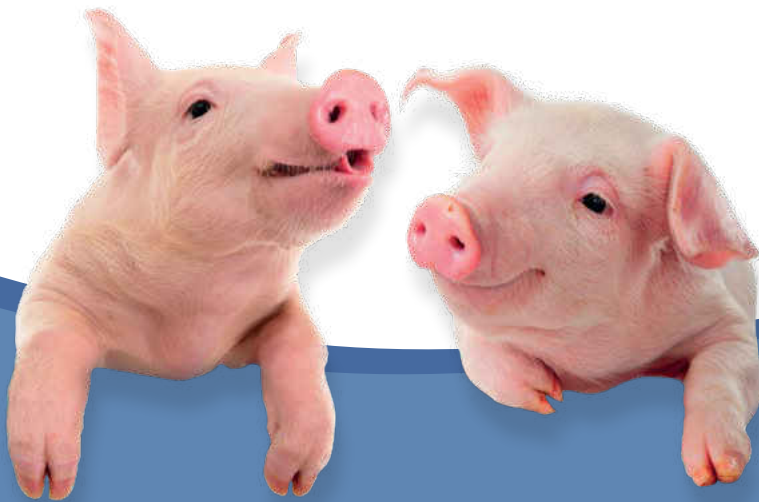


Australasian Pig Science Association  
**18th Biennial Conference, 2021**  
***Conference Handbook***



Australasian Pig  
Science Association (Inc)

## 2020–21 APSA Committee

President:	Robert Hewitt
Vice President:	Rebecca Athorn
Secretary:	Emalyn Loudon
Treasurer:	Frank Dunshea
Committee:	Jessica Craig Taya Clarke Kate Plush John Pluske
Immediate Past President:	Stuart Wilkinson
APSA Executive Manager:	Emalyn Loudon
APSA Conference Secretariat:	Kate Murphy, YRD Event Management

## 18<sup>th</sup> Biennial Conference **APSA 2021**

### Conference App

Delegates with a smart device will be able to access the program, speaker biographies and abstracts using the conference app.

To download:

1. Go to the Apple or Android app store
2. Search for Pheedloop Go
3. Download
4. Login details will be emailed to you.



**Australasian Pig  
Science Association (Inc)**

# Welcome from the President



Dear Colleagues,

On behalf of the APSA committee, it is with great pleasure that I welcome you to the 18th Biennial APSA Conference held here at Hotel X, Brisbane, or for the first time virtually.



Over the next four days, the diverse program will provide information on current thinking and solutions to many of the key challenges facing pork production. The organising committee has worked to draw together speakers from Australia and around the world to start a dialogue relative to sustainability, animal welfare, climate change impacts, and the adoption of technology, to name but a few.

The challenges that the COVID-19 pandemic has presented has shown the importance of connection and so, as is customary at an APSA Conference, several social functions will afford those able to be with us the opportunities to catch up with industry and research colleagues. I hope that you take the opportunity to relax with friends and forge collaborations with new ones.

I would like to thank all of our sponsors for their continued support of the APSA Conference. Without their incredibly generous support, the APSA Conference would not be possible. I would also like to offer my sincere thanks to the APSA committee; Rebecca Athorn, Frank Dunshea, Emalyn Loudon, Taya Clarke, Jessica Craig, Kate Plush, John Pluske and Stuart Wilkinson, as well as the team at YRD, Kate Murphy and Jenny Lawler for their hard work and contributions to making the APSA Conference succeed.

Lastly, thank you to all the delegates who have been able to travel to attend the APSA Conference and those that have met the challenge of attending and/or presenting virtually. Your attendance helps make the Conference a continued success. I hope you enjoy the event and look forward to catching up with you over the next four days.

Cheers,

**Robert Hewitt**



**Australasian  
Pork Research  
Institute Ltd**  
**APRIL**

## **A COMMITTED SPONSOR OF EXCELLENCE IN PIG SCIENCE, EDUCATION AND TRAINING**

The Australasian Pork Research Institute Ltd. (APRIL) is proud to be a Principal Sponsor of the 18th biennial conference of the Australasian Pig Science Association (Manipulating Pig Production XVIII).

APRIL is an independent, member-based organisation that seeks to benefit the Australasian pork industry by investing in research and development, education and training, and commercialisation activities focused on priorities and deliverables that ensure the sustainability of Australasian pork production, and generate optimal returns for its stakeholders.

The Australasian Pig Science Association meeting is an important forum to highlight research and education outcomes from APRIL's investments, and to allow for interaction and the exchange of information and ideas between participants.

**John Pluske** | Chief Scientist and CEO

**Australasian Pork Research Institute Ltd** | ABN 25 113 703 174

P.O. Box 466, Willaston, South Australia, 5118



# Social Program



## Monday 15 November

### Welcome Reception

(Following AC Dunkin Memorial Lecture)

*Bisou XYZ Balcony*

*Hotel X*

7.10pm–9.10pm

Sponsored by:

ew | **nutrition** 

### Networking Drinks

*Bisou Bisou Lobby Bar, Ground Floor*

9.10pm–11.00pm

Continue networking downstairs.

Sponsored by:



## Tuesday 16 November

### Conference Dinner

*Blackbird Riverview Room*

*Riverside Centre*

*123 Eagle St, Brisbane*

7.30pm–11.30pm

*Getting to Blackbird:*

Buses departing Hotel X at 7.10pm

Alternatively it is approximately a 20 minute walk.

Make your own way back to the hotel.

Sponsored by:



## Wednesday 17 November

### Networking Function

*Iris Rooftop Terrazza*

*Hotel X*

7.00pm–9.30pm

Sponsored by:





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# Scientific & Social Program



## Monday 15 November

All times are listed in Australian Eastern Standard Time (QLD)

### Student Workshop

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9.30–14.30      *Location: Bisou Z, Hotel X*  
\*Lunch served in room\*

### Lunch

---

12.30              Lunch served in Bisou Foyer

### Industry Workshop

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15.00              Afternoon tea

15.30–17.00      **DSM - Innovation: Taking Australian Pork Production Forward**  
*Location: Bisou XYZ, Hotel X*

### AC Dunkin Memorial Lecture

---

Sponsor: SunPork Group  
Chair: Mr Robert Hewitt  
*Location: Bisou XYZ, Hotel X*



18.00              **Welcome and opening of APSA 2021**  
Mr Robert Hewitt, APSA President

18.10              **Pork's role in the 2030 Agenda for Sustainable Development**  
Dr Mark Stafford Smith, CSIRO Honorary Fellow

### Welcome Reception

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19.10–21.10      Sponsor: EW Nutrition  
*Location: Bisou XYZ Balcony, Hotel X*



### Post Welcome Reception Drinks

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21.10–23.00      Sponsor: AusPac Ingredients  
*Location: Bisou Bisou Lobby Bar, Hotel X*



