Delineating spatio-temporal processes in the gut mucosa of pigs

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Relevance to livestock production

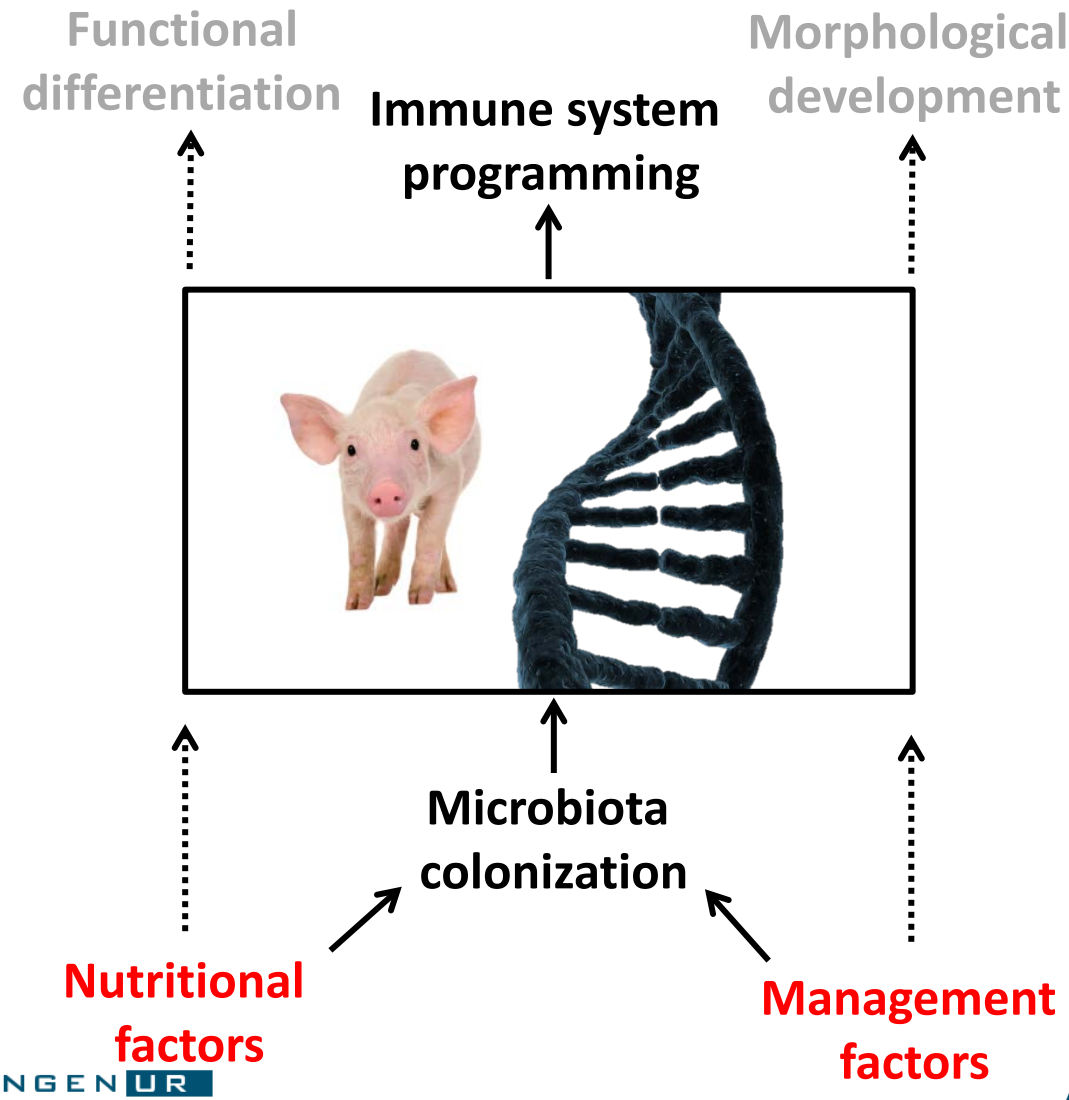
- **Gut is important for animal performance**
  - ✓ Feed efficiency / growth

- **Gut is the gatekeeper of health**
  - ✓ 70% of the immune cells located in mucosal tissue

