Risk Assessment Form
Cardiff School of Biosciences

IMPORTANT: Before carrying out the assessment, please read the Guidance Notes

1. General Information

School	Cardiff School of Biosciences	**Building**	Biosi 3	**Room No**	5.11
Name of Assessor	Dr. Amit Jathoul	**Date of Original Assessment**	16.10.15	**Assessment No or practical module No**	1

Status of Assessor: ☒ Staff Postgraduate ☐ Undergraduate ☐ Other: (Specify) _____

2. Brief Description of Procedure/Activity including its Location and Duration

Fluorescence and bioluminescence imaging for assays in in vitro culture dishes, fabricated structures, or organisms on bacterial plates, yeast plates, seedlings and whole plants, mammalian cell cultures and small rodents. Location: Room 5.09, 5th floor, Biosciences 3.

This risk assessment covers the following instrument, which is a spoke within Cardiff School of Biosciences Bioimaging Facility (BIOSI 2; E/0.03): PhotonIMAGER Optima, macrolens, and in actio modules (Biospace Labs, Paris, France).

The system uses light-emitting diode light sheet illuminators for fluorescence excitation.

2a. Is your work governed by specific legislation ie:

(Tick as appropriate, see guidance notes)

Human Tissue (HTA-work involving human tissue):	☐	Approval / compliance obtained ☐
GM (any genetically modified organism including plant and animals):	☐	Approval / compliance obtained ☐
Radiation (radioisotopes, sealed sources):	☐	Approval / compliance obtained ☐
Controlled Drugs:	☐	Approval / compliance obtained ☐
Non ionising radiation (lasers, magnetism):	☐	Approval / compliance obtained ☐
Use of human subjects (Ethics):	☐	Approval / compliance obtained ☐

3. Persons at Risk Are they Notes

Staff	☒	Trained	☒	All users must be trained by either Dr Lee Parry or Dr Patrick Hardinge
Visitor	☐	Disabled	☐	
Contractor	☐	Inexperienced	☐	
Students	☐	Competent	☐	
Vulnerable groups	☐			

4. Level of Supervision Notes

None ☐ Constant ☐ Periodic ☐ Training Required ☒	

5. Will Protective Equipment Be Used? Please give ***specific*** details of PPE

Head ☐ Eye ☐ Ear ☐ Body ☒ Hand ☒ Foot ☐	Laboratory coat and gloves to be worn at all times during use of instrument.

6. Is the Environment at Risk? Notes

Yes ☐ No ☒	

7. Will Waste be generated? If 'yes' please give details of disposal

Yes ☒ No ☐	All general waste (no organisms), e.g. used towels, bottles, gloves, etc to be

	disposed of in red bin provided. All sharps, e.g. syringe needles, to be disposed of in sharps bin provided.

8. Hazards involved

Work Activity / Item of Equipment / Procedure / Physical Location	Hazard	Control Measures and Consequence of Failure	Likelihood (0 to 5) ×	Severity (0 to 5) =	Level of Risk
Optical Imaging/ PhotonIMAGER Optima/ Anaesthetisation of animals/ Room 5.09	Isoflurane leakage and exposure of experimenters	Mice anaesthetised with 2-4% isoflurane and 2L/min oxygen within air-tight chamber. Excess gas scavenger fitted.	2	2	4
Optical Imaging/ PhotonIMAGER Optima/ Fluorescence imaging/ Room 5.09	Exposure of experimenters to illuminator light source for fluorescence excitation	Illuminators deactivate if the front door of the instrument is opened.	1	1	1
Optical Imaging/ PhotonIMAGER Optima/ general imaging/ Room 5.09	Spillage of liquids onto computer or machine	Please mop up and notify Bioimaging staff to assess the instrument. In rare cases, this may cause an electrical short that could lead to an electrical fire. In such case, press the fire alarm and evacuate building, moving to assigned meeting points (Museum Avenue). Fire Marshals should utilise CO_2 cannisters to put out the fire.	1	1	1
Optical Imaging/ PhotonIMAGER Optima/ general imaging/ Room 5.09	Escape of animals in machine or room	If animal escape is suspected, discontinue imaging. Open the device and locate all animals and return them to their cages and then to the animal holding facility for imaging on a subsequent day, unless you are permitted to re-anaesthetise them.	1	1	1
Optical Imaging/ PhotonIMAGER Optima/ Disposal of sharps/ Room 5.09	Penetration of skin with syringe needle during use or disposal	Syringe needles should always be handled with care. Once uncapped, do not attempt to replace needle caps. For disposal, grip from plastic part of fitting and slowly place into sharps bin.	1	2-3	2-3