# Scientific & Social Program



## Tuesday 16 November

All times are listed in Australian Eastern Standard Time (QLD)

### Session 1:

Sponsor: Australian Pork Limited

Location: Bisou XYZ, Hotel X

Chair: Dr Jessica Craig



9.30		Improving the performance of neonatal piglets Dr Chantal Farmer, Agriculture and Agri-Food Canada
10.20		Break
10.25	2	Feeding sows a gestation diet during lactation improves number of pigs weaned T.L. Muller, R.J.E. Hewitt, K.J. Plush, J.R. Pluske, D.N. D'Souza and R.J. van Barneveld
10.35	5	Tryptophan supplementation of sows prior to and after farrowing improves piglet survival A.L. Munn*, A.C. Weaver and W.H.E.J. van Wettere
10.45	8	Piglet birthweight affects fostering outcomes for pre-weaning survival J. Harper, K.L. Bunter and S. Hermes
10.55	9	Sizing up piglets for survival: a deeper look at a novel approach B.S. Tucker*, J.R. Craig, R.S. Morrison, R.J. Smits and R.N. Kirkwood
	10	Sizing up piglets for survival: a novel spin on a novel approach B.S. Tucker*, J.R. Craig, R.S. Morrison, R.J. Smits and R.N. Kirkwood
11.05		Flash Talks
	1	Negative dietary cation anion difference and calcdiol in transition diets reduce stillborn risk A.C. Weaver, J.A. Braun, T.C. Braun, E. Block, K. Tomas and I.J. Lean
	3	Conjugated linoleic acid fed at a low inclusion rate in the late gestation and lactation diet can improve farrowing outcomes for primiparous sows and their progeny J.R. Craig, J. Walker, C.J. Brewster, D.J. Henman, D.J. Cadogan and F.R. Dunshea
	6	A coarsely ground diet fed to sows in lactation improves piglet survival and litter size at weaning K.J. Plush, S.M. Tritton, R.J.E. Hewitt, G. Handley, K. Stamatopoulos and D.N. D'Souza
	7	Evaluation of the Brix refractometer as a pen side predictor for piglet survivability B. Fleming, S.H. Weekes, K.M.W. Loudon and D.L. Turpin
	12	The effect of inclusion of a specific mix of encapsulated fatty acids in gestation and lactation diets on sow and piglet performance during lactation M.D. Scott, C. Stewart, G.M. Allan and V.E. Beattie
11.20		Morning tea Sponsored by BASF





## Session 2:

Sponsor: Kemin

Location: Bisou XYZ, Hotel X

Chair: Dr Taya Clarke



11.40	13	Identifying reciprocal chromosomal translocations in boars affecting litter size F. Shams, <b>D.N. D'Souza</b> and T. Ezaz
11.50	14	Seasonal fertility in terms of number of pigs born alive is affected by sow parity <b>E.H. Goode*</b> , K.J. Plush and S. Hermes
12.00	15	Considering seasonal effects on farrowing rate and litter size in sow breeding objectives <b>S. Hermes</b>
12.10	16	Sows with a higher weaning number had a higher subsequent farrowing-rate reduction in the most stressful fertility season <b>A.M.G. Bunz</b> , K.L. Bunter, R.S. Morrison, B.G. Luxford and S. Hermes
12.20	19	Gene expression changes of fetal skeletal muscle exhibit sexual dimorphism in response to maternal heat stress at mid-gestation in pigs <b>W. Zhao</b> , F. Liu, C.D. Marth, M.P. Green, H.H. Le, B.J. Leury, A.W. Bell, F.R. Dunshea and J.J. Cottrell
12.30	<b>Flash Talks</b>	
	4	Feeding a low inclusion of conjugated linoleic acid improves the performance of gilt progeny when only supplied 1 week before farrowing <b>J.R. Craig</b> , N.C. Gardiner, C.J. Brewster, D.J. Henman, D.J. Cadogan and F.R. Dunshea
	11	The effect of inclusion of a specific mix of encapsulated fatty acids in sow diets on the nutritional and immunoglobulin content of colostrum and the nutritional content of milk <b>M.D. Scott</b> , C. Stewart, G.M. Allan and V.E. Beattie
	17	Relationship between lactational energy balance in summer and subsequent farrowing rate of sows <b>F. Liu</b> , C. Braden, E.M. Ford, A.M.G. Bunz, C.J. Brewster and D.J. Henman
	18	Supplementing 200 g/day of dextrose monohydrate during weaning-to-oestrus interval did not improve subsequent reproductive performance of sows mated in summer <b>F. Liu</b> , C. Elliot, S. Smith, C.J. Brewster, D.J. Henman and R.S. Morrison
	20	Impact of a bioactive mineral-based feed additive on oxidative stress and reproductive performance in sows R. Song, <b>R. Musser</b> , K. Friesen, S. Sinn, W. Lakkanasombat and J.M. Purser
12.45	<b>Break</b>	



### Session 3:

Sponsor: Lallemand

Location: Bisou XYZ, Hotel X

Chair: Dr Stuart Wilkinson

12.55	22	Gilts and sows adapt feed intake and feeding behaviour differently when moved into dynamic groups with electronic sow feeders L. Vargovic and K.L. Bunter
13.05	23	Reducing group size in electronic sow feeder gestation pens reduced skin injuries and improved reproductive outcomes of sows mated in summer S. Smith, F. Liu, B.S. Tucker, J.R. Craig, C. Braden, D. Hourigan, M. Webb and R.S. Morrison
13.15	<b>Flash Talks</b>	
	21	The usefulness of dual-energy x-ray absorptiometry to determine sow fat and lean mass T.L. Muller, R.J.E. Hewitt, L.C. Ward, K.J. Plush, J.R. Pluske, D.N. D'Souza and R.J. van Barneveld
	67	Artificial intelligence-based analysis of literature and social media conversations on the sensory, social, neurobiological and psychological dimensions of pleasurable pork eating experiences S. Ranasinghe, L. Sun, A. Adikari, V. Gole, D. De Silva, D. Burnett and D. Alahakoon
	68	In-feed guanidinoacetic acid improves meat quality in finisher pigs A.K. Lealiifano, D.J. Cadogan, S. White, H.C. Grigg and C.J. Brewster
	75	pH/temperature loggers accurately measure muscle pH and temperature decline of pork carcasses M. Trezona and K.L. Moore
	76	Comparing the effect of disinfectants on pork abattoir surface hygiene after sanitation D.N. D'Souza, P. Vandewinkel, R.J.E. Hewitt and T. Rau
13.30	Lunch Sponsored by Alltech Lienert	



