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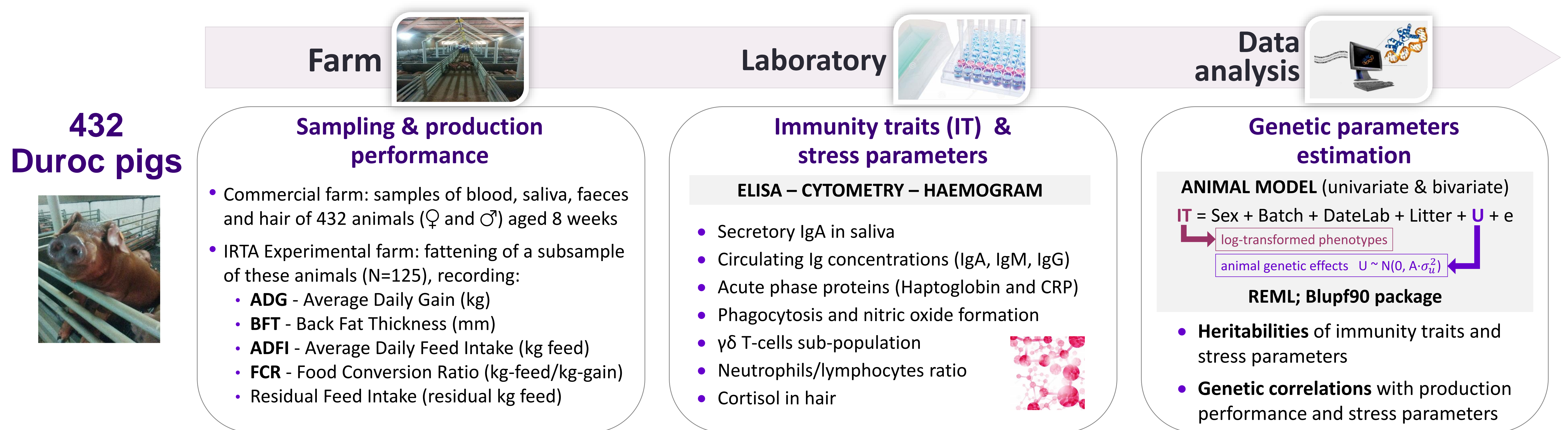
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IMMUIPIGEN

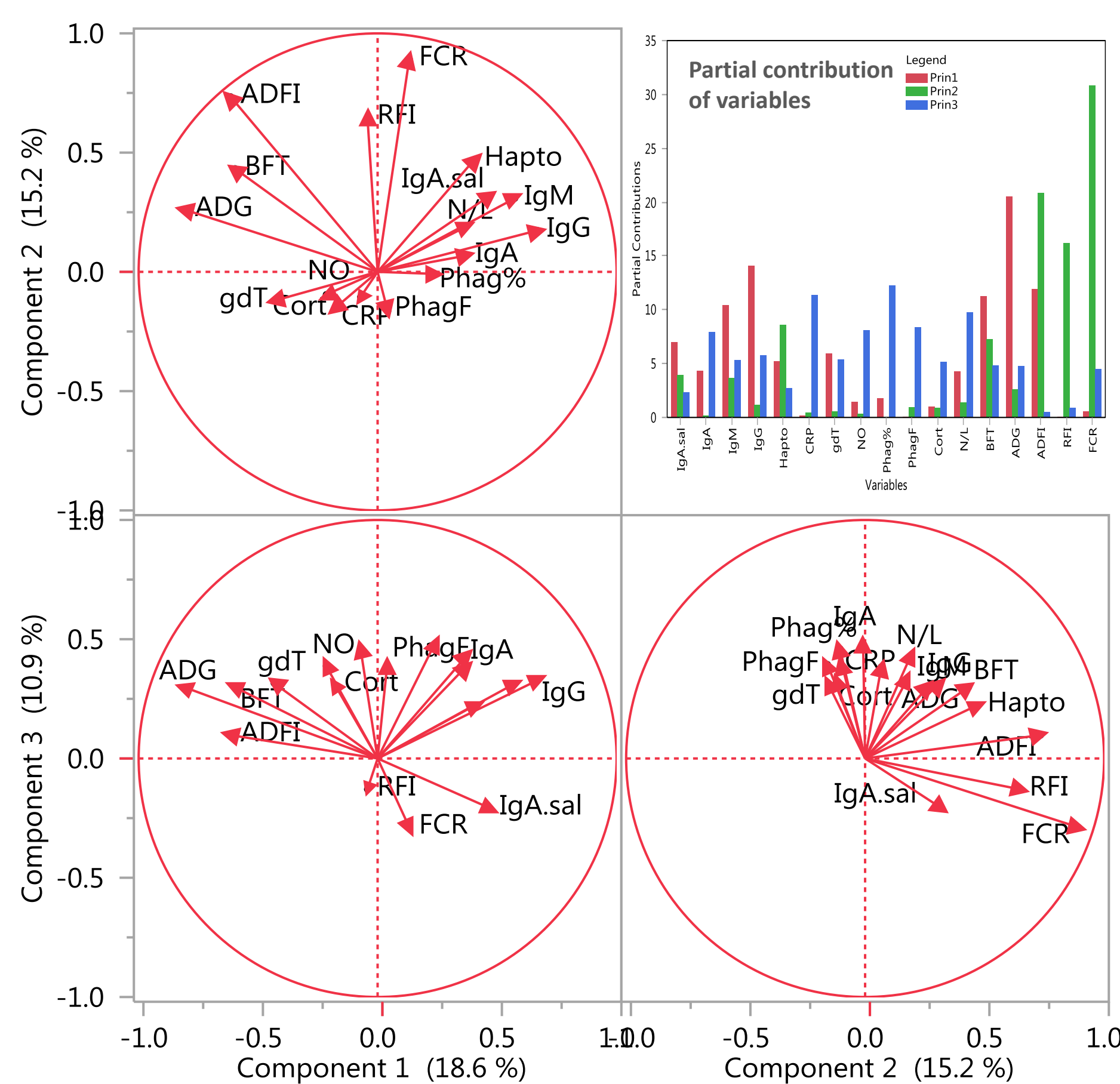
The **IMMUIPIGEN** project focuses the genetic architecture of global immunocompetence in pigs as a first step to implement selection programs on robustness while improving production performance.

