



APSA 2023 19TH BIENNIAL CONFERENCE

Australasian Pig Science
Association (Inc)

Sofitel, Brisbane, Australia

13th - 16th November 2023



Preliminary 2023 APSA Conference Program

(at 9/11/23)

Monday 13 November

APRIL Meetings

Meetings will be held in Ballroom Le Grand 2, Sofitel Brisbane.

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|-------------|--|
| 8.30-12.00 | CRC-P Tails Project Workshop (by invitation only) |
| 12.00-13.00 | Lunch |
| 13.00-16.30 | APRIL Annual General Meeting and Stakeholders' Forum (by invitation only) |
| 16.30-17.30 | Drinks |

Student Workshop

The Student Workshop will be held in Concorde, Sofitel Brisbane.

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|-------------|-------------------------|
| 12.00-13.00 | Lunch |
| 13.00-17.00 | Student Workshop |

Industry Workshops

Workshops are open to all Conference delegates. Workshops will be held in Ballroom Le Grand 1.

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|-------------|---|
| 11.30-12.00 | Lunch |
| 12.00-13.00 | DSM: Gilt Preparation: Building a Sustainable Foundation for the Modern Herd |
| 13.10-14.10 | AusPac Ingredients: Quantum Blue: Latest Applications and Current Research Optimising Utilisation of Dietary Fibre for Improved Production and Performance |
| 14.10-14.30 | Afternoon tea |
| 14.30-15.30 | Kemin: Building Swine Intestinal Tract Resilience with a Multi-Strain Probiotic |
| 15.40-16.40 | Phytobiotics: Less Stress, Improved Immunity, Healthier Pigs and Happier People |

AC Dunkin Memorial Lecture

Sponsor: SunPork Group

Chair: Dr Rebecca Athorn

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



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|-------------|--|
| 18.00-18.10 | Welcome and opening of APSA 2023
<i>Dr Rebecca Athorn, APSA President</i> |
| 18.10-19.10 | Animal source foods in the human diet: Recalibrating the conversation
<i>Professor Frédéric Leroy, Free University of Brussels</i> |

Welcome Reception

19.10-21.10

Sponsor: AusPac Ingredients

Location: Soirée Deck, Sofitel Brisbane



Post Welcome Reception Drinks

21.10

Sponsor: CCD Animal Health

Location: Cuvée Bar, Sofitel Brisbane



Tuesday 14 November

One-page papers will be presented as either 3-minute Flash Talks (FT) or 7-minute Oral presentations with 3 minutes for questions (O). The number beside each presentation refers to the paper number in *animal – science proceedings*. Papers denoted with a hash will be combined into one presentation. The author highlighted in bold will present the paper and presenters denoted with an asterisk are eligible for the APSA Medal, for student/early-career first time presenters at an APSA Conference.

Session 1: Early Life Interventions

Sponsor: Australian Pork Limited

Chair: Dr Rebecca Athorn

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



9.00 **Welcome from Principal Sponsors APL & APRIL**

9.10 **Early life piglet experiences and impacts on immediate and longer-term adaptability**

Dr Megan Lucas, The University of Melbourne

- 9.55 1# O Investigating gilt progeny birth weight variation, serum immunoglobulin concentration soon after birth and pre-weaning survival compared to sow progeny, and relationships with maternal grand-dam parity
***J. R. Craig**, E. M. Ford, J. Harper, A. M. G. Bunz and R. S. Morrison*
- 2# O Gilt progeny dams have higher litter sizes compared to sow progeny dams which may be influenced by differences in early reproductive development
***J. R. Craig**, E. M. Ford, J. Harper, A. M. G. Bunz and R. S. Morrison*
- 3 O Circulating haemoglobin levels in piglets around weaning
***J. E. Zemitis**, K. J. Plush, R. J. E. Hewitt and D. N. D'Souza*
- 4 O Early life maternal contact has long-term impacts on pig growth
***K. Tomas**, J. Savaglia, K. J. Plush, D. N. D'Souza, K. L. Butler, P. H. Hemsworth and A. J. Tilbrook*

