AE ReportA 15088 ~ (Status=ACCEPTED)(Applicant=[redacted]) (AE APPLICATION 15088) Generation of climate-smart cattle from edited embryos

Group	Line	Question	Answer
		0. ADMINISTRATIVE DETAILS	
0	1	**Title**	(AE APPLICATION 15088) Generation of climate-smart cattle from edited embryos
0	2	**Applicant**	[redacted]
0	3	**Project proposer (If not the person named above)**	
0	5	**Institution**	AgResearch Limited
0	6	**Location**	AGR Ruakura
0	7	**Start Date (dd/mm/yyyy)**	09/09/2020
0	8	**Finish Date (dd/mm/yyyy)**	09/09/2021
0	9	**Number of animals used ~ Species used**	74 ~ Cattle
0	10	**Number of animals used ~ Species used**	
0	11	**Number of animals used ~ Species used**	
0	12	**Number of animals used ~ Species used**	
0	13	**If the number of animals used is not the same as the approved number of animals proposed for use in your application please explain why there is a difference.**	18 recipient cows were used in two different rounds of synchronisation and/or embryo transfers. In the application we had estimated that 10 calves will be produced during the approval period from November 2020 transfers. However, no pregnancies from edited embryos were established and hence control pregnancies aborted. 14 instead of 15 cows were used for ovum pick up.
0	15	**AgResearch Staff - please ensure the person responsible for entry of animal use data in to Animal Use database.is named on this form**	
0	17	**Animal Manipulation Grades**	
0	18	**The grades must reflect the summed impacts of both the initial state of the animal and the induced effect of the experimental procedure, not the induced effect alone**	
0	19	**What was the maximum animal manipulation grading approved in your proposal? (It is recorded in ANIMAL USE justification line 2 on your application)**	C (MODERATE IMPACT)
0	20	**Was the maximum grading of manipulations for some or all of the animals indicated in your proposal appropriate? (YES or NO)**	yes
0	21	**If, now that you have completed the manipulations, you think that the maximum grading was different from your proposal please explain why.**	
0	22	**What should the maximum grading now be?**	C (MODERATE IMPACT)
0	23	**If you have changed the grading for some or all of the manipulations please remember to use the appropriate grading on the AEStats form**	
		1. MANIPULATIONS	
1	1	**Please note that an answer is required for points 3, 5 and 7. Even a No answer must be included**	
1	2	**Briefly outline the manipulations carried out (including any approved modifications). Please include treatments, numbers of animals etc.**	Modification 2798 Synchronisation of 28 recipients and transfer of 15 edited and 10 control embryos. Ultrasound pregnancy scanning and abortion of control embryos at around day 45 of gestation.

