staff. Assistance in placing stools on lab benches is appreciated.

The lab washing-up area in 4S 0.21 is supervised by *Ewan Basterfield.* This area operates flexibly and provides support when required. Dirty glassware will normally be collected, washed and returned to laboratories. PLEASE ENSURE GLASSWARE IS RINSED FREE OF HAZARDS.

During very busy periods it may be necessary for you to deliver and collect your own glassware, especially if it is required urgently. You should advise the Laboratory Assistants accordingly if you require any special washing regime. The 4S 0.21 washing-up area also provides **autoclave facilities** (in room 4S 0.23 opposite – see section on autoclaving several pages ahead).

For decontamination by autoclaving refer to the waste disposal (microbiological) section. Used glassware that has been autoclaved will be washed-up and returned to laboratories. (See also Waste Disposal section).
During "off-peak" periods some assistance with general laboratory cleaning and other tasks will be available. Please contact Ewan Basterfield (3S 0.04) if you require this service.

Laboratory Coats
If you are a researcher working in a "wet" laboratory you should have at least two laboratory coats. These coats must have a University laundry label sewn inside just under the collar and the label should be clearly marked "4 South" or "4S", together with your name and department.

Dirty coats should be delivered to the shelving in the corridor opposite to the autoclave room by Monday afternoon for laundering. The Laboratory Assistants will record details of your coat. Clean coats are received on Thursday and will be delivered to your laboratory on Friday. A few spare coats are available in the Stores.

New laboratory coats can be purchased by submitting a blue or pink Stores Requisition form, quoting; style (for optimum protection you are recommended to purchase the "Howie" style of laboratory coat with elasticated cuffs, a high neck and side fastening studs) size and who the coat is for. Before being sent for laundering, the coats must have (marked with indelible laundry marker on the laundry label):
1. the name of the lab worker
2. the department (Biology, or simply B&B)
3. the building (4S or 3S)

When you receive new coats from the store the labels should already have been appropriately marked.

3.2 Waste Disposal

Information on disposal from the University is available on the web at:
http://www.bath.ac.uk/hr/stayingsafewell/environment/hazardous-waste/
E-mail biology-wastes@lists.bath.ac.uk for requests for non-routine collections of departmental laboratory hazardous wastes and also for enquiries about waste disposal within the department.

All solid laboratory waste, except that designated as **Hazardous Waste**, should be placed in the **"red-label"** bins provided. The Porters empty Red-label bins.
Hazardous Waste should be treated as follows:

Microbiological waste for autoclaving and disposal should be placed in the transparent autoclavable bags in the laboratory before being delivered to the autoclave room (4S 0.23). Sturdy plastic bag holders can be ordered from Stores and these should be used for transporting full bags to 4S 0.23 prior to being left there for autoclaving. **Please seal the bags of disposable waste with autoclave tape.** New disposal bags are available from the Stores (3S 0.12).

	Store code
Autoclave bag	AUT1410
Autoclave bag	AUTHOLD

Animal and Clinical waste: should be stored in a freezer in your lab area. Request collection by e-mailing biology-wastes@lists.bath.ac.uk.

Glass: (Not recyclable bottles.) Broken glass and other glass for disposal should be placed in the **yellow** 60 litre or 10 litre containers provided. Please remove caps, deface hazard labels and rinse where feasible. Request collection of full containers by e-mailing biology-wastes@lists.bath.ac.uk.

Sharps: Used needles, blades and small glass shards must be placed in the **yellow** sharps bins provided. Full sharps bins should be taken to the autoclave room (4S 0.23) for autoclaving prior to disposal. Replacement sharps bins are available from the Stores (3S 0.12).

Sharps bin size	**Store code**
0.6 litre	3 82 2346
5 litre	3 82 2352
10 litre	3 82 2369

Organic Solvent waste: should be put in the appropriate disposal bottles, obtainable by e-mailing biology-wastes@lists.bath.ac.uk. Please use the **yellow-labelled** bottles for waste containing halogenated (chlorinated) solvents and the **red-labelled** bottles for waste containing non-halogenated (non-chlorinated) solvents. Request collection of full bottles by e-mailing biology-wastes@lists.bath.ac.uk.

Ethidium Bromide: contaminated waste must be placed in the labelled 30 litre **yellow** containers. Please do not overfill these - use an alternative instead. Request collection of full drums by e-mailing biology-wastes@lists.bath.ac.uk. Empty yellow 30 litre containers are available from Stores (3S 0.12) on completion of a requisition (stores code 3 82 2381).