### Session 4:


Sponsor: APRIL

Location: Bisou XYZ, Hotel X

Chair: Dr Kate Plush



14.30	32	Non-targeted metabolomics approach to study blood metabolic profile of pigs fed different dietary zinc levels after weaning E.A. Soumeh, M.V. Curtasu, T.S. Nielsen, S.G. Gorji and M.S. Hedemann
14.40	28	The anorexigenic effect of dietary lysine could be mediated by increased jejunal cholecystokinin secretion in piglets M. Müller, A.J. Tilbrook, R.J. van Barneveld, S. Niknafs and E. Roura
14.50	40	Effect of sex on ad libitum feeding behaviour in growing pigs S.G. Olumodeji, T. Nguyen, F. Zaefarian, K.L. Chidgey, T.J. Wester and P.C.H. Morel
15.00	<b>Break</b>	

15.05	<b>The tale of the Finnish pig tail – how to manage non-docked pigs?</b> Professor Anna Valros, University of Helsinki
15.50	<b>Break</b>
15.55	<b>Flash Talks</b>
39	The effect of a feed supplement on reducing aggressive behaviour in long-tailed weaned pigs <b>M.G. Marchesi</b> and A. Scollo
43	Effect of dietary inclusion of forage crops on ileal amino acid and apparent energy digestibilities in pigs S. Tsikira, T.J. Wester, C. Jenkinson, T. Nguyen and <b>P.C.H. Morel</b>
44	A higher dose of phytase with application of a full matrix has the potential to reduce feed costs and maintain performance in grower-finisher pigs <b>A. Wilkinson</b> , D.J. Henman, C.J. Brewster, T. McDonald and J.C. Kim
45	Stimbiotic supplementation from wean to finish in pigs fed corn-based diets G. González-Ortiz, <b>J.C. Kim</b> , A. Barbosa de Brito, G. Cordero, M.A. Callegari, C.A. da Silva, D. Melo-Durán and M.R. Bedford
46	Dietary copper (I) oxide improves growth rate and feed efficiency of finisher pigs compared to alternative copper sources <b>C.J. Brewster</b> , D.J. Henman, M. Mottram, A. Monteiro and I. Cockshott
47	Phytomolecules support wean to finish growth performance in pigs with subclinical ileitis K.L. Moore and <b>M.A. Parke</b>
48	Evaluation of benzoic acid supplementation with or without essential oil on growth rate, weight variation and carcass quality in finisher pigs <b>J.E. Zemitis</b> , R.J.E. Hewitt, K.J. Plush, S.M. Tritton, G. Handley and D.N. D'Souza
49	Effects of benzoic acid and essential oils on growth performance and health status of grower-finisher pigs under challenge conditions <b>W Ren</b> , X.L. Li, X.R. Jiang, J.L. Wu and M.C. Walsh
16.20	<b>Afternoon tea</b> Sponsored by SunPork Group 


## Session 5:

Sponsor: Feedworks

Location: Bisou XYZ, Hotel X

Chair: Professor Frank Dunshea



16.40	<b>Presentation of the:</b> <ul style="list-style-type: none"> <li>• Batterham Memorial Award</li> <li>• APSA Fellow</li> </ul> 
17.10	<b>Smart agri-systems for the pig industry</b> Professor Lisa Collins, University of Leeds
17.55	<b>Break</b>
18.00	<b>APSA Annual General Meeting</b> All current financial members of APSA are invited to join the AGM

# 18<sup>th</sup>

APSA<sup>2021</sup>  
conference  
brisbane australia

## Conference Dinner

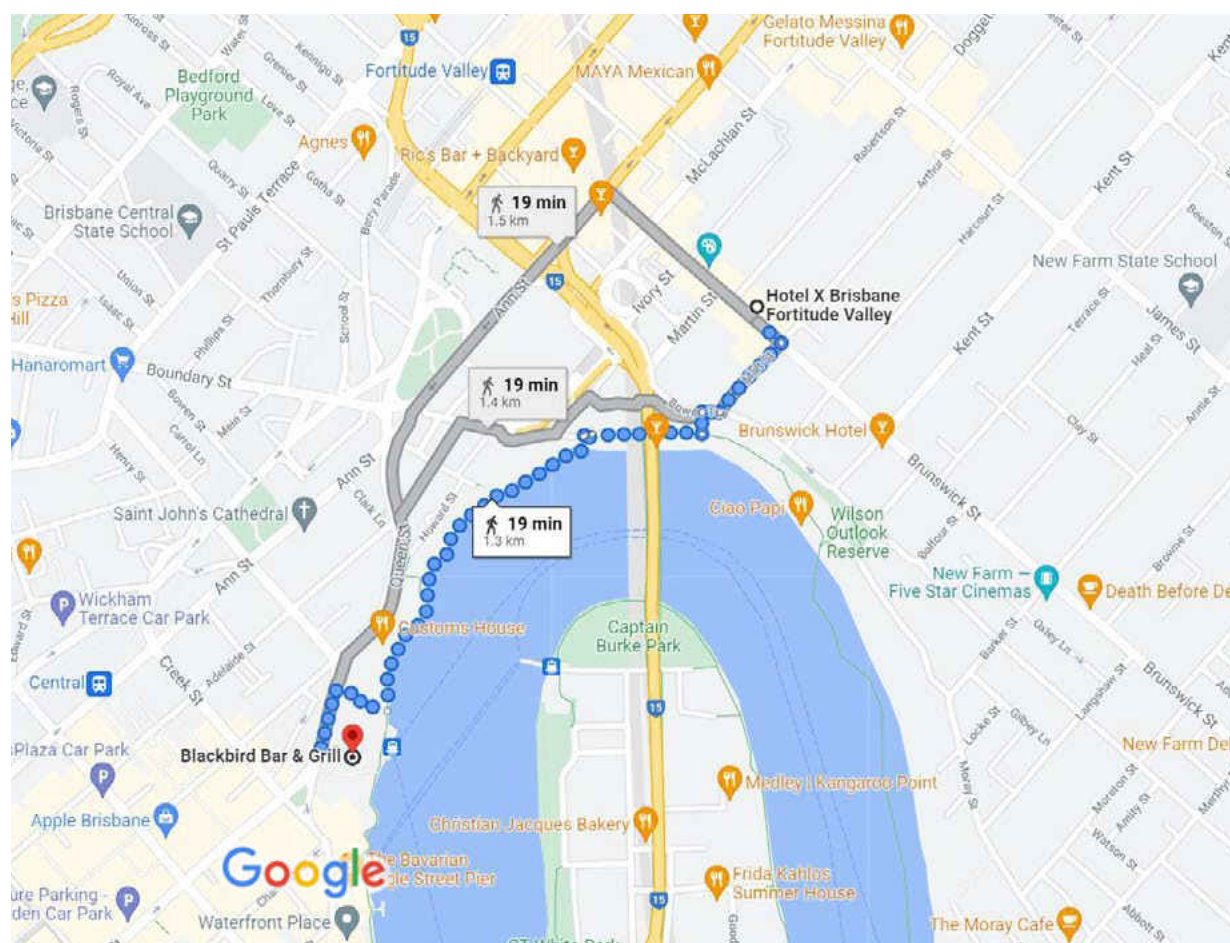
**19.30–23.30**

Sponsor: DSM Nutritional Products

Location: *Blackbird Riverview Room, Riverside Centre*



19.10	Bus departs Hotel X
19.30	Pre-dinner drinks
20.00	Seated for dinner
23.30	Close



## Wednesday 17 November

All times are listed in Australian Eastern Standard Time (QLD)