10.30 Morning tea
Sponsored by Elanco



Session 2: Biosecurity, Health and Management

Sponsor: MSD Animal Health

Chair: Dr Taya Thomas

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



11.00 **Smallholder farming in selected regions and its impact on the changing African Swine Fever pandemic**

Dr Nina Matsumoto, Ausvet

- 11.45 5 O Preparation of pigs for oral intoxication to assist mass destruction in an emergency animal disease response
***K. Richards**, Y. J. Pollock, R. Shankar, L. Staples, D. Marshall, B. Allen and D. N. D'Souza*
- 6 O Improving the effectiveness of pig truck washing at an abattoir using low-cost cleaning protocols
***K. L. Moore**, M. Trezona and S. O. Sterndale*
- 7 O Use of piggery effluent for point-of-management diagnostics: A proof of concept
*M. N. Naseem, L. Omaleki, J. M. Templeton, M. Muralidhar, J. R. Botella, P. J. Blackall and **C. Turni***
- 8 O Exudative epidermitis-causing *Staphylococcus hyicus*: Insights and education for industry optimisation
***A. Truswell**, T. Laird, J. Blinco, S. Pang, D. Jordan, D. Hampson, S. Adsett, R. Abraham and S. Abraham*

- 9 O Is total dissolved solids a reliable proxy for chloride and sodium levels in water offered to pigs?
J. M. Pluske and J. R. Pluske

12.35

Lunch

Sponsored by EW Nutrition

APSA Annual General Meeting (12.45pm – 1.45pm)

All current financial members of APSA are invited to join the AGM



Session 3: Welfare Systems

Sponsor: AB Vista

Chair: Dr Rebecca Athorn

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



14.00 **Space allowance for growing pigs: Animal welfare, performance and on-farm practicality**

Dr Kirsty Chidgey, New Zealand Pork

14.30 **Towards truly stall free pork production**

Dr Kate Plush, SunPork Group

15.00 Panel questions

15.15 10 O Replacement of straw with hessian and high dietary fibre maintains sow nesting behaviours and improves pain tolerance

S. E. James, K. J. Plush, L. M. Staveley and T. L. Nowland*

11 O The effects of day of mixing post-insemination, flooring type, and gilt replacement

protocol on the severity of claw lesions of sows: A case study using logistic regression
A. Klein, T. Kramer, A. S. Cornelison, W. P. Schweer, S. Langer, C. Rapp, G. C. Alberton and L. A. Rodrigues

15.35

Afternoon tea

Sponsored by Alltech Lienert Australia



Session 4: Welfare and Behaviour

Sponsor: Phytobiotics

Chair: Professor John Pluske

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



16.00 12 O Tail lesions in nursery pigs

A. Valros, M. Tuominen-Brinkas, H. Koskikallio, K. Ahlqvist, M. Heinonen and C. Munsterhjelm

13 O Decision support tools for mitigating tail biting in pigs: Analysing methodologies and predictive outputs

S. Ward, J. M. Pluske, K. J. Plush, J. R. Pluske and C. V. Rikard-Bell

14 O Stocking density increases the incidence of tail biting in post-weaned pigs

A. Abdallah, A. Kumar, M. Navarro, M. Müller, A. J. Tilbrook, K. J. Plush, D. N. D'Souza and E. Roura*

15 O The effect of hoof lesion score on sow survivability over two parities

K. Savage, D. L. Turpin, T. Clarke and E. M. Baxter

16# O Large pellets stimulate object play in piglets during lactation

R. J. E. Hewitt, S. Jannusch, S. M. Tritton, K. J. Plush and D. N. D'Souza

17# O The impact of pellet size and moisture level of creep feed on post-weaning performance of pigs