Healthy

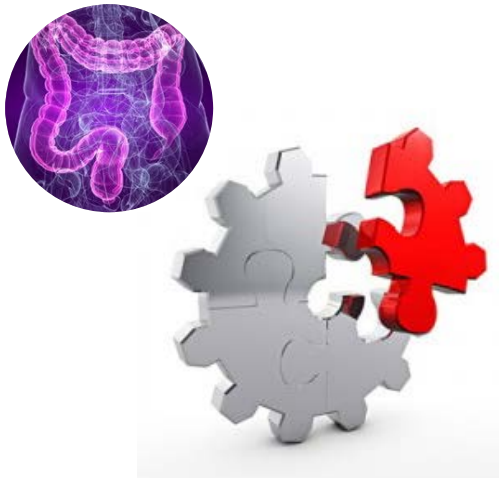
Disturbed

Focus on gut development



Objective

- **Investigate intestinal development by combining multiple transcriptomic studies**

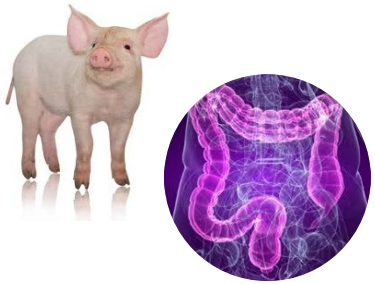


- ✓ **Spatio-temporal processes**

- ✓ **Biological function**