### Session 6:

Sponsor: AB Vista

Location: Bisou XYZ, Hotel X

Chair: Dr Taya Clarke



9.30		The Five Domains model and promoting positive welfare in pigs Dr Nikki Kells, Massey University
10.15		Break
10.20	59	Effects of housing system and human contact on fear in piglets L.M. Hemsworth, M.E. Hayes, R.Y. Acharya, R.S. Morrison, A.J. Tilbrook, K.L. Butler, J.-L. Rault and P.H. Hemsworth
10.27	60	Maternal contact and human interaction does little to change piglet performance during lactation K. Tomas*, J. Savaglia, K.J. Plush, D.N. D'Souza, J.N. Fernandes, K.L. Butler, P.H. Hemsworth and A.J. Tilbrook
10.34	61	Reduced maternal contact and positive human contact has a limited effect on 18-day old piglet behaviour in a novel arena test J. Savaglia, K. Tomas, K.J. Plush, J.E. Zemitis, D.N. D'Souza, K.L. Butler, P.H. Hemsworth and A.J. Tilbrook
10.41	62	Effects of early housing and interactions with humans on the severity of tear staining in pigs M.E. Hayes, P.H. Hemsworth, L.M. Hemsworth, R.S. Morrison, A.J. Tilbrook, K.L. Butler and J.N. Marchant
10.48		Panel questions
11.00		Morning tea Sponsored by EW Nutrition



### Session 7:

Sponsor: DSM Nutritional Products

Location: Bisou XYZ, Hotel X

Chair: Dr Jessica Craig



11.20	24	The effect of farrowing crate heat lamps on the skin and rectal temperature of sows M. Jorquera-Chavez*, J.R. Craig, B.S. Tucker, N.C. Gardiner and R.S. Morrison
11.30	30	Essential oils in maternal feeds improve performance, reduce salivary cortisol and increase plasma ghrelin in pigs after weaning C. Castro, R. Palou, S.T. Anderson and E. Roura
11.40	38	Weaning stress does not negatively influence the humoral immune response in pigs using the tetanus toxoid vaccine as a model D.L. Turpin, S.O. Sterndale and J.P. Mansfield
11.50		Flash Talks
	53	Water distribution systems may pose risks to pig health and productivity S.B. Little, G.F. Browning and H. Billman-Jacobe
	57	A new single shot biopolymer vaccine technology successfully produces a prolonged antibody response to Actinobacillus pleuropneumoniae in pigs: a pilot study J.R. Craig, M. Al Kobaisi, A. Vanderfeen and G. Tuckett

Continues...



Session 7 continues:

	58	Lauric acid in feed reduced excretion of <i>Lawsonia intracellularis</i> early in infection but had no effect on disease severity or growth of finisher pigs A.M. Collins, B.G. Bowring and J.R. Pluske
	63	Intra- and inter- observer variability of a facial injury score to assess nesting behaviour in crated sows K.J. Plush, J.G. Alexopoulos, J. Savaglia, D. Glencorse and D.N. D'Souza
12.05	64	Variance components estimation for body length and area traits derived from image analysis of live pigs N.R. Sarker*, B.J. Walmsley and S. Hermes
	65	Estimation of genetic correlations between primal cut weights and length or area traits in live pigs N.R. Sarker*, B.J. Walmsley and S. Hermes
12.15	66	Improvement of meat and carcass quality traits using genomics in pig sire lines M. Sharif-Islam*, J.H.J. van der Werf, V. Boerner and S. Hermes
12.25		Break

## Session 8:

Sponsor: Linley Valley Pork

Location: Bisou XYZ, Hotel X

Chair: Professor Frank Dunshea



12.35	69	Effect of antioxidants and organic acids supplementation on pork quality in summer H.H. Le, J.J. Cottrell, R.J.E. Hewitt, S.M. Tritton, Y. Iqbal, R.D. Warner and F.R. Dunshea
12.45	70	High dietary monounsaturated fatty acids fed to pigs improve pH and colour of pork loins A. Coba*, M. Navarro, F.R. Dunshea and E. Roura
12.55	71	The mono:polyunsaturated fatty acid ratio in cooking losses from pork loin is related to the dietary monounsaturated fatty acid content and the main grain/pulse fed to pigs M. Navarro, S. Niknafs, M. Asahdirad, F.R. Dunshea and E. Roura
	72	Increasing monounsaturated fatty acid levels in pork improved the "pleasantness" of grilled loins in panellists with Chinese background M. Navarro, A. Coba, F.R. Dunshea and E. Roura
13.05	73	Texture and collagen characteristics differ between pork Longissimus and Biceps femoris X. Li*, M. Ha, R.D. Warner and F.R. Dunshea
13.15	74	Linear regression analysis of the relationship between pork fibre types and quality – preliminary study M.N. LeMaster*, R.D. Warner, M. Ha, D.N. D'Souza, X. Li, S.S. Chauhan and F.R. Dunshea
13.25		Lunch Sponsored by Ridley



