

HOW TO STUDY MICROBES THAT CAUSE DEADLY DISEASES

Alternative text

BSL *	Containment measures*	Nature of microbe	Example microbes†
1	Open benchwork	Unlikely to cause disease in humans	Non-pathogenic <i>E. coli</i> <i>Pseudomonas fluorescens</i> Saccharomyces spp. Coccolithophores Tobacco mosaic virus
2	Open benchwork. Use of Class II biological safety cabinet (BSC) if risk of infection from aerosol or splashes. Restricted access to laboratory.	Can cause human disease and presents risk to lab workers, unlikely to spread to community, usually effective prevention/treatment	<i>Campylobacter jejuni</i> <i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> <i>Candida albicans</i> <i>Acanthamoeba</i> spp. <i>Giardia lamblia</i> Varicella zoster virus (chicken pox) Measles virus Zika virus
3	All work must be performed in an appropriate BSC. Special PPE such as respirators often required.	Can cause severe human disease and presents high risk to lab workers, may spread to community, usually effective prevention/treatment	<i>Bacillus anthracis</i> <i>Escherichia coli</i> O157:O7 <i>Yersinia pestis</i> <i>Blastomyces dermatitidis</i> <i>Coccidioides immitis</i> <i>Plasmodium falciparum</i>

	Restricted and controlled access to laboratory. Directional airflow.		Rabies virus SARS / MERS coronaviruses Yellow fever virus
4	All work must be performed in a Class III BSC. Airlock entry, shower upon exit. High-tech PPE such as positive pressure suit and respirator. Pass-through autoclave (through the wall).	Can cause severe human disease and presents high risk to lab workers, likely to spread to community, effective prevention/treatment usually not available	Ebola virus Marburg virus Nipah virus Variola virus (smallpox) NOTE: only viruses in BSL-4

*All biosafety levels (BSL) require use of standard microbiological practices including aseptic techniques.

+ The current list of microbe classifications in the UK can be found at <http://www.hse.gov.uk/pubns/misc208.pdf>