Data – meta-analyses

9
Experiments

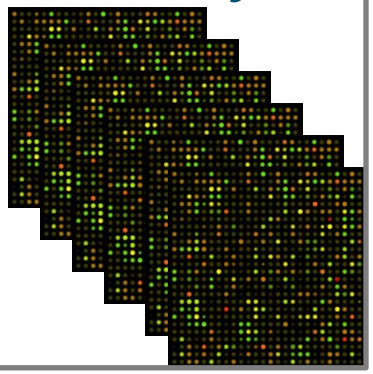


2
Platforms

Agilent Technologies

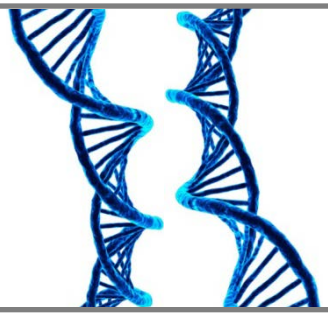
affymetrix

98
Microarrays



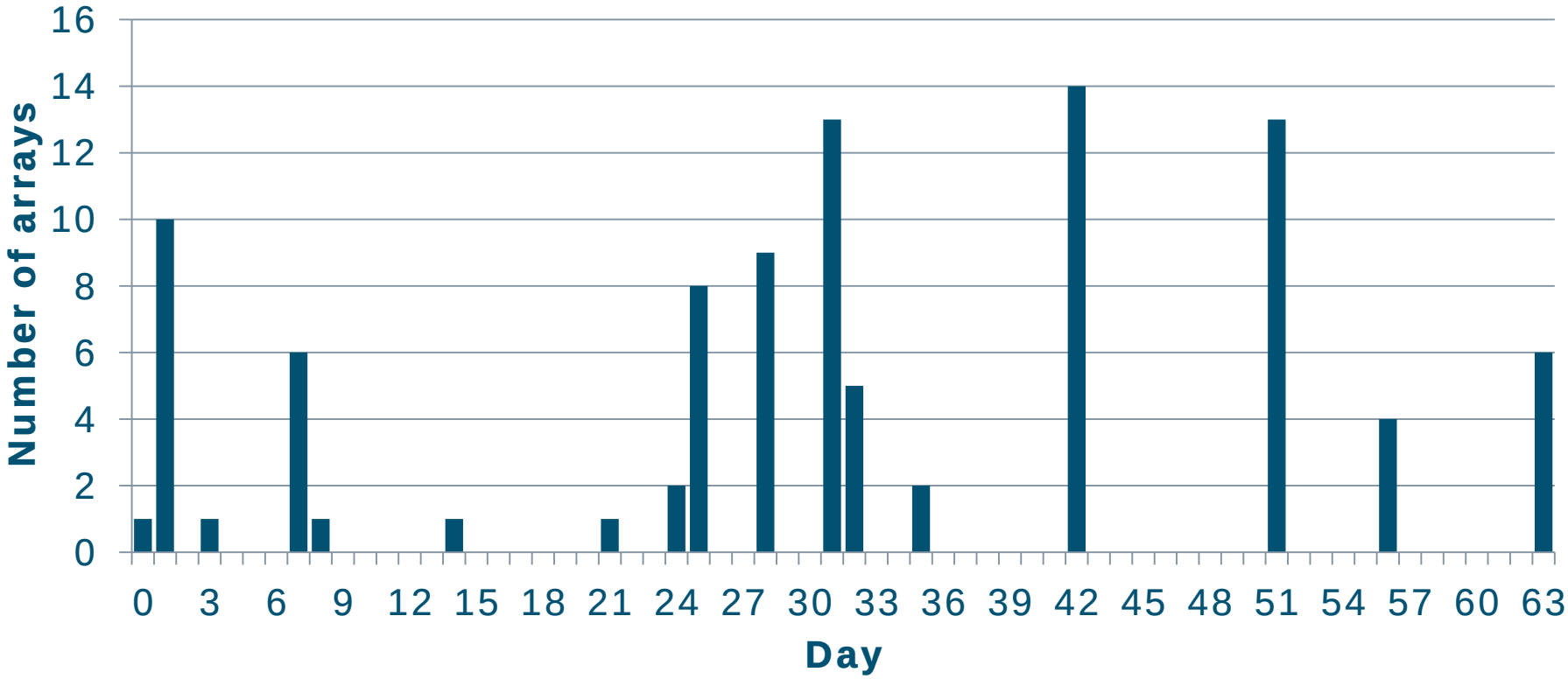
17
Time-points

8,069
Genes



Animal Breeding & Genomics Centre