## Session 9:

Sponsor: Jefe

Location: Bisou XYZ, Hotel X

Chair: Dr Stuart Wilkinson



14.25	33	In-feed quinine improved performance to a similar level as ZnO and CuSO <sub>4</sub> in post-weaning pigs E. Garcia-Puig*, F. Liu, R.S. Morrison, A. Lisle and E. Roura
14.35	27	Optimising synthetic lysine in the diet to improve growth rate in weaner pigs M.J. Partridge, J. Walker, S. Smith and D.J. Henman
14.45	26	Strong evidence supporting the existence of “starchy” taste in pigs using a double-choice model M. Zhou*, M. Navarro, S. Li, S. Diffey and E. Roura
14.55	29	An oral gavage of leucine decreases feed intake by triggering early satiation and prolonging satiety in young pigs M. Müller, A.J. Tilbrook, R.J. van Barneveld, M. Navarro and E. Roura
15.05	25	Disinfection of umbilical cord in newborn piglets to prevent umbilical outpouchings A.J. Norval*, T.B. Jensen and A.R. Kristensen
15.15	<b>Flash Talks</b>	
	31	Effect of an essential oil mixture on reducing the risk of diarrhoea in newborn piglets and improving piglet growth until weaning L. Hugonin, D. Isaac and V. Camau
	34	Higher bioavailability of copper increases growth performance of weaner pigs when included at lower inclusion rates R.J.E. Hewitt, M.O. Sampaio, A.C. Corso, K.J. Plush, M.S. Bekker and D.N. D’Souza
	35	Evaluating the effect of copper source and level on microbiota diversity in nursery piglets D. Stanley, Y.S. Bajagai, M.S. Bekker, R.J.E. Hewitt, M.O. Sampaio, A.C. Corso, K.J. Plush and D.N. D’Souza
	36	Supplementation of a protected complex of biofactors and antioxidants improves performance of weaner pigs R.J.E. Hewitt, M.O. Sampaio, A.C. Corso, W. Bradshaw and D.N. D’Souza
	37	Weaner performance is improved in the first 21 days after weaning with the addition of a dietary butyric acidifier R. Jamieson, D.J. Henman, J. Walker, J.M. Ros and Y. Bao
15.30	<b>Afternoon tea</b> Sponsored by AusPac Ingredients	



Session 10 overleaf.



## Session 10:

Sponsor: Phytobiotics

Location: Bisou XYZ, Hotel X

Chair: Dr Rebecca Athorn



15.50	What have we learned about the effects of heat stress on the pig industry? Dr Fan Liu, Rivalea Australia
16.15	What will we feed our pigs? - heat stress impacts on crop production Professor Richard Trethowan, University of Sydney
16.40	Future consequences of climate change for European pig production Dr David Renaudeau, PEGASE (Physiology, Environment, and Genetics for the Animal and Livestock Systems)
17.05	Panel questions

## Networking Function

19.00–21.30

Sponsor: BASF

Location: Iris Rooftop Terrazza, Hotel X



## Thursday 18 November

All times are listed in Australian Eastern Standard Time (QLD)

## Session 11:


Sponsor: Novus

Location: Bisou XYZ, Hotel X

Chair: Professor John Pluske



9.30	Can early-life establishment of the piglet intestinal microbiota influence production outcomes? Dr Tanya Nowland, South Australian Research and Development Institute
10.15	Break
10.20	41 The evaluation of intestinal fatty acid-bind protein as a biomarker for intestinal function D.A. Wijesiriwardana, J.R. Pluske, J.J. Cottrell and F.R. Dunshea
10.30	42 Associative expression patterns between amino acid sensors and hormones in the porcine gastrointestinal tract S. Niknafs*, M. Müller, M. Navarro and E. Roura
10.40	54 Reversion of critically important antimicrobial resistance using bacteriophage and competitive exclusion as a combined therapy T. Laird, S. Abraham and M. O'Dea
10.50	55 A blast from the past(eurella): a retrospective analysis of porcine respiratory disease associated Pasteurella multocida and management implications for the Australian pig industry A. Truswell*, T. Laird, S. Jones, D.L. Turpin, R. Abraham and S. Abraham

11.00	56	Glaesserella australis - exploring colonisation and antimicrobial resistance X. Sun*, S. Jenkin, B. Gleeson, E.T. Lobo, P.J. Blackall, L. Omaleki and C. Turni
11.10	<b>Brunch</b> Sponsored by Rivalea Australia 	

## Session 12:

Sponsor: Australian Pork Limited/APRIL

Location: Bisou XYZ, Hotel X

Chair: Dr Kate Plush



11.30	50	The correct single diet can replace phase-feeding in grower-finisher pigs without compromising growth performance and carcass quality R.J.E. Hewitt, M.O. Sampaio, A.C. Corso, S.M. Tritton and D.N. D'Souza
11.37	51	Commercial evaluation of a phase feeding strategy compared to a single diet strategy for grower-finisher pigs E.M. Ford*, F. Liu, C.J. Brewster and D.J. Henman
11.44	52	Feeding a single diet throughout the grower-finisher period produces comparative results to a phase-feeding program J.E. Zemitis, K.J. Plush, R.J.E. Hewitt, S.M. Tritton and D.N. D'Souza
11.51	Panel questions	
12.00	<b>Flash Talks</b>	
	77	Valuing the costs of waste management in the pork industry M.E. Kragt, F. Dempster, A. Tascon and S.N. Jenkins
	80	Assessing the potential of black soldier fly technology to convert piggery manure into slow release fertiliser S.N. Jenkins, J.A. Middleton, Z. Huang, B.S. Mickan, M.O. Andersen, I.S. Waite and L.K. Abbott
	81	Effect of benzoic acid supplementation in pig diets on the pH, nitrogen derivatives and ammonia emission of pig excretions during storage Y. Luo, W. Ren, U.M. McCormack, E. Pérez-Calvo and J. Wu
	82	Evaluation of the hot bubble pilot plant for effluent evaporation and water desalination A. Garrido Sanchis and R. Wei
12.15	78	Production of insect meal from pork processing derived waste K. DiGiacomo, B.J. Leury, F.C. Leach, R.J.E. Hewitt and D.N. D'Souza
12.25	79	The use of black soldier fly meal in weaner pig diets as a partial substitute for soybean meal and a replacement for pharmaceutical inclusion of zinc oxide S.O. Sterndale, J.P. Mansfield, D.L. Turpin, J.C. Kim and J.R. Pluske