J. E. Zemitis, K. J. Plush, R. J. E. Hewitt, G. Balog, L. M. Staveley, S. M. Tritton and D. N. D'Souza

- 18 O Welfare-related measurements of weaner pigs collected by an automatic monitoring system from different angles
*H. -L. Ko**, *P. Fuentes*, *X. Manteca* and *P. Llonch*
- 19 O Immunocastration does little to alter sexual, aggressive and feeding behaviours, but changes the performance of lighter carcass-weight female pigs
*S. Small**, *R. J. E. Hewitt*, *K. J. Plush*, *S. Jannusch*, *T. Combe* and *D. N. D'Souza*
- 20 FT Use of a stimbiotic to ameliorate porcine ear necrosis in nursery piglets
L. A. Merriman, *S. Becker*, *G. Cordero* and *S. Hasan*
- 21 FT Validating the use of estimated weight from a 3D camera in a pig ecoshelter grower/finisher system
B. S. Tucker, *S. E. James*, *T. L. Nowland*, *J. Y. C. Jolley*, *R. Terry* and *P. J. Verma*
- 22 FT Effect of raising pigs with intact tails and exposure to enrichment material on their growth rate and tail lesions
M. Jorquera-Chavez and *R. S. Morrison*
- 23 FT Strategic use of an enrichment block reduces body damage at slaughter for grower-finisher pigs
G. Balog, *K. J. Plush*, *R. J. E. Hewitt*, *J. E. Zemitis*, *L. M. Staveley*, *R. Esquerra*, *R. Parkes* and *D. N. D'Souza*
- 17.30 Session close

Conference Dinner

Sponsor: DSM

Location: Ballroom Le Grand 3, Sofitel Brisbane

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19.00 Pre-dinner drinks

19.30 Dinner

International APSA Travel Scholarship Awards – Sponsored by APSA

Batterham Memorial Award – Sponsored by Feedworks

23.00 Close



Wednesday 15 November

Session 5: Piglet Survival

Sponsor: Australasian Pork Research Institute Limited

Chair: Dr Jessica Craig

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



9.00 Improving pig survival with a focus on birthweight: a practical breeding perspective

Jo-Anne Harper, Rivalea Australia

Incorporating paper 24:

Can within-litter birthweight variation in pigs be improved using genetics?

A. M. G. Bunz and J. Harper

- 9.45 25 O Umbilical cord gene expression in newborn piglets with different birth body weight and lactation growth
P. Salgado-López, P. Aymerich, F. Llobet-Cabau, A. Castelló, J. M. Folch, J. Gasa and D. Solà-Oriol*
- 26 O The use of post-cervical artificial insemination to improve reproductive performance in sows
L. M. Staveley, S. Hermes, R. J. E. Hewitt, K. J. Plush and D. N. D'Souza
- 27 O The provision of hessian with a high fibre diet provides benefits to sows and piglets
T. L. Nowland, L. M. Staveley, S. E. James and K. J. Plush
- 28 O Blood prostanoid concentrations during late gestation as indicators of stillbirth and pre-weaning mortality risk in sows
S. A. Barnes, E. Mas, T. Rozek, T. Durand, J. M. Kelly, K. Petrovski, R. Kostecki and E. Noschka*
- 29 FT Relationship between incidence of low-birthweight piglets and peri-natal litter survivability
D. Mosterman, G. Balog, J. E. Zemitis, L. M. Staveley, R. J. E. Hewitt, K. J. Plush, D. N. D'Souza

10.30

Morning tea

Sponsored by Australian Pork Limited



Session 6: Sow Nutrition

Sponsor: Kemin

Chair: Dr Stuart Wilkinson

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



- 11.00 30 O A combination of dietary organic acids in late gestation and lactation diets improves piglet weights through to weaning
C. J. Brewster, D. J. Henman, A. R. Wilkinson, J. Doubleday and L. Pineda
- 31 O Addition of a novel immunity booster solution to sow diets during the critical transition period and in lactation improves piglet survival
R. Jamieson, J. R. Craig, G. Handley, D. J. G. Hattingh, M. C. Walsh, D. J. Henman and U. M. McCormack*
- 32 O Phase feeding gestating sows: How varying levels of crude protein and amino acids affects sow gestation and litter performance
C. C. Mulvenna, M. E. E. Ball, J. Taylor, A. Gordon, V. Beattie, K. McCracken, M. O'Connell, R. Bradford, S. Smyth and R. Muns
- 33 O Effects of betaine supplementation in summer lactation and weaning-to-remating interval on subsequent reproductive performance of sows
F. Liu, E. M. Ford, J. J. Cottrell, J. R. Craig, C. J. Brewster, D. J. Henman, R. J. Smits and F. R. Dunshea