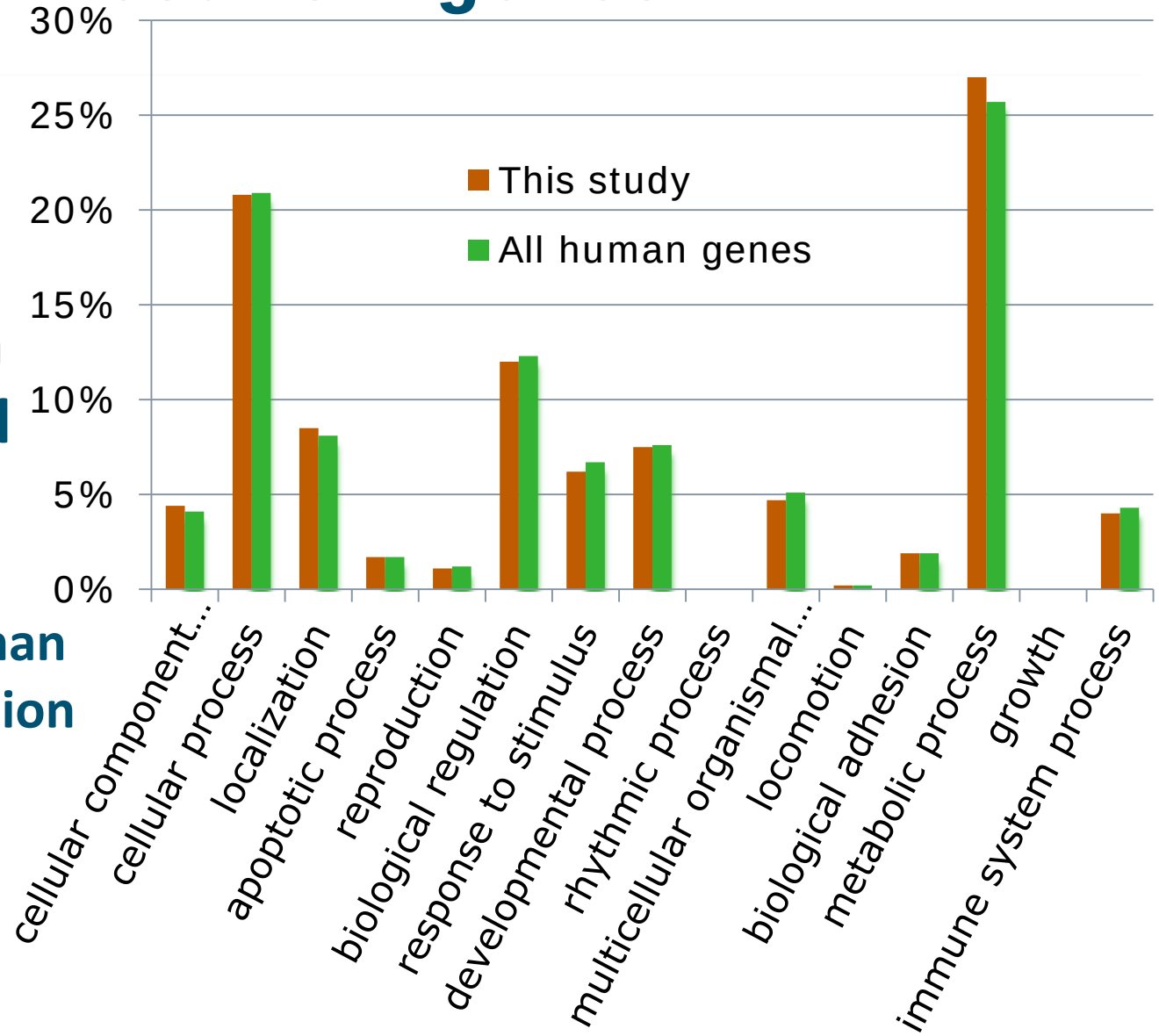
Results – microarrays & time-points



- **Histogram of the microarrays shows acceptable distribution**

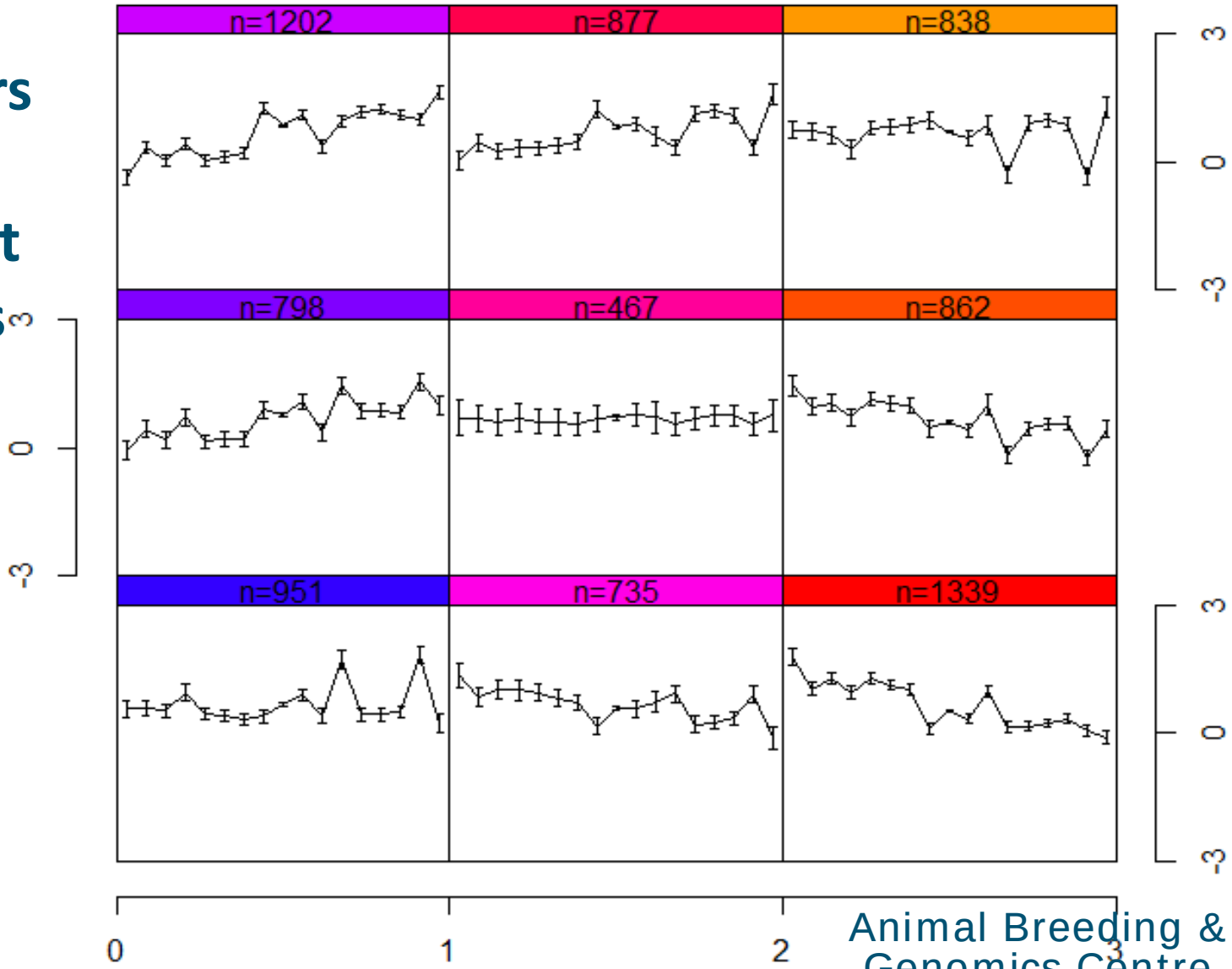
Results – genes

- **Proper representation of all biological functions**
- **Mapped to human - more information**