## APSA Awards & Conference Close

### 12.40–13.00

APSA Medal – Sponsored by SunPork Solutions

APSA Flash Talk Award – Sponsored by APSA

Conference close delivered by 2023 APSA President



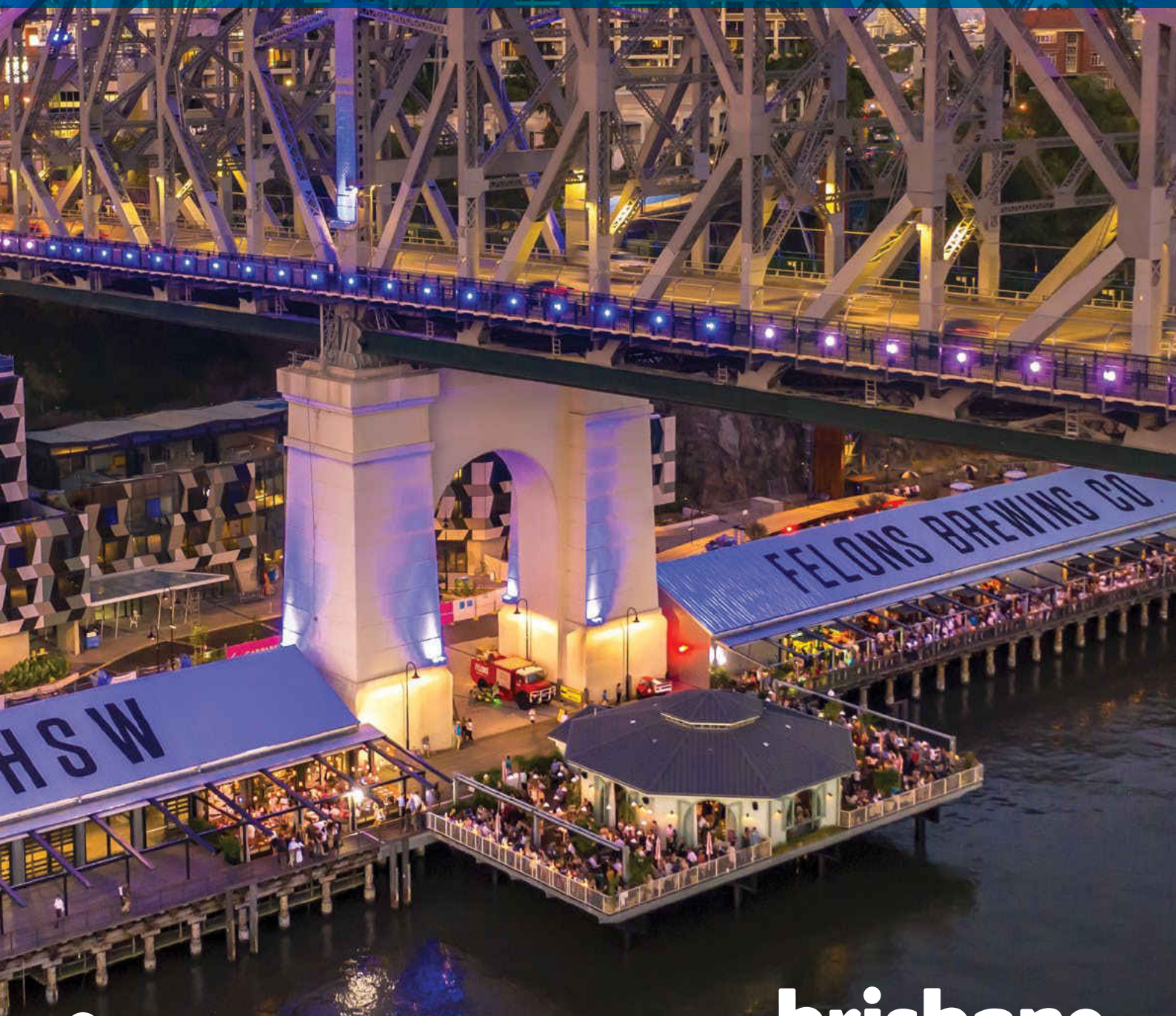
Author in bold is the presenter; asterisk denotes eligibility for the APSA Medal.

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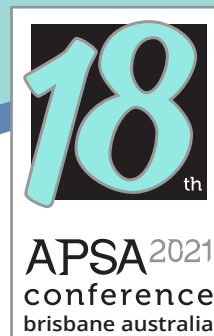


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# Keynote Speakers



## **Dr Chantal Farmer**

*Improving the performance of neonatal piglets*

Dr Chantal Farmer is a Research Scientist in swine lactation biology working at the Sherbrooke Research and Development Centre of Agriculture and Agri-Food Canada. She obtained her Bachelor of Science from McGill University (1980), her Master of Science from the University of Saskatchewan (1982) and her PhD from Pennsylvania State University (1986). Dr Farmer's research goal is to increase sow milk yield and she was a pioneer in studying mammary development in gilts and sows. She has published 153 scientific manuscripts, 9 book chapters, and is the sole editor of two books. Dr Farmer's expertise is recognised internationally as evidenced by her being guest-speaker in 13 European countries as well as China, Canada and the USA. She was president of the Canadian Society of Animal Science in 1998-99 and was made a fellow of this society in 2017. She was also on the board of the American Society of Animal Science from 2014 to 2020.



## **Professor Richard Trethowan**

*What will we feed our pigs? - heat stress impacts on crop production*

Richard Trethowan is Professor of Plant Breeding and Director of the Plant Breeding Institute at The University of Sydney. He has 33 years of experience breeding crops with tolerance to abiotic stresses both internationally and in Australia. His research interests include the development of new plant breeding technologies, enhancement of high-temperature tolerance of cereal and leguminous crops and development of grain crops with enhanced nutritional value.



## **Dr David Renaudeau**

*Future consequences of climate change for European pig production*

Dr David Renaudeau, 46 years old, is a Senior Research Scientist in the PEGASE (Physiology, Environment, and Genetics for the Animal and Livestock Systems, F 3590 St Gilles) joint research unit between INRAE and AGROCAMPUS OUEST. Dr Renaudeau has 20 years expertise on swine nutrition and on the adaptation to thermal heat stress. He is conducting research programs aiming to better understand the mechanisms underlying heat adaptation in pigs and to propose innovative strategies for better coping with thermal heat stress. He is involved in national collaborative projects dealing with the production of modeling tools for evaluating the impacts of warming climate on the pig production sector.



## **Professor Lisa Collins**

*Smart agri-systems for the pig industry*

Professor Lisa Collins is Head of the School of Biology, Professor of Animal Science, N8 Agrifood Chair in Agricultural Systems, Director of the National Pig Centre and Deputy Director of the Global Food and Environment Institute at the University of Leeds. Her research focuses on the development and application of smarter agricultural systems through multi-disciplinary approaches including technology development, systems modelling and data analytics. Amongst a broad portfolio of active research projects, Professor Collins is PI on PIGSustain, a £2.06M Global Food Security programme grant. Professor Collins serves on national and international advisory, funding and academic society councils and strategy groups, including BBSRC, the Dog Advisory Council, ASAB council, and European Food Safety Authority groups. She is an experienced public

communicator of science, regularly presenting invited public lectures including at the Royal Institution and in national theatres. Her work regularly features in national and international news media in all formats. In 2014, Professor Collins received the British Science Association Charles Darwin Award for excellence in science communication, and in 2010, the UFAW Young Animal Welfare Scientist of the Year award. In 2020, she was elected as a Fellow of the Learned Society of Wales and is the British Science Association Section President for Agriculture and Food for 2021.



#### **Dr Fan Liu**

*What have we learned about the effects of heat stress on the Australian pig industry?*

Dr Fan Liu is a Research Scientist at Rivalea Australia, one of the largest commercial pig producers in the Southern

Hemisphere. As an industry-based researcher, Dr Liu conducts a broad range of research to improve production efficiency in the Australian pig industry, with a focus on mitigating negative impacts of summer conditions in pig production. Before joining in Rivalea, Dr Liu completed a PhD degree on developing nutritional strategies to reduce heat stress in pigs at The University of Melbourne, supervised by Prof Frank Dunshea, Prof Brian Leury and Dr Pietro Celi. He completed a Bachelor and a Master degree in Nanjing Agricultural University (China). In 2019, Dr Liu received the Batterham Memorial Award from the Australasian Pig Science Association for his contribution to the heat stress research in the Australian pig industry.