9. Chemical Safety (COSHH Assessment)

Hazard	Control Measures	Likelihood (0 to 5) ×	Severity (0 to 5) =	Level of Risk
Isoflurane spillage	Users should take care not to spill isoflurane when filling the vapouriser. If spillage occurs, the user should mop it up with a towel (if less than ca.20ml) and vacate the room for 30 min, leaving the door open. If the spill is larger (i.e. an entire 250ml bottle), the room should be evacuated with the door closed and health and safety manager notified. In case of spillage on skin or eyes wash well with water/ use eye bath. For ingestion seek medical attenuation. Risk	2	2	4

	Phrases: R36 - Irritating to eyes. R37 - Irritating to respiratory system. R38 - Irritating to skin.			
Firefly luciferin use	Wear gloves and lab coat. Luciferin is non-toxic.	1	1	1

Scoring Criteria for Likelihood (chance of the hazard causing a problem) Likelihood
Scoring Criteria for Severity of Injury (or illness) resulting from the hazard

	Likelihood					
5	Almost Certain	**5**	**10**	**15**	**20**	**25**
4	Very Likely	**4**	**8**	**12**	**16**	**20**
3	Likely	**4**	**6**	**9**	**12**	**16**
2	Unlikely	**2**	**4**	**6**	**8**	**10**
1	Very Unlikely	**1**	**2**	**3**	**4**	**5**
	Severity	No Injury / Illness	First Aid Required	Minor Injury	Major Injury	Death
		1	**2**	**3**	**4**	**5**

Score Action to be taken:

0-5	**Low Risk**	No further action needed.
6-9	**Medium Risk**	Appropriate additional control measures should be implemented
10-25	**High Risk**	Additional control measures **MUST** be implemented. Work **MUST NOT** commence until such measures are in place. If work has already started it must **STOP** until adequate control measures are in place

10. Source(s) of information used to complete the above e.g Supervisor, Web etc….

Personal experience, MSDS and example risk assessment forms for fluorescence microscopy

11 Additional Control Measures – Likelihood and Severity are the values with the additional controls in place

Work Activity / Item of Equipment / Procedure / Physical Location	Hazard and Existing Control Measures	Additional Controls needed to Reduce Risk	Likelihood (0 to 5) ×	Severity (0 to 5) =	Level of Risk

After the implementation of new control measures the procedure/activity should be re-assessed to ensure that the level of risk has been reduced as required.

12. Action in the Event of an Accident or Emergency

Report to supervisor / manager. Follow OSHEU guidance (ext 74910).

13. Arrangements for Monitoring the Effectiveness of Control

Ad-hoc visual checks and periodic review of existing risk assessments. School Safety inspections, internal and external safety audits.

14. Review: This assessment must be reviewed by (date): 13.11.2021

Name of Reviewer:	Dr Patrick Hardinge	Date of Review:	13.11.2020
Have the Control measures been effective in controlling the risk?	Yes		
Have there been any changes in the procedure or in information available which affect the estimated level of risk?	No		
What changes to the Control Measures are required?	None		

15. Signatures for printed copies:

Assessor: Dr. Amit Jathoul Date: 16.10.15

Approved by: Date:

Reviewed by: Date:

This copy issued to: Date:
(print name and signature)