



EAAP

69th ANNUAL MEETING

Dubrovnik, Croatia
27th to 31st August 2018



Conventional and traditional livestock production systems – new challenges



Foetal and maternal placenta cells respond differently to a deleterious foetal mutation

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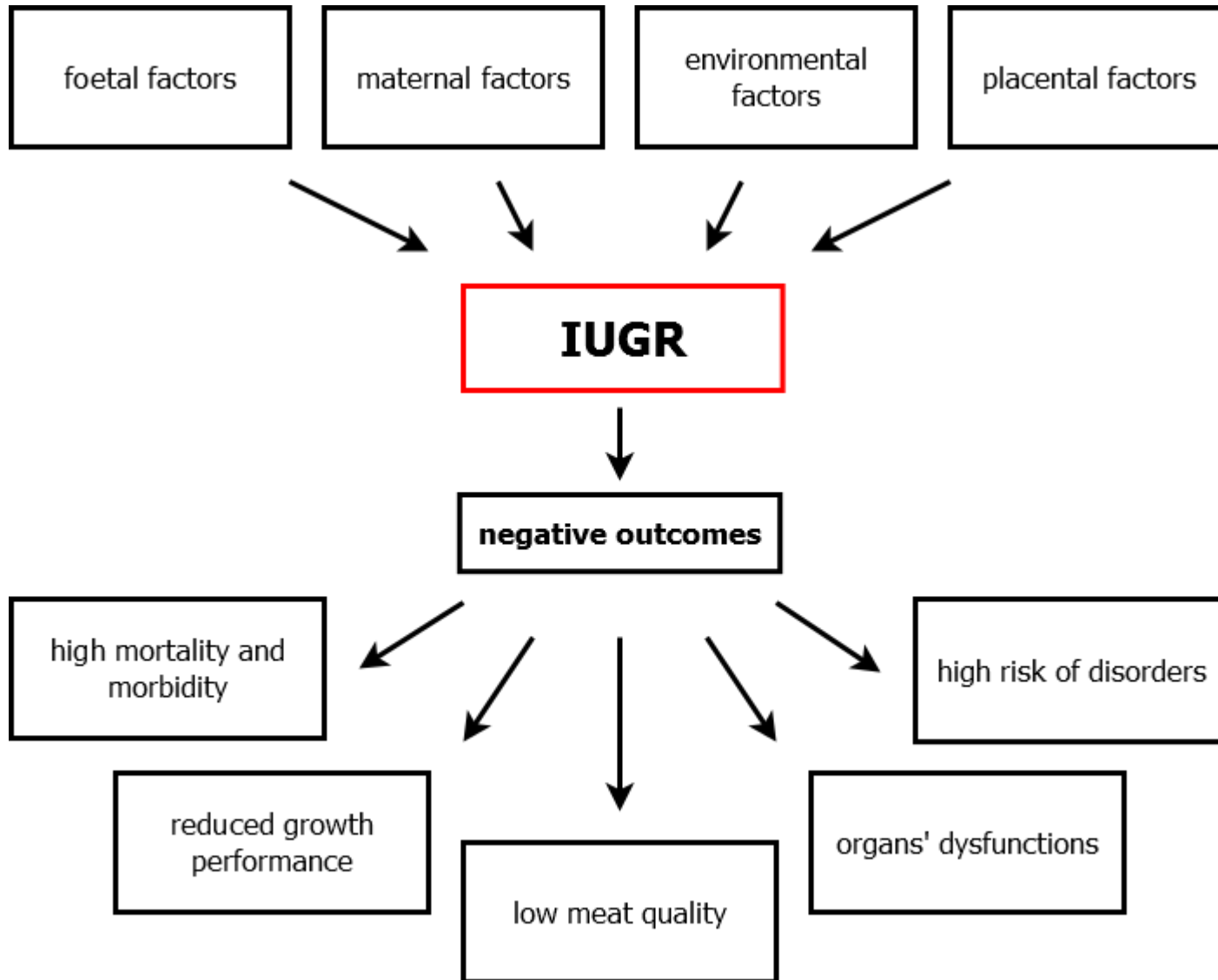
What is IUGR?