#### **Dr Nikki Kells**

*The Five Domains model and promoting positive welfare in pigs*

Dr Nikki Kells is a Senior Lecturer in Animal Welfare in the Animal Welfare Science and Bioethics

Centre at Massey University. She completed a Master of Science looking at gas alternatives to carbon dioxide for on-farm euthanasia of pre-weaned piglets. This was followed by a PhD investigating acute and chronic pain associated with tail docking of piglets, along with strategies to mitigate this. Dr Kells' current research interests include evaluation of affective states in animals using electrophysiological and behavioural paradigms, improved techniques for humane slaughter and killing of farm and companion animals, development of prolonged acting analgesia for animal husbandry, and development of welfare assessment tools for farmed animals, including fish.



#### **Dr Mark Stafford Smith**

*Pork's role in the 2030 Agenda for Sustainable Development*

Dr Mark Stafford Smith is an Honorary Fellow with CSIRO where he continues to contribute to climate adaptation research,

and interacts regularly with national and international policy issues around adaptation and sustainable development. His significant international roles include past vice-chair of the International Geosphere-Biosphere Programme's Scientific Committee; co-chair of the 2012 Planet Under Pressure: New Knowledge Towards Solutions conference on global environmental change in the lead up to Rio+20; Chair (2013-17) of the inaugural Science Committee for Future Earth which helps to coordinate research towards global sustainability worldwide; and is now a senior advisor to the Global Environment Facility's Scientific and Technical Advisory Panel in Washington. In Australia, Dr Stafford Smith contributes to Future Earth Australia on sustainability issues, the Outback Alliance on

policy for remote areas, the Global Drylands Ecosystem Program network, and various other chairing, editorial and writing roles. Dr Stafford Smith has over 30 years' experience in drylands systems ecology, management and policy, including senior roles such as CEO of the Desert Knowledge Cooperative Research Centre and Program Leader of CSIRO's Centre for Arid Zone Research. He continues to publish, adding to over 200 peer-reviewed contributions to science, as well as many presentations and publications for less-specialised audiences.



### **Professor Anna Valros**

*The tale of the Finnish pig tail - how to manage non-docked pigs?*

Professor Anna Valros has a Master of Science in Zoology (1998), and a PhD in animal behaviour and welfare (2003) from the University of Helsinki, Finland. Since 2008 she has been appointed as Professor of Animal Welfare at the Department of Production Animal Medicine, Faculty of Veterinary Medicine, University of Helsinki. Her main research area is behaviour and welfare of pigs, with tail biting prevention and aetiology being one of her focuses. She has coordinated two international projects on tail biting in pigs, including the EU-ERAnet project FareWellDock. In her research, she has focused on issues such as understanding farmer perceptions, the mechanistic link between health and tail biting and scoring of tail biting at the abattoir. Professor Valros is an associate member of the European College of Animal Welfare and Behavioural Medicine (AWSEL) and an independent expert member of the EU Animal welfare platform. She has taken part in several EU-level initiatives on reducing the need for tail docking, including the TAILS-action coordinated by the European Commission and as a member of the Animal welfare platform subgroup on pig welfare.



### **Dr Tanya Nowland**

*Can early-life establishment of the piglet intestinal microbiota influence production outcomes?*

Dr Tanya Nowland is Research Scientist working in pig reproduction and welfare at the South Australian Research and Development Institute. She has a background in animal science and her research interests include sow reproduction and welfare and how that relates to piglet health and survival. Specifically, her research has focussed on the development of non-antimicrobial industry applicable practices to help support healthy intestinal microbiota development and improve pre-weaning piglet performance. This research will enable improvements in animal health and farm productivity. Dr Nowland has completed her PhD on 'Development and manipulation of the piglet intestinal microbiota'.



