

Lab Responsibilities

Everyone will have certain responsibilities to maintain the lab. This will ensure that we all work as efficiently and safely as possible. Familiarise yourself with your role. Everyone has a responsibility for many of these things and must either deal with them directly or bring issues to the attention of the person in charge.

Job	People	Description
Stores (Consumables)	Tha and Dhuha	Fortnightly bulk buying of consumables from stores.
MyFinance (Consumables)	Uzma and Fahima	Fortnightly bulk ordering of consumables through myFinance.
Hazardous waste disposal	Helal	Arrange the disposal of toxic and hazardous chemical waste (i.e. silica, transition metals, thiols) as required.
Liquid nitrogen	Tha	Drop off the Dewar to be refilled, collect and return to the lab.
Rotavaps/Sonicator	Helal	Change the water bath fortnightly with deionised water. Replace any broken or damaged parts, chase up repairs and ensure equipment is used properly and area is kept tidy.
Balances	Mohammed	Ensure that the balance area is clean and tidy. No chemical spills or stains (weekly).
LCMS/HPLC	Paul and Dana	Troubleshooting and assisting newly trained users.
Biotage	Fahima and Paul	Troubleshooting and liaising with accounts manager.
IR	Dana	Troubleshooting and training of new users.
Safety	Mohammed	Weekly check of safety showers and eye wash.
Compressed gasses	Uzma	Arrange replacement of cylinder.
TLC stations	Dmitrij	Prepare/replace TLC dips as required. Ensure that TLC station has recipes and functional groups suitable for each stain displayed. Keep UV lamp area tidy.
Computers	Ed	General troubleshooting and liaising with IT services.
Inventory/reagent management*	Helal (Wells) and Dana (Todd)	Ensure that chemical storage is in line with what's expected by UCL and the UK in general (i.e. separate incompatible chemicals and store chemicals according to their hazards). Organise and coordinate yearly stock check of inventory.
Vacuum pumps	Dhuha and Dmitrij	Replace the oil in the high vacuum pumps (every 6 months typically or as required). General troubleshooting and ensure that the pumps are operating as they should. Ensure that the Dewars contain enough liquid N ₂ and traps are emptied after use.
Rotas	Ed	Waste disposal and consumables rotas.

Before leaving the group or finishing with a job, it is important to pass on the details of the job to another group member.

G25 Lab Rules

General housekeeping

It is imperative that **communal areas** and the apparatus stored within them are left clean for the next person to avoid contamination and risk of injury.

Glassware is limited so promptly clear up after yourself, particularly with more specialist equipment such as columns and don't hoard items you're not using on a daily basis.

Cleaning – Glassware should be cleaned thoroughly on BOTH the inside and outside. First, rinse with detergent/water and then with acetone. You may need to do this multiple times to remove stubborn stains. If it is not possible to get an item clean, it must be subjected to harsher cleaning agents (e.g. acid/base bath) or suitably disposed of. Rinse with acetone before drying.

Solvent Winchesters must be returned to the solvent cabinets when they are not in use (particularly overnight). We have a safety obligation to do this, and in addition, it makes it easier for others to locate solvents they need. Please don't open several bottles of the same solvent and keep the flammables cabinet tidy. This allows us to quickly check stock levels.

Good gloving practice – Gloves when used properly can help protect your skin from contamination from chemicals and other hazards. It's essential that you wash your hands once gloves have been removed. Disposable gloves must be discarded once removed and not saved for future use. Remove gloves before touching personal items, such as phones, computers and one's skin. If for any reason a glove fails, and chemicals come into contact with skin, consider it an exposure and seek medical attention.

Balances – The balances are a glove-free area to prevent cross contamination. If you're weighing out something particularly toxic, use clean gloves and dispose of them after use. The balance spirit level should be checked before every use and the balance adjusted accordingly. If you are unsure how to do this, ask someone to show you. The balance should always be spotless. Any spills should be dealt with immediately, to prevent permanent damage, using either ethanol or IPA.

Rotavaps – Ensure that the dry ice/IPA is topped up in the trap before applying vacuum. Do not use the 'continuous' function or apply full vacuum with solvent remaining in the collection flask as this will pull solvent through the pumps. Additionally, empty the collection flask to remove low boiling solvents, before attempting to remove higher boiling ones. Clean the adaptors and empty the collection flask after use, ready for the next user and set the bath temperature back down to 25 °C. If you are removing higher boiling solvents such as water and DMF, clean the rotavap thoroughly to prevent contamination for the next user. Do not use the rotavaps on the benches to remove anything potentially toxic or smelly. The rotavap in the fumehood can be used for this purpose. Fill in the log book and clean the rotavap thoroughly after use.

Cutting TLC plates – Cut whole plates using the guillotine and do not leave odd shapes. When finished, wipe down the area and DO NOT leave loose silica lying around.

TLC station – Keep the TLC dips area tidy. Either dip TLC plates directly into the stain bottles or use the pipettes provided. Don't leave dirty/broken glass pipettes lying around and clear up after yourself. If you get stains on the bench, give it a wipe.

Hi-Vac line – The vacuum should only be used to remove trace amounts of solvents. Excess solvent should be first removed on the rotavap. The trap gets blocked very easily if too much

solvent is pulled in. Ensure that you top up the Dewar with liquid nitrogen when using the line. Some solvents take longer to remove than others, but don't leave compounds on there for longer than required as space is limited. After switching off the line, ensure that you check the trap for any condensed solvent. This needs to be removed to ensure that the best possible vacuum is maintained.

