

ALM Tech News

No. 10



Meat for thought

In August, several researchers working on the ALM Tech project attended the 63rd International Congress of Meat Science and Technology (ICoMST) held in Cork, Ireland. Posters containing information related to the Project were presented in almost all sessions of ICoMST and the feedback received was very positive.

Dave Ledward (University of Reading) and David Hopkins (NSW Department of Primary Industries) presented a paper summarising meat science research since 1976 (see Ledward D.A. and Hopkins D.L. (2017). Meat science from 1976: A history of the journal. *Meat Science* **132**: 29-34). Whilst 2017 papers are generally not yet available, see <http://icomst-proceedings.helsinki.fi/#> for papers presented between 1955 and 2016. The 2018 ICoMST meeting will be held in Australia.

Directly before ICoMST 2017, the *Sustainable Meat Markets, Cross-border Trade and Eating Quality Workshop* was held in Dublin, Ireland. Program Leaders, Graham Gardner, David Pethick and Peter McGilchrist all presented papers at this United Nations Economic Commission for Europe (UNECE) workshop. In addition, other prominent researchers involved with the Project spoke on issues relevant to meat science.

A key focus of this workshop was to establish the Meat Standards Australia (MSA) methodology as the international standard for eating quality description. Australian meat is in the global market place, thus establishing our MSA system as the international eating quality description of choice will facilitate trade.

In the last newsletter a brief overview regarding the first Industry Calibration Workshop was given. The aim of this meeting was to initiate discussion about calibration and auditing requirements for effective delivery of new measurements and devices to industry. These requirements are listed on Page 2.

A large portion of the ALM Tech research focus is directed towards more established technologies which have a high likely-hood of commercial success. However, to ensure that the industry maintains a competitive advantage, research is also focusing on “Blue Sky” technologies that are more speculative.

One example of this is *Rapid Evaporative Ionization Mass Spectrometry* (REIMS) which is being used in the UK in the medical field. David Pethick visited Imperial College, London to learn more about possibilities for applying this technology to meat processing. For more information see P2 below.

Please don't hesitate to contact me if you have any questions or comments pertaining to the Project,

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Program E: Program Executive

Program leader: Graham Gardner

At the first Industry Calibration Workshop, convened by Jaya Marimuthu, the group identified the need for:

- a system for industry-wide calibration of all devices developed;
- industry business rules for all traits measured;
- providing justification for the expense of devices with more precision, repeatability, and accuracy;
- an AUSMEAT validation and auditing structure;
- alignment with relevant legislation via the National Measurement Institute;
- consistent messaging regarding precision, accuracy, and repeatability of devices measuring traits.

The next meeting will be held in early October and will be aligned with the industry Objective Carcase Measurement Taskforce meeting.

P1: Development of Lean Meat Yield technology

Program leader: Graham Gardner

Experiments involving lamb DEXA in an abattoir have been progressing well. These experiments focused on the robustness and repeatability of DEXA scanning, with promising results.

The first installation of a commercially installed DEXA for beef carcasses is progressing well, and should be ready by the end of the year. A series of 5 experiments have already been designed to further calibrate and test the robustness of this device.

A plan is being devised to enable the simultaneous testing of multiple other devices focused on measuring lean meat yield at this same site. This is an exciting opportunity that allows the direct comparison of numerous devices and their relative accuracies and precision.

P2: Development of eating quality (EQ) measurement technology

Program leaders: Dave Pethick & Pete McGilchrist

As noted on Page 1, Dave saw REIMS in action using a liver sample. This technology enables measurements of mass-to-charge ratio to be made. From these measurements a chemical profile can be developed whereby it is possible to distinguish between tissues of different composition.

In the laboratory that Dave visited, REIMS is being applied to human medicine by distinguishing between tissues that are healthy from those that are not. The

important link is that healthy tissue contains fat and unhealthy tissue has a relatively lower fat content. It may be possible that REIMS could be useful for fat comparisons in meat e.g., hogget versus lamb.

A recent meeting regarding NIR was held in Melbourne. A key point about NIR is that it behaves a little like a camera so it has all the limitations of needing a cut surface. Hence, the machine must be fit for purpose. It was agreed that a primary manufacturing company must be involved in further work.

P3: Development of robotic technology

Program leader: Christian Ruberg

A major aim for P3 is to find a commercial solution for cost effective offal scanning and sortation. Preliminary work on evaluating MRI and MEXA is complete and a report will be written.

MEXA appears to have the best potential for achieving a solution. Additional funding to further investigate MEXA for offal scanning and sortation will be sought.

P4: Industry Databases

Program leader: Daniel Brown

As expected the amount of data being generated from the devices being developed in Programs 1, 2 and 3 is mounting up. Researchers in P4 are essential to ensuring this data is effectively collected, stored and utilised.

Daniel is in the process of providing methodology to Project researchers to ensure that the data is reliable and valid.

P5: Data Decision Systems

Program leader: Wayne Pitchford

As written in the Operational Plan, “the aim of Sub-program 5.3 is to improve industry liaison through refinement and development of the initial supply chain officer concept”.

This initial concept was a collaborative initiative between MLA and the Sheep CRC. For example, a livestock supply chain officer position was supported within a business lamb supply chain. With the objective being to increase lean meat yield across the lamb supply chain, the officer worked with producers. Work included communicating market requirements so creating opportunities for producers to receive premiums for market compliant animals. For more information see *CISP 3 Year Achievement Report* (<https://www.mla.com.au/download/finalreports?itmId=2713>)

Organisations associated with the Project and wishing to engage in such a model can contact Sean Miller. Whilst the general model will be generic, specifics will need to be tailored for individual businesses.