Lab smalls: (bottles of redundant chemicals) should be notified to biology-wastes@lists.bath.ac.uk and their safe disposal will be arranged.

Loose Powders: Hazardous chemicals should be treated as Lab Smalls. Non-hazardous powders must be bagged before disposing in the "red-label" bins (bagging minimises dispersal in the air when the bins are emptied).

Scintillation Vials: must be placed in the 60 litre **yellow** bins provided in counter room (4S 1.48). Please ensure that you complete the on-line management system when you dispose of vials. This is a legal requirement. When full collection of full drums can be requested by e-mailing biology-wastes@lists.bath.ac.uk. Empty labelled yellow 60 litre containers are usually available from Stores (3S 0.12).

Other Radioactive Disposals: Suitably screened bins for the disposal of solid radioactive waste (P-32, S-35 and 1-125) are kept in relevant laboratories. When full you should contact biology-wastes@lists.bath.ac.uk to arrange collection and replacement.

All solid and liquid radioactive waste disposals must be recorded on the on-line management system. This is also a legal requirement.

Paper Re-Cycling: the porters run a clean paper re-cycling service.

Cardboard boxes: place these (except thin card such as tissue boxes) outside your lab on the floor of the corridor late in the afternoon. The porters will collect them in the morning.

Glass Re-Cycling: Pyrex, Duran or Schott bottles cannot be recycled. Other types of glass containers can be recycled in the facilities around campus.

Further advice on Hazardous Waste Disposal can be obtained by referring to the web at –
http://www.bath.ac.uk/hr/stayingsafewell/environment/hazardous-waste/index.html or by contacting the University Hazardous Waste Service at waste@lists.bath.ac.uk. Advice on radioactive waste disposal can be obtained from the Department Radiation Protection Supervisor, Dr. John Beeching (4S 1.11) ext. 3572.

3.3 Refrigerants and Gases

Crushed Ice is available from the machines situated in 4S 0.50 and 3S 1.09. The machine in 4S 1.15 can also be used out of term time.

Dry-Ice (Cardice) is delivered on Mondays and is available in the storage boxes situated in 4S 0.50, 4S1.48 and 3S 1.09. You are requested to "recycle" additional dry ice obtained in deliveries by adding it to these boxes when available. Queries relating to dry-ice should initially be addressed to Ewan Basterfield (3S0.04)

Important safety advice for the use of Dry-ice and liquid nitrogen is given on the web at http://internal.bath.ac.uk/bio-sci/bbsafe/asphyx.htm

Liquid Nitrogen is currently delivered on Mondays and Thursdays. Dewars for refilling should be placed in the South Foyer. Queries relating to liquid nitrogen should initially be addressed to Ewan Basterfield (3S 0.04). Please note that personnel must not accompany pressurised liquid nitrogen containers when being transported in the lift.

Cylinders of compressed gases should be requested by completing an internal Stores Requisition form and handing it to Martin White (3S 0.12). Nitrogen and carbon dioxide are available ex Stores, but other gases and special-mixtures can be obtained fairly quickly from BOC.

3.4 Central Facilities

Centrifuges and Rotors: Ultra- and mid-speed centrifuges are situated in 4S 0.50, 4S 1.48 and 3S 1.09 together with the appropriate rotors and accessories. Centrifuges and rotors are monitored by *Ewan Basterfield*, but it is the **responsibility of users and their supervisors** to ensure their proper use and to wash and dry rotors. **Please ensure that you complete the appropriate booking sheet for the centrifuges and rotors before use.**

Cold Rooms are situated in various parts of the building and mostly allocated to particular programme areas. They are monitored by a designated programme technician, but it is the **responsibility of users** to ensure that they are kept tidy.

Darkrooms: these comprise a number of service darkrooms in various parts of the building containing, among other facilities, the x-ray film processors (4S 0.74) and the Polaroid camera (4S 1.36). They are monitored by a designated programme technician, but it is the **responsibility of users** to ensure that the equipment is used correctly and that they are kept tidy.

Vacuum Equipment is located in various parts of the building, but notably in 4S 1.48. It is the **responsibility of users** to ensure that they are properly used. Any problems should be referred to the workshop.

DNA Sequencing and Micro array reading: for use of these services please check with your supervisor.

Glasshouses: The Department has a number of glasshouses devoted to teaching and research. *A*ll enquiries should be addressed to Claire Soulsby.