Floor/bench space – The floor space should be kept completely clear. Everything (including solvent Winchester's when in use) should be placed on the bench and not stored on the floor or on stools.

Sharps – Needles must never be left around unprotected. Do not resheath needles. Dispose of them directly or store in a small vial for reuse if necessary.

Biotage Selekt – There is no booking system and you can use the purification system as required, when it is not in use. There are currently 9 racks available. Please don't keep racks and tubes in your fumehood for prolonged periods of time. Combine your fractions as soon as possible after doing a column and clean the tubes thoroughly, finishing with several acetone rinses. To ensure that the tubes dry quickly for the next user, place them upside down onto tissue on the bench, before returning them to the Biotage or the designated cupboard.

We have bought many Sfär cartridges of varying sizes. You can reuse these several times by simply flushing with MeOH at the end of a run (to remove any impurities remaining on the column), followed by a less polar solvent. The column should then be dried by doing an air flush. As the Sfär columns contain spherical silica with a high surface area, they have a higher loading capacity. This means that you can use a smaller column than you usually would to achieve the same separation. Be aware that your compounds may behave differently on spherical silica in comparison to the standard Merck silica TLC plates we use. You may need to alter your gradient accordingly.

There are many methods of loading (i.e. liquid and dry) and you would have been sent a guide on this. Once the silica has reached its lifetime (i.e. you start to see gaps between the silica and the frit) you can remove the frit and dispose of the silica. The empty cartridge can then be refilled as required.

LCMS – You will have received guidance on the use and maintenance of the analytical and preparatory LCMS instruments. Please refer to these documents and ensure you play close attention to the do's and don'ts. Always use LCMS grade solvents (preferred over HPLC). For the analytical system, prepare dilute samples which have been filtered through a syringe filter and inject 0.1-0.5 µL, working your way up if necessary. It is good practice to run a wash before and after you sample and if you are the last person to use the system in the day, run the wash sequence (Wash.S). For a more thorough wash, use the iPrOH.S sequence.

Consumables

Consumables which are at or below the stock (min) level, will be ordered to replenish stock to the max level by those individuals assigned to the role. Typically, these take 1-3 days to arrive although some items (i.e. vials) can take slightly longer (4-5 days). To make it easier to determine stock levels, please keep the consumables cupboards tidy and don't hoard consumables that you're not using in draws. If items have a long lead time, we will endeavour to order alternatives if urgent.

When consumables arrive, we may ask for help collecting these from stores. Please be receptive if you are asked.

Reagent management – It is essential to manage reagents correctly to not adversely affect your chemistry or that of others.

All new compounds should be added onto Quartzly immediately and assigned a suitable sub-location. All empty reagent bottles should be removed from the inventory before disposal. Empty bottles, or reagents that have been deemed unusable should be labelled as such, removed from the database and disposed of. – ***This is the responsibility of everyone in the lab.***

As a group we will carry out an annual stock take (likely in December) to ensure that the inventory is up to date. It's the responsibility of those assigned to managing the inventory to coordinate this and advise group members on appropriate locations for chemicals. This needs to be in line with what's expected by UCL and the UK in general.

Waste Disposal

In general, small amounts of waste (acetone washings, used silica, sharps etc.) can be contained and stored in individual fumehoods and then transferred to the dedicated storage area. However, for particularly hazardous waste, you may need to quench these if appropriate and move them to the final storage area and arrange for their disposal.

- **Solvent waste** – Waste should be separated into chlorinated or hydrocarbon (non-chlorinated) and transferred to 10 L plastic drums which are stored in the waste fumehood. Drums can be collected from stores, and it is our responsibility to clearly label these with the type of waste (non-chlorinated or chlorinated) and the lab number (i.e. G25). Once full, these will need to be taken outside to the storage facility, ready for collection. DO NOT TOTALLY FILL waste containers as the contents can potentially expand when warmed. This presents a danger to us and those collecting the waste. It is not one individual's responsibility to collect waste drums from stores. Take initiative and collect more if needed.
- **Bins** – Gloves and other waste should be placed in yellow hazardous waste bags. Once full, these should be tied off with cable ties that can found in the consumables draw. Yellow bags need to be taken outside for disposal by the two people assigned to waste that week. Waste paper towels generated from handwashing can be disposed off in the small bin near the handwash sink. No laboratory waste should be placed in this bin.
- **Aqueous waste** – In general, aqueous acidic and basic waste should be neutralised and transferred to the appropriate 10 L waste drum in the waste fumehood.
- **Hazardous waste** – Filled containers of silica waste need to be appropriately labelled and disposal arranged. This is done through stores and is the responsibility of the person allocated to hazardous waste disposal. Very toxic waste and heavy metals (e.g. Pd, Cu, Ni) need to be transferred to clearly marked containers and their disposal arranged via stores. For commonly used heavy metals (i.e. Pd), waste containers can be stored in the waste fumehood rather than individual areas.
- **Glass bins** – Glass waste is put into one of the designated bins. Once full these need to be closed, sealed with tape and taken outside.

Lab shut-down – At the end of the day, everyone needs to ensure that their area is shut down before leaving. The last person to leave should double check that the UV lamps, Biotage, rotavaps, pumps and hi-vacs are turned off. Fume hood sashes should be closed when leaving the lab - at any time of day.