General Risk Assessment

Form RA1

School Assessment No:	R(D)SVS/The Roslin Institute
Title of Activity:	A Question of Taste – PCR workshop
Location of Work:	Easter Bush Science Outreach Centre

Brief Description of Work:

A full-day (approx. 5 hour) hands-on PCR workshop, which includes:

1. Phenolthiocarbamide (PTC) taste test using control and PTC paper test strips to reveal PTC tasting phenotype (taster or non-taster).

2. Collection of participants own cheek cells using saline mouthwash and DNA extraction from cell pellet.

3. Polymerase Chain Reaction using extracted DNA to amplify a region of the *TAS2R38* gene.

4. Restriction enzyme digests of PCR products using HaeIII enzyme.

5. Agarose gel electrophoresis of digested samples.

6. Visualisation of DNA samples on agarose gels to reveal *TAS2R38* genotype* (homozygous taster, heterozygote, homozygous non-taster).

In addition participants will perform a range of paper-based and discursive learning activities.

The workshop will be led by a member of UoE staff and assistance will be provided from one or more student/researcher/clinician volunteers (including undergraduate and postgraduate students, UoE staff and STEM Ambassadors).

Note: Please see the separate *EBSOC visit risk assessment* for general information about your visit to the Easter Bush Science Outreach Centre.

*Examining the *TAS2R38* gene reveals no information about any health-related genetic information to the participants. It is strongly recommended that this practical is not performed by parents and their children, as there are some patterns of results which could lead to doubts about maternity and paternity. Please see appendix for further details.

Hazard Identification:

Hazard(s)	**Present Risk Evaluation** L/M/H	**Control Measures** (i.e. alternative work methods / mechanical aids / engineering controls etc.)	**Risk Evaluation after control** L/M/H
Slips and trips: Items left in walkways, liquid spills	L	No electrical wires or other items will be placed across walkways. Any liquid spills will be cleaned up immediately. Stools will be stacked or pushed under benches when not in use.	L
Electrical hazards: Lab equipment	L	All electrical equipment at Easter Bush Campus is PAT tested annually. Participants will be supervised when setting up gel electrophoresis tanks and power will be turned on and off by demonstrators.	L
Toxicity: PTC taste test	L	Participants will only be permitted to taste one PTC test strip containing 3-4µg PTC (below limit recommended by CLEAPSS). Demonstrators will use a control strip to demonstrate tasting technique to avoid repeated tasting.	L
Biohazard: Cheek cell sampling	L	Participants will only handle their own cheek cell samples. Cell suspensions will be disposed of down the sink as soon as they are finished with. Any spills will be cleaned up using suitable disinfectant.	L
Burns: Molten agarose	M	Demonstrators will use protective hand and eye wear when preparing molten agarose. If participants are pouring their own agarose gels, the molten agarose will be decanted into plastic 50ml tubes containing a small volume (approx. 60ml), cooled to 60°C and they will be fully supervised at all times.	L

Eye damage: Transilluminators	L	Participants will only use blue light transilluminators (a safer alternative to UV). Participants and demonstrators will wear protective glasses and/or use filter screens on transilluminators to avoid exposure to bright blue light. Only demonstrators will use the UV Gel doc to photograph gels – this has a safety feature to cut out the UV transilluminator when the door is opened.	L
Chemical hazard: DNA extraction, PCR and DNA digest setup.	L	Chemicals involved are not hazardous but could cause minor discomfort if swallowed or splashed into eyes. Participants will wear lab coats and nitrile gloves throughout the practical work and eye protection when appropriate.	L
Chemical hazard: SYBR-Safe DNA stain in DMSO (dimethyl sulfoxide)	M	Only demonstrators will handle SYBR-Safe stock solution when preparing agarose gels, used at 1:10,000 dilution. Participants and demonstrators will wear nitrile gloves at all times when handling SYBR-Safe or agarose containing SYBR-Safe. Should stock SYBR-Safe come into contact with gloves, gloves will be removed and replaced. Gloves will be removed shortly after handling agarose gels and disposed of safely.	L

Engineering Controls: none required

Personal Protective Equipment (PPE):

Eye / Face	x	Hand /Arm	x	Feet / Legs		Respiratory	
Body (clothing)	x	Hearing		Other (Specify)			
Specify the grade(s) of PPE to be worn: Reusable safety glasses and lab coats, disposable nitrile gloves.							
Specify when during the activity the item(s) of PPE must be worn: Lab coats at all times during workshops, gloves and safety glasses as required by practical activities.							

Non-disposable items of PPE must be inspected regularly and records retained for inspection

Persons at Risk:

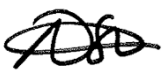
Academic staff	x	Technical staff	X	P'Grad students	x	U'Grad students	x
Maintenance staff		Office staff	x	Cleaning staff		Emergency personnel	
Contractors		Visitors	x	Others			

Additional Information:

All demonstrators will receive training, including all health and safety aspects, before taking part in the workshops.

School groups taking part in the workshop will be accompanied by a teacher/other responsible adult at all times.

Assessment carried out by:

Name:	Nicola Stock	Date:	15.12.17
Signature:			

Appendix: Ethical Considerations – PTC tasting

It is strongly recommended that children and their parents do not participate together in this activity.

The ability to taste PTC is mainly due to differences at various locations within the *TAS2R38* gene. Therefore, it is a trait which is inherited from parents. Because of this, there are some combinations of results which could cause anxiety to parents and children who participate together in this activity.

There are several explanations for unexpected results. These include the number of differences within the *TAS2R38* gene that can affect ability to taste PTC, differences in other genes involved in taste, participant's age, whether they are a smoker, and the density of a person's taste buds. These complex factors that contribute to the ability to taste PTC suggest that the taste test cannot definitively reveal any sensitive information between family members. However, it is strongly advised that this situation is avoided by preventing parents and children participating in this activity together and by ensuring that students do not have access to PTC strips that they could take home.

This taste test protocol has been considered by a leading UK geneticist who has stated that differences in the ability to taste PTC are highly unlikely to be associated with any other health conditions for the participants.