

## Failure mode and effects analysis

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system or function	step	situation	causes, mode	potential incident	impacts, consequences	preventive measure
eppendorf with GMO inside	transformation	eppendorf open	manipulation mistake or normal situation	aerosol creation	spread of microorganisms	manipulation process without creation of any aerosol
eppendorf with GMO inside	extraction of the medium	eppendorf falls	manipulation mistake or coactivity	aerosol creation, liquid leakage	spread of microorganisms	cleaning of the spot where the leakage happened with bleach and alcohol
erlenmeyer flask with GMO inside	transformation after culture	erlenmeyer flask open	manipulation mistake or normal situation	aerosol creation	spread of microorganisms	manipulation process without creation of any aerosol
erlenmeyer flask with GMO inside	transformation after culture	erlenmeyer flask falls	manipulation mistake or coactivity	aerosol creation, liquid leakage	spread of microorganisms	cleaning of the spot where the leakage happened with bleach and alcohol
eppendorf with GMO inside	transport of eppendorfs in the ice	eppendorfs not correctly closed	manipulation mistake or coactivity	aerosol creation, liquid leakage	spread of microorganisms	reduction of the number of transport, check of the well closing eppendorf
flow hood	manipulation under flow hood	manipulation with the flow hood on	normal situation	spread of aerosols in the lab	release of the GMOs out of the lab	
eppendorfs or erlenmeyer	culture in the shaker	eppendorfs or erlenmeyer not correctly fixed or not correctly closed	manipulation mistake	aerosol creation, liquid leakage	spread of microorganisms in the device and in the lab	adjustable attachment system, verification of the good container closure
	screening of petri plate under flow hood	unadequate manipulation	tiredness, incompetence of the manipulator	aerosol creation, solid medium impaired	spread of microorganisms	writing processes, manipulators trained
fridge	storage	cooling fridge breakdown	fridge breakdown, electric failure	increase of bacteria growth	increase of waste	(fridge spare, generator spare)

freezer	glycerol stock storage	cooling freezer breakdown	freezer breakdown, electric failure	loose of glycerol stocks	increase of waste	(freezer spare, generator spare)
autoclave	need of doing autoclaves	autoclave breakdown	autoclave broken, lack of authorize people to use the autoclave, electric failure	increase of waste , trash bag pierced	spread of microorganisms	training compain for the use of the autoclave, check up of the autoclave annualy, setting up of non-piercable trash bags, storage of biological waste in a special room.
centrifuge	centrifuge in use	centrifuge not balanced	manipulation mistake	centrifuge damage	spread of microorganisms	information on how using devices
eppendorf	eppendorf used in centrifuge	eppendorf open	manipulation mistake	aerosol creation	spread of microorganisms	writting processes