- 34 O Low crude protein diets improve heat stress indicators in lactating sows under cyclic hyperthermal temperatures
A. Coba, M. Müller, M. Navarro, E. A. Soumeh, J. R. Pluske, W. H. E. J. van Wettere, J. J. Cottrell, F. R. Dunshea, J. B. Gaughan and E. Roura
- 35 O Blood metabolic profile of sows fed high and low fibre diets prior to farrowing
E. A. Soumeh, J. Nastasi, S. E. James, L. M. Staveley, K. J. Plush and T. L. Nowland
- 36 O Umami feed flavouring in lactating sows under heat stress stimulates litter growth irrespective of the crude protein content of the diet
M. Müller, A. Coba, M. Navarro, G. Tedo, J. J. Cottrell, F. R. Dunshea, J. R. Pluske, W. H. E. J. van Wettere and E. Roura
- 37 O Xylanase supplementation in sows and its effects on digestibility and offspring
G. González-Ortiz, G. Cordero, S. Hasan, R. Lizardo and M. R. Bedford*
- 38 FT A coarser ground diet fed to sows in gestation improves reproductive performance
K. J. Plush, S. M. Tritton, J. E. Zemitis, G. Balog, R. J. E. Hewitt and D. N. D'Souza
- 39 FT Physiological responses related to acute heat stress decrease over time as lactating sows become acclimated to a hyperthermic environment
A. Coba, M. Müller, M. Navarro, E. A. Soumeh, J. R. Pluske, W. H. E. J. van Wettere, J. J. Cottrell, F. R. Dunshea, J. B. Gaughan and E. Roura

12.30

Lunch

Sponsored by DSM-Fermentich

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Session 7: Nutrition and Intestinal Function

Sponsor: Digestive Physiology of Pigs Australian Chapter

Chair: Professor Eugeni Roura

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



Digestive Physiology of Pigs

13.30 New developments in mineral and vitamin D nutrition for sows and growing pigs

Professor Hans Stein, University of Illinois

(Sponsored by Adisseo)



- 14.15 40 O Total tract digestibility of calcium, phosphorus and gross energy improved by a novel consensus bacterial-6 phytase variant in pregnant sows
A. Kumar, D. Velayudhan, Y. Dersjant-Li and E. Roura
- 41 O Effects of pelleting and particle size reduction of corn on digestibility of starch, amino acids, fibre and fat, and concentration of net energy in corn-soybean meal diets fed to group-housed pigs
S. A. Lee, D. A. Rodriguez, C. B. Paulk and H. H. Stein*
- 42# O Assessment of the tryptophan requirement for pigs: A meta-regression analysis
S. Cho, B. Chae, J. I. C. Poaty Ditengou, N. J. Choi, Y. S. Kim, J. S. Tak, J. R. Pluske and J. C. Kim*
- 43# O Assessment of the isoleucine requirement for pigs: A meta-regression analysis
S. Cho, B. Chae, J. I. C. Poaty Ditengou, N. J. Choi, Y. S. Kim, J. S. Tak, J. R. Pluske and J. C. Kim
- 44# O Assessment of the valine requirement for pigs: A meta-regression analysis
S. Cho, B. Chae, J. I. C. Poaty Ditengou, N. J. Choi, Y. S. Kim, J. S. Tak, J. R. Pluske and J. C. Kim
- 45 O Supplementing with a probiotic and phytogetic blend improves growth performance and intestinal morphology and increases microbiome diversity in grower and finisher pigs fed reduced crude protein diets
E. Vinyeta, A. E. Ghane, Y. Noguchi, I. H. Kim, Y. Dersjant-Li and D. Velayudhan