Results – Self Organizing Maps

- 9 clusters
- Different patterns

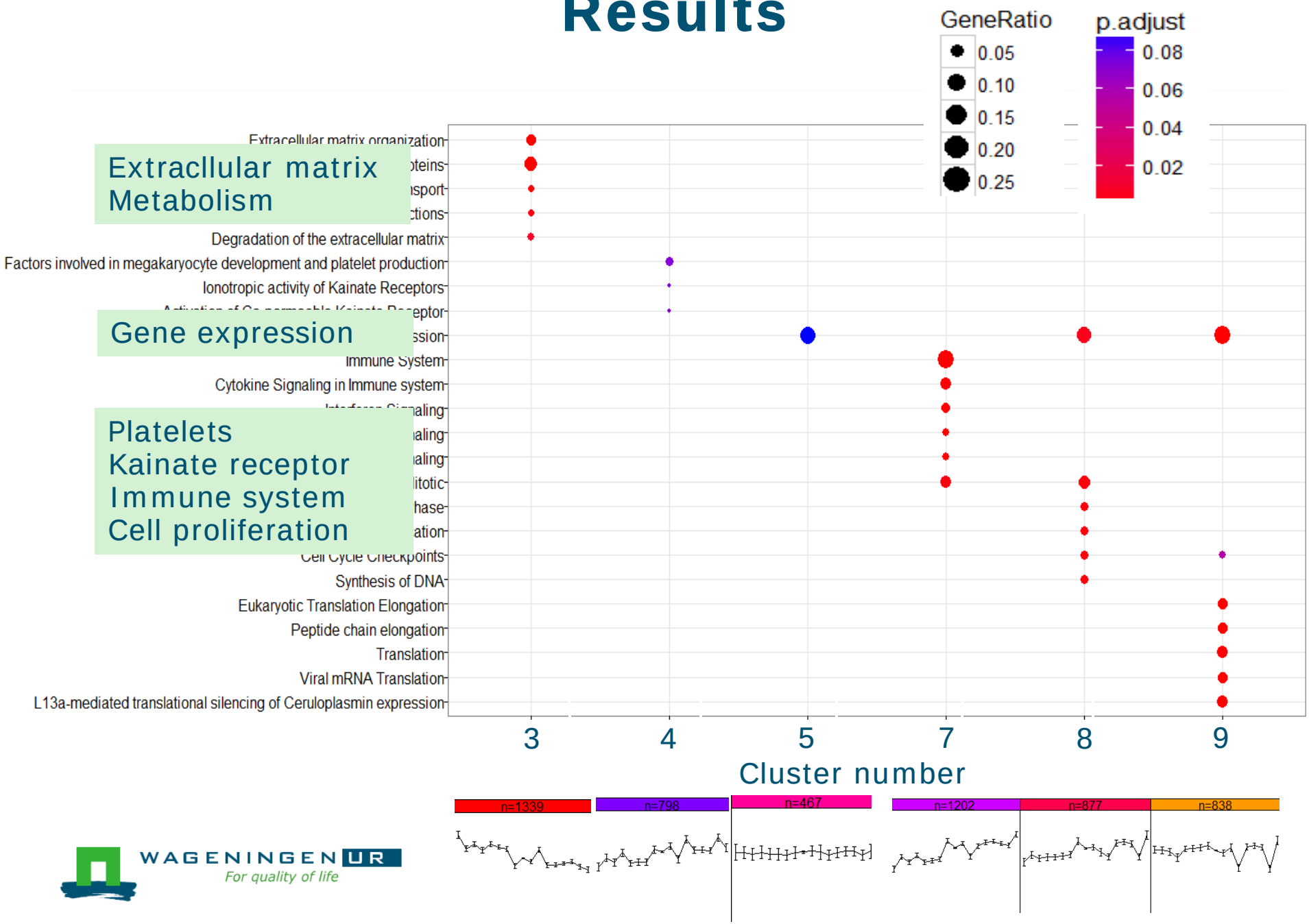


Results

Extracllular matrix
Metabolism

Gene expression

Platelets
Kainate receptor
Immune system
Cell proliferation



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Conclusions

- **Obtained insight into time-dependent fluctuations of biological processes**

- **Maybe exploited to modulate particular processes changes**

  Changes in

  ✓ Management

  ✓ Nutrition

  ✓ Genetic background

Thank you for your attention

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