SPARQ-ed Risk Assessment Sheet : PCR and Real-Time PCR

Description of Risk	Hazard				Analyse / Evaluate Risk			Overall Risk Category (see explanation below)
	Source	Current Controls	Event	Category	Consequences	Exposure	Probability	
RSI – Repeated Pipetting : If a large number of reactions are performed (can be done as 96 well plate) then repetitive pipetting occurs. PCR and real-time PCR requires repeated pipetting into small tubes or wells.	Muscular (Strain)	SPARQ-ed participants only do one PCR tube per person. Use of a "robot" for large scale projects	Long term repetitious pipetting results in injury to wrist and/or thumb	Repetitive movement with low muscular loading	**Substantial :** Long term injury to tendons in wrist and thumb.	**Unusual**	**Unusual But Possible**	
Skin Burns from Hot Surfaces of PCR Cycler: Thermocyclers generate high heats (max ~98°C) during their cycling - thermal cyclers can also be used as heating blocks. Touching the thermoblock may result in burning injury.	Thermal	PPE (gown, gloves, and appropriate footwear). Protective lid/cover for thermal cyclers during run. Use of forceps to remove tubes if hot. Temperature is held at 4°C at the end of the run after which the tubes are removed. Use of machine training provided to all staff Temperature is always displayed on the machine.	If tubes are unloaded prior to machine cool down period finger tips can suffer minor burns. Contact with the heating block when at high temperature during a thermal cycle (eg. adding polymerase to 'hotstart' PCR) . Ignoring heat warnings	Contact with or exposure to heat or cold	**Minor :** Minor burns to hand/fingers.	**Unusual :** In a standard thermal cycler, if lid/cover is in place. It is unlikely that this would be removed (thermal lid) and reactions are cooled to 4°C at end of cycle as part of standard cycling conditions.	**Conceivable :** Only conceivable in the thermal cycler if lid is lifted during cycling to add/remove something - care would be required. The lid is locked during the Rotorgene run but conceivable if tube removal is too soon after run is finished.	

Prob	Exposure					
	VR	R	U	O	F	C
AC	Low	Mod	Subs	Subs	High	VH
QP	Low	Low	Mod	Mod	Subs	High
UP	Low	Low	Low	Mod	Mod	Subs
RP	Low	Low	Low	Low	Low	Mod
C	Low	Low	Low	Low	Low	Low
PI	Low	Low	Low	Low	Low	Low

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PI	Low	Low	Low	Low	Low	Low

Explanation of Overall Risk Categories

Exposure

Very Rare (VR) – extremely rare (has not yet occurred	**Rare (R)** – hardly every occurs (but has been known to occur)	**Unusual (U)** – does not occur often (from once per month to once per year)	**Occasional (O)** – sometimes occurs (from once per week to once per month)	**Frequent (F)** – occurs often (approximately once daily)	**Continuous (C)** – occurs repeatedly (or many times daily)

Probability (Prob)

Almost Certain (AC) – is the most likely and expected result if the hazard event takes place	**Quite Possible (QP)** – is quite possible, not unusual, has an even 50/50 chance	**Unlikely but Possible (UP)** – Would be an unusual sequence or coincidence	**Remotely Possible (RP)** – would be a remotely possible coincidence	**Conceivable (C)** – has never happened after many years of exposure, but is conceivably possible	**Practically Impossible (P)** – has never happened after many years of exposure and is virtually impossible

Overall Risk Category

Low – risk is normally acceptable	**Moderate (Mod)** – should be dealt with as soon as possible but situation is not an emergency	**Substantial (Subs)** – should receive attention as soon as possible	**High** – immediate correction required	**Very High (VH)** – immediate correction required

The Overall Risk Category for each element is highlighted in green.