

## Hands-on DNA: Bacterial Evolution – Equipment List

| <b>Equipment for workshop prep</b> |  |
|------------------------------------|--|
| Fridge                             | Thawing DNA samples, short-term DNA storage and storing agarose gels (if required)   |
| Freezer (-20°C)                    | Storing DNA sample aliquots  |
| Ice machine                        | Crushed ice needed for DNA samples during workshop and during DNA aliquoting. Can use ice cubes and a blender.                                       |
| Insulated ice pots                 | Can use shallow polystyrene pots/cups (from a catering supplier)   |
| Microtube racks (1.5ml tubes)      | Use when aliquoting student DNA samples and for storing samples in the freezer   |
| Fine tipped marker                 | Labelling student DNA tubes (we recommend Staedtler Lumocolor Fine Permanent markers)  |
| Microcentrifuge                    | Spinning liquid in DNA tubes down to bottom prior to aliquoting and handing out to students  |
| Micropipette (P200) + tips         | Aliquoting master tubes of DNA into 25µl aliquots for students, adding SYBR-Safe DNA stain to molten agarose   |
| 1000ml measuring cylinder          | Diluting 10x TBE to 1x for gel running and agarose gel prep  |
| Spatula                            | Measuring powdered agarose   |
| Top-pan balance                    | Weighing out powdered agarose  |
| 250/500ml measuring cylinder       | Measuring 1x TBE for agarose gel prep  |
| Glass conical flask (500ml)        | Preparing molten agarose   |
| Microwave                          | Preparing molten agarose for gel pouring   |
| Heatproof gloves/ 'hot hands'      | For handling hot conical flask of molten agarose   |
| Gloves (disposable)                | Ideally non-powdered nitrile gloves. Latex not recommended. Wear when handling concentrated SYBR-Safe stain and removing gel combs and casting gates |

| <b>Equipment for each student group (and duplicate set for demonstrator)</b> |   |
|--|---|
| Gratnell tray  | One per student group   |
| Microtube rack   | To accommodate 0.2ml tubes  |
| Micropipette   | Need to pipette 20µl and 4µl volumes  |
| Tip box with tips  | Boxes can be reused and should be kept topped up with fresh pipette tips (no need to sterilise) |

|                    |   |
|--------------------|---|
| Fine tipped marker | For labelling tubes (see above)   |
| Float rack         | For incubating samples in water bath – available from NCBE as part of starter kit |
| Ball point pens    | For filling out worksheets – use pencils if desired                               |
| Scissors           | For restriction digest activity – round-ended craft scissors are ideal            |

| <b>Equipment on each table</b>      |  |
|-------------------------------------|--|
| Power pack                          |  |
| Gel tank with gel                   | Pre-pour agarose gels, remove comb and casting gates and set up in tanks, ready for students to add running buffer |
| Container for waste tips/tubes      | No need for a lid or disinfectant  |
| Spare 1.5ml microtubes              | For pipetting practice   |
| Duran bottles or similar (500ml/1L) | For 1x TBE on student benches  |
| Plastic funnel                      | For decanting used TBE back into bottles   |

| <b>Equipment on demonstrator bench</b> |  |
|--|--|
| Insulated box (e.g. polystyrene box)   | To keep DNA samples (on ice) cold before handing out to students   |
| Microcentrifuge                        | For spinning down samples after restriction digest and as required |
| Orange glasses                         | For viewing gels (class set if possible)                           |

| <b>Equipment on side benches/ around classroom</b> |   |
|--|---|
| Water bath   | Set to 37°C                                 |
| Vortex mixer(s)                                    |   |
| Blue-light transilluminators                       |   |
| Gratnell Racking                                   | Useful for storage of pre-set student trays |

| <b>Equipment for other activities</b> |  |
|---------------------------------------|--|
| Restriction enzyme activity           | Thermal printer + 25mm rolls thermal paper <b>or</b> A3 printer, guillotine + sticky tape  |
| Bacterial evolution game              | For each group of four: Counters (large and small, four colours, ten of each size), mutation spinner (laminated card + matchstick), dice, chance cards, mutation cards |