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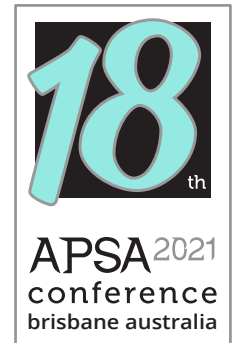
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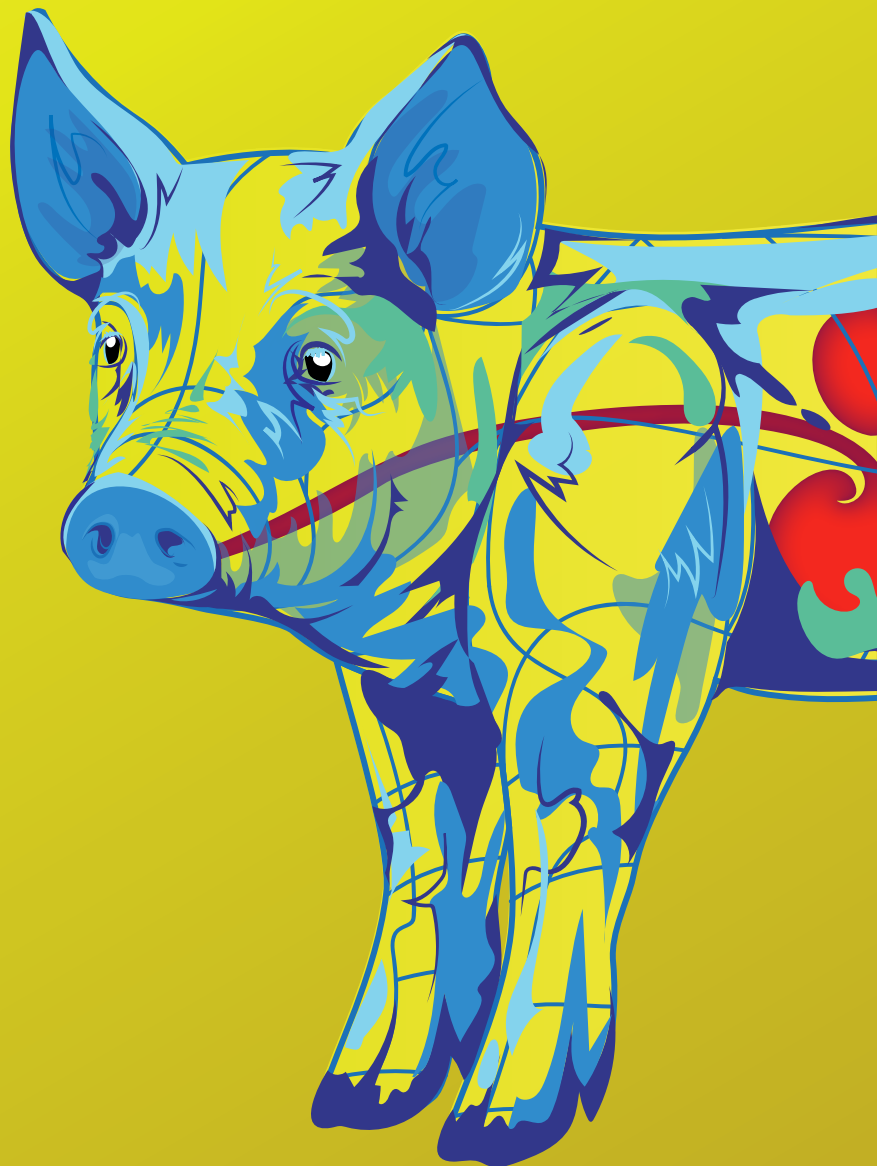
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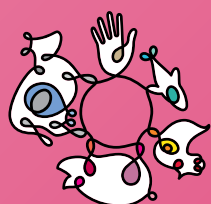
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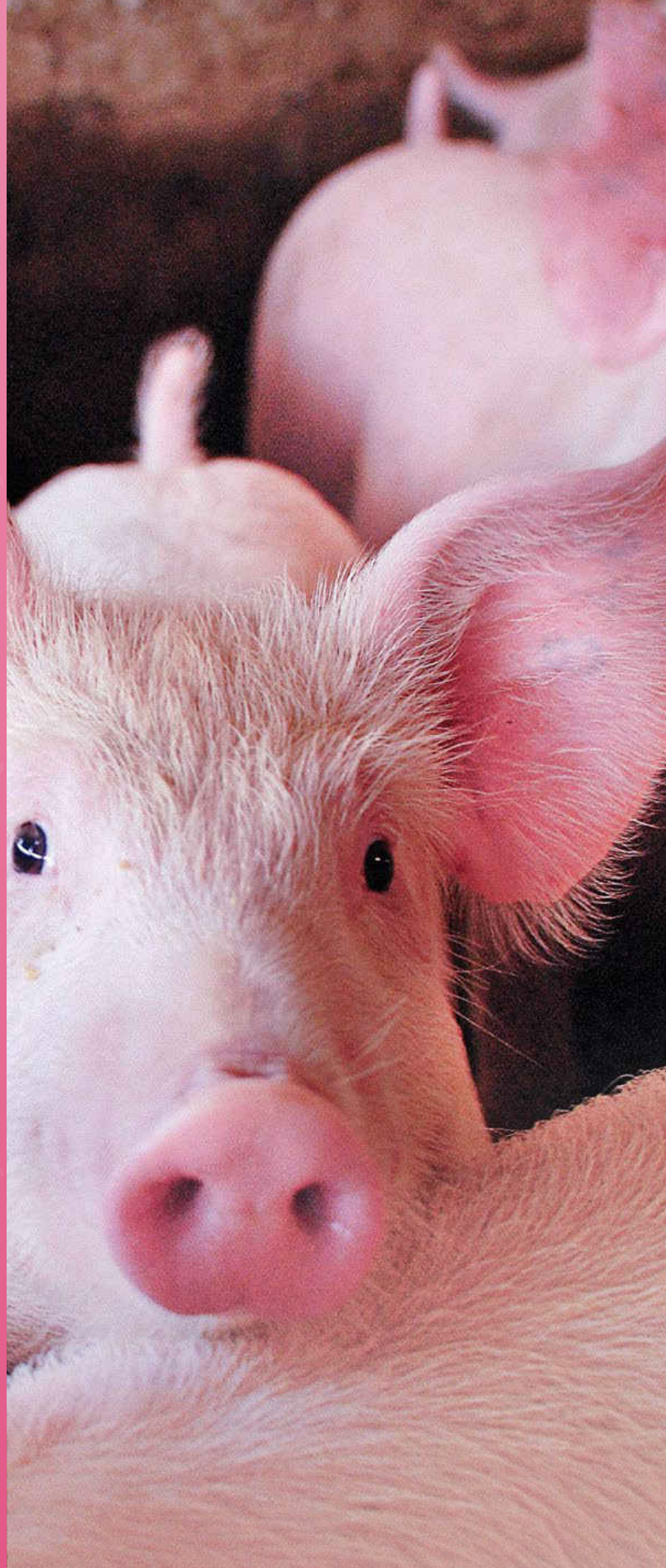
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“Rivalea has always provided me with a fantastic environment to work in and to foster my knowledge of the pork industry. I have learned so much (and continue to do so every day) working within a group of enthusiastic, hard-working professionals, always willing to explain things to me and lend a helping hand. The company has a number of diverse departments and roles that employees can be a part of. From the first day I started as a Research and Innovation Technical Officer in 2013 I always had a desire to study a PhD in pig reproduction, and Rivalea made that happen – supporting me every step along the way. I am now lucky enough to be using my knowledge gained through my PhD studies and time as a Technical Officer to work with farm management and staff to implement new ideas and innovations on farm and am working collaboratively with other companies on a number of exciting industry research projects. **I definitely look forward to working with Rivalea well into the future.** And besides, being surrounded by cute pigs isn't a bad way to spend your days.”

Dr Jess Craig, Research Scientist and APRIL Industry Placement Participant, 2021

“Rivalea not only produces quality pork products but also contributes to scientific knowledge on pig welfare, production and environment. Working at the same commercial research station where the pioneer scientists initiated the internationally renowned research program 35 years ago is an honour and privilege. We have established research collaboration with universities, institutions, animal health and nutrition companies all over the world. Besides, Rivalea is a multicultural company that **creates equal employment opportunity for the people from different cultural backgrounds.** The group of people here take care of pigs, mates and the land.”

Dr Fan Liu, Research Scientist and APRIL Industry Placement Participant, 2021

“Working at Rivalea has given me the skills and knowledge to develop myself both personally and professionally. I always feel supported to **take every opportunity** for growth that is offered.”

Erin Ford, Senior Technical Officer, 2021

“I have been with Rivalea for 6 years now and my career has developed in ways I never thought possible or had imagined. When I started out, I was a Technical Officer in the research facility but I have now progressed through Production, the Environment Department and have ended up as the Quality Assurance Manager for Farms. Rivalea is able to offer endless opportunities to its employees as well as offering many different training courses or supporting you in further studies. I always knew I wanted to work with pigs and I'm so happy I get to do that on a daily basis whilst furthering my career and being **surrounded by supportive, passionate and knowledgeable people.**”

Emma Klapish, QA Manager-Farms, 2021

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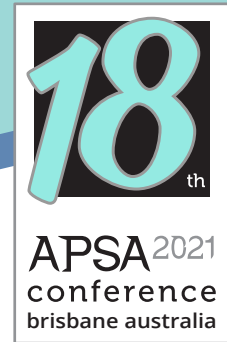
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