Intrauterine growth restriction (IUGR) refers to the impaired growth and development of the mammalian embryo/foetus or its organs during pregnancy



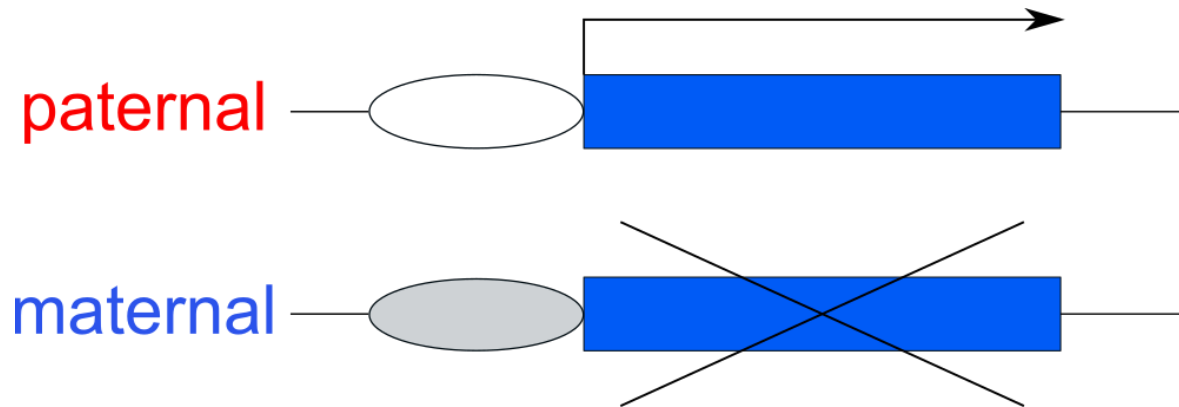
<https://www.ncbi.nlm.nih.gov>