- 46 O Finisher pigs fed a blend of phytogenic compounds perform similar to those supplemented with ractopamine
D. Isaac, N. Schwerin, F. Laski and T. Gicquel
- 47 O Modern phytases increase ileal gross energy digestibility in grower pigs
D. J. Cadogan, S. Wilkinson, D. Velayudhan, Y. Dersjant-Li and J. J. Cottrell
- 48 FT Increasing the dietary supplementation of a new generation phytase can counteract the detrimental effect of calcium on phosphorus absorption in pigs
H. Zhai, U. McCormack, J. Zhang, Z. Wang, S. Wang and K. Stamatopoulos
- 49 FT The inclusion of guanidinoacetic acid in finisher pig diets increased carcass weight
K. L. Moore
- 50 FT Differential sex response to the inclusion of protease in phase or single diets in grower pigs
R. J. E. Hewitt, S. Small, S. Jannusch, T. Combe, S. M. Tritton, M. O. Sampaio, K. J. Plush and D. N. D'Souza

15.30

Afternoon tea

Sponsored by Australasian Pork Research Institute Limited



Session 8: Meat Science

Sponsor: Linley Valley Pork

Chair: Professor Frank Dunshea

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



- 16.00 51 O Effect of 12-days ageing on texture and cooking loss of Australian pork silverside and loin
Y. Xu*, M. Ha, H. Huang and R. D. Warner
- 52 O *Triceps brachii* is favoured by Australian consumers over *Longissimus thoracic et lumborum* and *Biceps femoris* in pork
X. Li, M. Hastie, R. D. Warner, A. Lealiifano, R. J. E. Hewitt, D. N. D'Souza, M. Trezona and F. R. Dunshea
- 53 O The effect of ageing on pork colour parameters varies among *Longissimus thoracic et lumborum*, *Biceps femoris* and *Triceps brachii*
G. Q. Huang*, R. D. Warner, H. Huang, R. J. E. Hewitt, D. N. D'Souza, F. R. Dunshea, M. Trezona, H. Grigg, R. S. Morrison and M. Hastie
- 54 O The effect of ageing, muscle type and pH on pork texture measured by hardness and Warner Bratzler shear force
W. Gu, R. D. Warner, H. Huang, R. J. E. Hewitt, D. N. D'Souza, H. Grigg, R. S. Morrison, M. Trezona, F. R. Dunshea and M. Hastie
- 55 O Effect of pork muscle type on pH, water holding capacity and instrumental tenderness across maternal and terminal lines
H. Huang*, M. Hastie, R. J. E. Hewitt, D. N. D'Souza, H. Grigg, R. S. Morrison, F. R. Dunshea, M. Trezona and R. D. Warner
- 56 O Impacts of ageing and cooking temperature on cook loss, Warner-bratzler peak shear force, and protein denaturation of pork *Longissimus thoracic et lumborum*
M. LeMaster, S. S. Chauhan, D. N. D'Souza, F. R. Dunshea and R. D. Warner
- 57 O Bioprotective cultures suppress microbial growth in ready-to-eat bone-in ham
D. N. D'Souza, N. Flick, M. A. Sciberras, P. Vandewinkel and R. J. E. Hewitt
- 58 O Pre-conditioning pork loins in vacuum packaging does not overcome the negative impact of subsequent high oxygen modified atmosphere packaging on quality traits
M. Ha, M. LeMaster, F. R. Dunshea, D. N. D'Souza, M. Hastie and R. D. Warner