			Modification 2860 Synchronisation of 20 recipients and transfer of 16 edited embryos. Ultrasound pregnancy scanning and abortion of pregnancies at around day 45 of gestation. Modification 2911 14 high breeding worth cows had 6 rounds of weekly ovum pick up (OPU) and a last OPU session after a 3 week interval. Modification 2914 Synchronisation of 30 recipients and transfer of 15 edited and 10 control embryos. Ultrasound pregnancy scanning at day 35, 49 and 83 of gestation. Some recipients were re-used over the different ET rounds
1	3	**Did the manipulations go according to plan Yes or No?**	No
1	4	**If the manipulations did not go according to plan please state what happened**	Embryo transfers under modification 2798 did not establish pregnancies from edited embryos. This was later shown to have been caused by a toxic culture component and was resolved for subsequent embryo transfers. OPU cows were vet checked soon after arrival and it was recommended to give the cows a 6 week rest period prior to starting any OPU which was unexpected but didn't impact the trial. Animals over that time recovered from any uterine infections and gained body condition (remnant issues from previous farm) and OPU all went to plan from there.
1	5	**Were any adverse effects on animal welfare noted. (Bruising, swelling at injection sites, failure to adapt to changed conditions etc) Yes or No?**	No
1	6	**If Yes please detail any adverse effects on animal welfare**	
1	7	**Were any animals withdrawn from the experiment or euthansed prematurely Yes or No?**	Yes
1	8	**If Yes please state why this was necessary, state whether or not it was as a result of the manipulations and if it was a result of the manipulations please detail why it was necessary.**	Recipients pregnant with control embryos (Mod 2798) were aborted (prior to half gestation) in the absence of pregnancies with edited embryos.
1	9	**If Yes please detail and state whether or not this affected the outcome of the project**	The issue has been resolved and embryo transfers have/are going to be repeated.
		2. COMMENTS from STAFF	
2	1	**Please comment on your approaches you described in your application to address the 3R's. Were they successful?**	
2	2	**Replacement**	There are no tissue culture or other alternative models available to reliably predict the full impact of specific genetic modifications on the phenotype, the stability of the phenotype, long term health effects or data on the ability to safely contain and maintain cattle in outdoor containment.
2	3	**Reduction**	Embryos are biopsied and screened for intended genotype and only validated embryos will be transferred for development to term. Only a minimum number of animals for each line of genetically modified cattle will be generated that ensures programme objectives will be met.
2	4	**Refinement**	All manipulations are carried out according to SOP's or contracted out to ABS which aim to minimize any pain or noxiousness by use of minimally invasive techniques, sedation, pre-emptive pain relief and gold standard nursing and husbandry.
2	5	**Based on your experience of this and other experiments, do you have any comments that may assist those carrying out similar work in future and which might improve the welfare of animals in a similar trial and /or improve the efficiency of animal handling, staff safety, etc. (i.e. If you had to do this again what would you do differently)**	Regular review and update of husbandry protocols aids our aim to achieve gold standard nursing and husbandry. Recipients need a regular turnover to maintain a recipient herd that keeps fit for purpose.
		98. NOTES ~ Read only	
98	1	**Status Change**	([redacted] 28/09/2021) SUBMIT
98	2	**Committee Decision**	(14/10/2021 ACCEPTED[redacted])
		99. PERSONNEL SIGNATURES	

99	1	**Committee**	RUAKURA
99	1	**Programme leader and Facility manager must sign. All other personnel that were involved in this project must be named so that they can view and add to this report but they do not need to sign it.**	
99	99	[redacted] **~ approved ~ Job (Veterinarian and Animal Welfare Officer) Location (Lincoln Science Centre;)**	Veterinarian, Animal Welfare Officer
99	99	[redacted] **~ approved ~ Job (Animal Technician) Location (Ruakura; Animal Phys Yard, First Aid)**	Animal Technician, U/S, ET
99	99	[redacted] **~ Job (Associate Research Director - Delivery) Location (Invermay; Administrator:** [redacted] **)**	Associate Research Director
99	99	[redacted] **~ approved ~ Job (Farm Senior) Location (Ruakura; Farm. First Aid)**	Farm Senior
99	99	**HALET ~ approved ~ Job (Research Farm Manager, Ruakura) Location (Ruakura; Manager-Animal Containment Facility,Yard; First Aid)**	Farm Operations Manager / Facility Manager
99	99	[redacted] **~ approved ~ Job (Senior Statistician) Location (Ruakura; North Wing, Ground floor)**	Statistician
99	99	[redacted] **~ approved ~ Job (Principal Scientist) Location (Ruakura; Dairy Science Building)**	Programme Leader
99	99	[redacted] **~ approved ~ Job (Farm Senior - Farm Technical) Location (Ruakura; Containment Unit; First Aid)**	Farm Senior
99	99	[redacted] **~ Job (Senior Scientist) Location (Ruakura; An Phys. First Aid)**	Senior Scientist
99	99	[redacted] **~ approved ~ Job (Science Team Leader - Animal Biotechnology) Location (Ruakura; Repro-An Phys, Fire Warden)**	Principal Scientist, Science Team Leader