We present results regarding the genetic determinism of immunity traits

MATERIAL & METHODS



PRINCIPAL COMPONENTS



GENETIC PARAMETERS

IMMUNITY TRAITS & STRESS PARAMETERS	HERITABILITY ESTIMATES mean H ² (SE)	GENETIC CORRELATION ESTIMATES (*)						
		WITH STRESS PARAMETERS		WITH PRODUCTION PERFORMANCE				
		N/L	Cortisol	ADG	ADFI	FCR	RFI	BFT
IgA concentration in saliva (mg/dl)	0.21 (0.34)	-0.12	-0.10	0.00	-0.42	0.06	-0.06	-0.10
IgA concentration in plasma (mg/ml)	0.63 (0.13)	0.00	-0.15	0.54	0.62	-0.17	0.09	0.08
IgM concentration in plasma (mg/ml)	0.40 (0.12)	0.48	0.37	-0.08	0.38	0.52	0.09	-0.31
IgG concentration in plasma (mg/ml)	0.35 (0.13)	0.39	-0.07	0.03	0.15	0.10	-0.26	-0.33
Haptoglobin in serum (mg/ml)	0.17 (0.00)	0.41	0.36	-0.62	0.06	0.36	0.54	-0.18
C Reactive Protein in serum (µg/ml)	0.21 (0.10)	-0.26	-0.61	0.08	0.42	0.24	0.73	-0.05
γδ T-cells sub-population (%)	0.58 (0.14)	-0.16	-0.37	0.46	0.54	0.45	0.21	0.69
Nitric Oxide in serum (µM)	0.25 (0.12)	0.09	0.19	-0.31	0.12	0.39	0.30	0.56
Phagocytosis (% cells)	0.38 (0.14)	0.71	0.34	-0.78	0.00	-0.01	-0.01	-0.98
Phagocytosis (FITC)	0.58 (0.14)	0.35	0.32	-0.47	-0.29	-0.32	-0.33	-0.49
Neutrophils/Lymphocytes ratio	0.52 (0.16)	---	0.32	-0.63	-0.56	0.18	-0.12	-0.35
Cortisol in hair (µg/mg)	0.35 (0.13)	0.32	---	-0.17	-0.22	-0.10	-0.12	-0.16

(*) In black genetic correlation estimates significantly different from zero. In grey estimates not different from zero and/or showing very large uncertainty regions (large SE).

- Immunity traits had moderate to high heritabilities, ranging between 0.18 and 0.63. The highest heritabilities were obtained for circulating IgA concentration, percentage of γδ T-cells and level of phagocytosis, whereas secretory IgA in saliva reported a heritability not significantly different from zero.
- The two stress indicators, neutrophils/lymphocytes ratio and cortisol concentration in hair, showed moderate heritabilities, were genetically correlated between them ($r_G=0.32$), positively associated to phagocytosis, and negatively associated to γδ T cells and production traits.
- Percentage of phagocytic cells and level of phagocytosis were both negatively associated to growth and fat depot, whereas genetic correlations with feed efficiency were favourable or negligible (negative or null r_G with FCR and RFI).
- Percentage of γδ T cells showed strong positive genetic correlations with growth, feed intake and fat deposition, jointly with a favourable (negative) genetic relationship with stress parameters.

Our results evidence the genetic determinism of immunity traits, and support the possibility of applying effective selection programs to jointly improve immunocompetence, welfare and production efficiency in pigs.