17.30

Session close

Networking Function

19.00-21.30

Sponsor: BASF

Location: Cocktail Bar, Blackbird Bar & Grill, Riverside Centre



Thursday 16 November

Session 9: Genetics and General Physiology

Sponsor: Australian Pork Limited

Chair: Robert Hewitt

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



9.00 Genetic engineering technologies in domestic pigs

Professor Paul Verma, South Australian Research and Development Institute

- 9.45 59 O Comparing pedigree and genomic relationships to control inbreeding in optimum-contribution selection restricting the number of sires in pigs
M. Sharif-Islam, M. Henryon, J. H. J. van der Werf, T. T. Chu, B. J. Wood and S. Hermesch
- 60 O Economic values for feed conversion ratio expressed per pig and per kilogram carcass weight
S. Hermesch, R. Z. Athorn and S. Willis
- 61 O Preliminary screening of the gut microbiota of piglets for antibiotic-resistant genes using a metagenomic approach
V. H. Tran*, M. Navarro, L. Omaleki, E. Roura and C. Turni
- 62 O How does weaning age affect the microbiome of piglets fed zinc oxide free diets?
J. Taylor*, C. Mulvenna, A. Strain, O. Gundogdu, N. Corcionivoschi and R. Muns
- 63 O Supplementation of a protected complex of biofactors and antioxidants reduces inflammation in weaner pigs
R. J. E. Hewitt, M. O. Sampaio, A. C. Corso, W. Bradshaw, K.J. Plush and D. N. D'Souza
- 64 O In-feed quinine hydrochloride supplementation improved piglet growth in the absence of zinc oxide under commercial conditions
E. Garcia-Puig, F. Liu, R. S. Morrison, A. Lisle and E. Roura
- 65 O Effect of two sources of zinc on growth performance and gut health of piglets with a low or normal birth weight
C. Negrini, D. Luise, F. Correa, S. Viridis, **I. Cockshott**, A. Monteiro and P. Trevisi
- 66 FT A novel immunity booster solution improves post-weaning growth and antioxidant status in piglets fed no antibiotics
J. R. Craig, D. J. Henman, E. M. Ford, F. Liu, M. C. Walsh, G. Handley, D. J. G. Hattingh, H. A. R. Suleria, and U. M. McCormack
- 67 FT Diets fermented with bacteria and enzymes improve growth performance and health of weaned piglets
P. Cozannet, M. Perez de Nanclares, F. Barcelo, **B. Guo** and P. Zheng

11.00

Brunch

Sponsored by APRIL



Session 10: Nutrition and Physiology

Sponsor: CJ Bio

Chair: Dr Kate Plush

Location: Ballroom Le Grand 1 & 2, Sofitel Brisbane



- 11.45 68 O The fingerprint of volatile organic compounds in swine feed formulations: Signature groups and nutrient precursors
S. Taylor*, M. Navarro, M. Müller, N. Pascal, C. Ibanez, M. Wong, V. H. Tran and E. Roura
- 69 O The ability of near infrared spectroscopy to measure volatile compounds in pig feed ingredients
M. Navarro, D. Cozzolino, S. Taylor, M. Müller, N. Pascal, G. Tedo, C. Ibanez and E. Roura

- 70 O The volatile organic compound profile in commercial post-weaning diets differ from gestating or lactating diets potentially contributing to neophobic feeding behaviours in piglets
P. Bogere*, S. Taylor, M. Navarro, M. Müller, N. Pascal, C. Ibanez, G. Tedo, M. Wong and E. Roura
- 71 O A new bitter taste receptor gene discovered in pigs: Transcriptomic analysis and experimental validation of the putative novel bitter taste receptor
K. W. Lai*, X. Tan, M. Zhou and E. Roura
- 72 O Structure of two novel porcine bitter taste receptors
X. Tan, K. W. Lai, M. Zhou and E. Roura
- 73 O Mid-infrared spectroscopy can identify changes in plasma profiles associated with dietary interventions: Untargeted omic screening
D. Cozzolino, **M. Navarro**, S. Taylor, C. Ibanez, N. Pascal, G. Tedo, M. Müller and E. Roura
- 74 O Individual variations in starch (maltooligosaccharides) preference in piglets
M. Zhou, M. Navarro, X. Tan and E. Roura

APSA Awards & Conference Close

13.00-13.30 APSA Medal – Sponsored by SunPork Group
APSA Flash Talk Award – Sponsored by APSA
Conference close delivered by 2025 APSA President



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