Microbial Culture Collection is maintained by *Ewan Basterfield*, to whom all enquiries should be directed.

Controlled Environment Rooms: those cabinets that do not specifically belong to programme areas are overseen by *Ewan Basterfield* (3S 0.04) to whom all enquiries should be directed.

Autoclave: The autoclave is situated in 4S 0.23. There is a timetable for autoclave runs with 3 "clean" runs per day (2 for media and 1 for dry materials such as tips and glassware) and materials to be sterilised should be delivered to 0.23 suitably labelled on autoclave tape with the person's name, lab number, contents and date. The normal "clean" autoclave regime is 121°C for 15 minutes.
You are requested to remove sterilised items as soon as possible as storage space is very limited. Leave items on the shelves on the right as you enter 0.23 from the corridor. If you require media to be maintained molten after sterilising please label the containers accordingly and they will be placed in the grey oven. There will normally be three "clean" runs per day and materials to be sterilised should be delivered to 4S 0.23, suitably labelled. The normal autoclave regime is 121°C for 15 minutes. Materials must be collected as soon after autoclaving as possible to avoid clogging the limited storage space. For decontamination by autoclaving refer to the waste disposal (microbiological) section.

Confocal microscope: users' guide is available at http://www.bath.ac.uk/mas/
Technical enquiries may be addressed to Ewan Basterfield (3S 0.04).

4. Training

4.1 Mandatory Courses

The Department runs training courses for new postgraduates in:

- Safety
- Radiological protection
- Use of Centrifuges
- Genetic Modification

All these courses are mandatory for all new postgraduate students. Laboratory work cannot commence until the safety course has been completed. These courses will start during the induction week (see Moodle for calendar). Please check Moodle regularly for updates.

4.2 Other Training Opportunities

The Good Microbiological Practice (GMP) course contains training in the safe handling of micro-organisms and cell cultures as well as the legal aspects of using genetically modified organisms and their vectors. See Moodle for timetable.

Electron microscopy and atomic force microscopy for life scientists: (Ursula Potter). This course is provided by the Centre for Electron Optical Studies See Moodle for timetable

Bioimaging course: (Adrian Rogers). This course is provided by the Centre for Electron Optical Studies. See Moodle for timetable.

Environment: IP, licensing and spinouts; Ethics: Confidentiality, attribution, copyright, malpractice and plagiarism.

Details of these courses can be found at: http://www.bath.ac.uk/research/pgskills/
Updates will also be posted on Moodle.

Taught Level 3 and Masters Units available within the Department
New research postgraduates, particularly those arriving from other Universities, should consider whether they might broaden their knowledge by attending one or more appropriate level Units, each normally lasting one semester. Full details can be found in the catalogue of Units at: http://www.bath.ac.uk/catalogues/2016-2017/index.html. You should seek the advice of your supervisor and get permissions from the Convenor of the Unit.

5. Societies

Details of societies can be obtained from the members of staff listed below or from the web sites, many of which have joining instructions.

The Biochemical Society
http://www.biochemistry.org (Dr. Jim Caunt)
The British Pharmacological Society (Professor S. Wonnacott)
http://www.bps.ac.uk/
The British Neuroscience Association (Professor D.R. Brown) http://www.bna.org.uk)
The International Society for Neurochemistry (Professor D.R. Brown)
http://www.neurochemistry.org/

The Society for Neuroscience (Professor D.R. Brown) http://www.sfn.org/
The British Society for Parasitology http://www.bsp.uk.net/
The British Society for Cell Biology http://www.bscb.org
The American Society for Cell Biology (Dr Paul Whitley) www.ascb.org
The British Society for Developmental Biology (Dr. R.N. Kelsh)
http://www.bms.ed.ac.uk/
The British Society for Plant Pathology (Dr. R.M. Cooper)
http://www.bspp.org.uk/
The Genetics Society
http://www.genetics.org.uk
The Physiological Society (Professor S.E. Reynolds)
http://www.physoc.org/
The Royal Entomological Society (Professor S.E. Reynolds) http://www.royensoc.co.uk/
Society for Invertebrate Pathology http://www.sipweb.org/
The Society for Experimental Biology (Professor S.E. Reynolds)
http://www.sebiology.org/
The Association for the Study of Animal Behaviour (Dr. Tamas Szekely)
http://asab.nottingham.ac.uk/
The Society for General Microbiology (Dr. Ruth Massey)
http://www.sgm.ac.uk/