IUGR: factors and negative outcomes

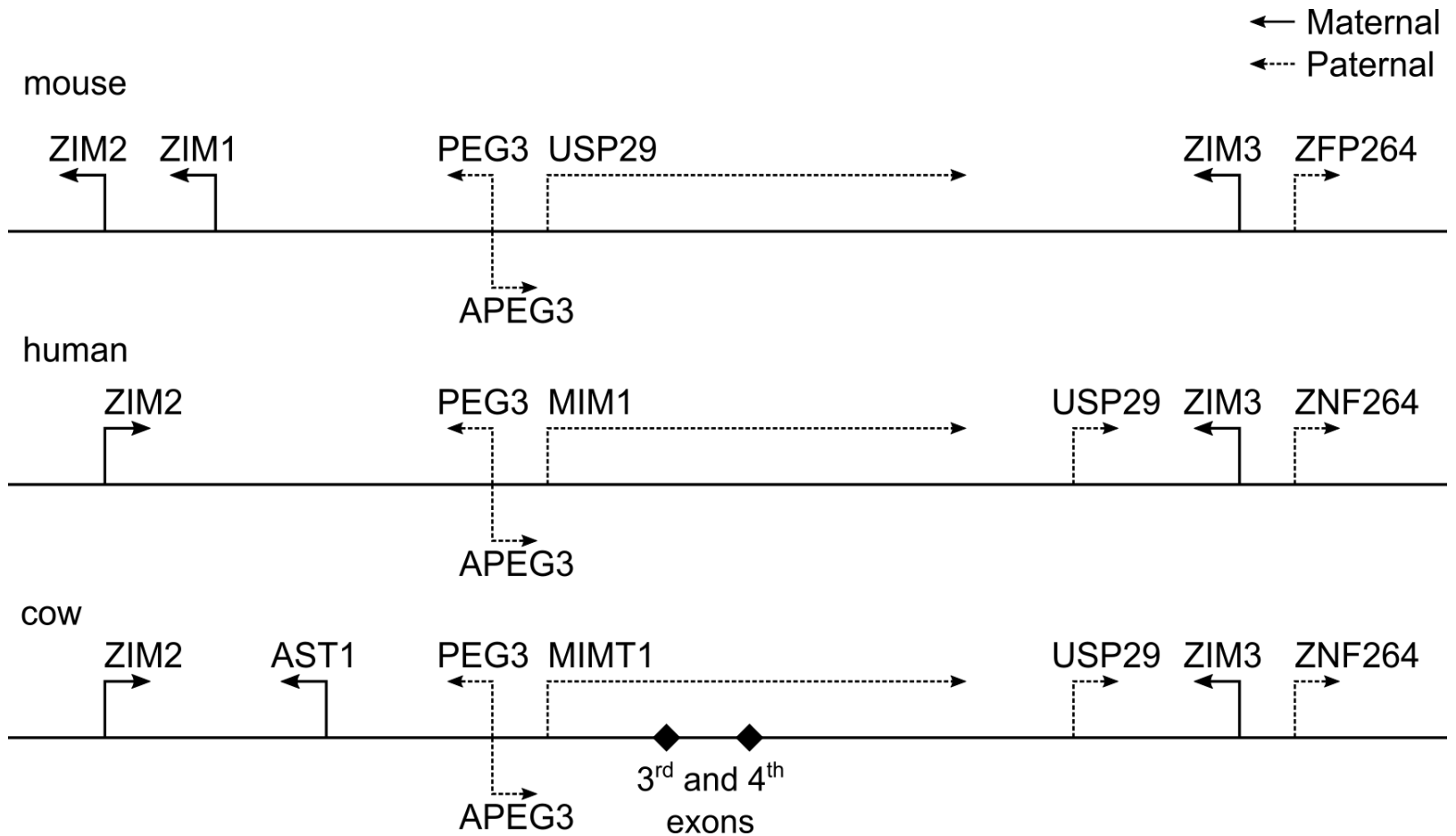


Genomic imprinting

- Preferential expression of one parental allele



PEG3 domain



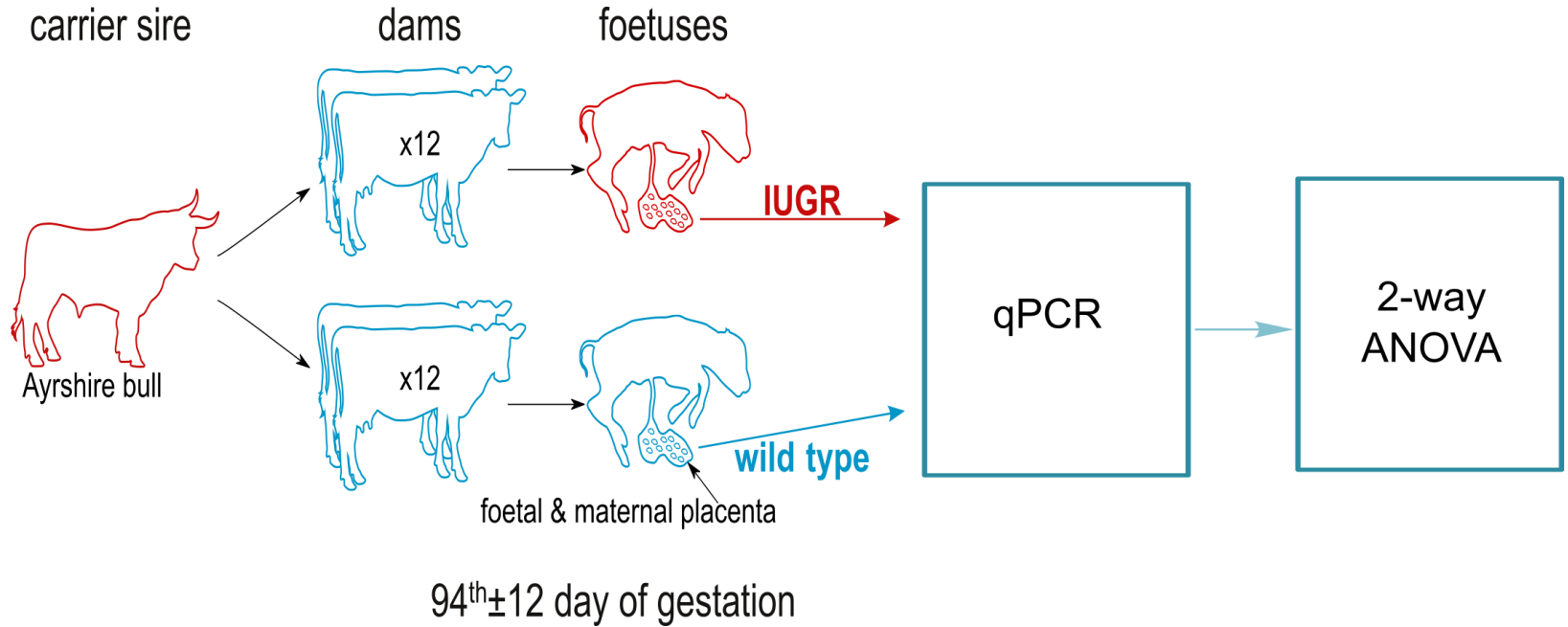
Next generation sequencing revealed:

- 128 and 308 genes differentially expressed (between foetal wild-type and *MIMT1^{Del}*) in maternal and foetal placenta

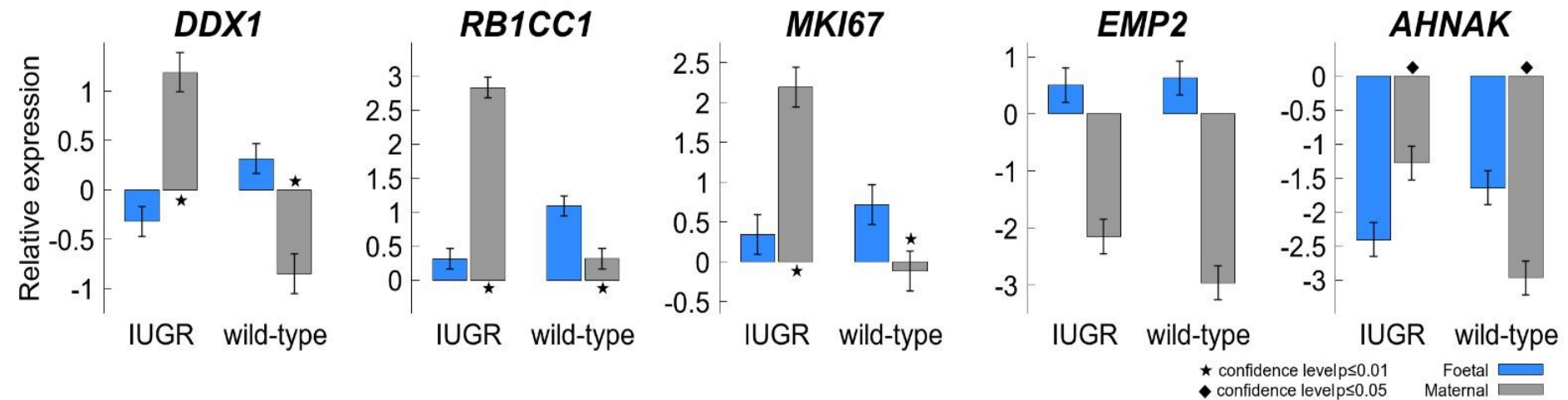
Aim of the study

To further verify the impact of the foetal *MIMT1*^{Del} mutation on foetal growth

Materials and methods



Gene expression in foetal and maternal placenta



Conclusions

- maternal and foetal placenta respond differentially to a deleterious foetal mutation
- mother recognizes the foetus genotype and tries to protect endangered gestation?

Thank you for your attention

References

- Flisikowski, K., Venhoranta, H., Nowacka-Woszuik, J., McKay, S. D., Flyckt, A., Taponen, J., Schnabel, R., Schwarzenbacher, H., Szczerbal, I., Lohi, H., Fries, R., Taylor, J. F., Switonski, M., Andersson, M., 2010. A novel mutation in the maternally imprinted *peg3* domain results in a loss of *mim1* expression and causes abortions and stillbirths in cattle (*bos taurus*). *PLOS ONE* 5 (11), 1–9.
- Xu, H., Pausch, H., Venhoranta, H., Rutkowska, K., Wurmser, C., Rieblinger, B., Flisikowska, T., Frishman, D., Zwierzchowski, L., Fries, R., Andersson, M., Kind, A., Schnieke, A., Flisikowski, K., 2017. Maternal placenta modulates a deleterious fetal mutation. *Biology of Reproduction* 97 (2), 249–257.