



Pig adaptation to cold environment enhances oxidative and glycolytic Longissimus muscle metabolism

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Pig adaptation to cold environment enhances oxidative and glycolytic *Longissimus* muscle metabolism

Faure J., Lebret B., Bonhomme N., Ecolan P., Kouba M., Lefaucheur L..

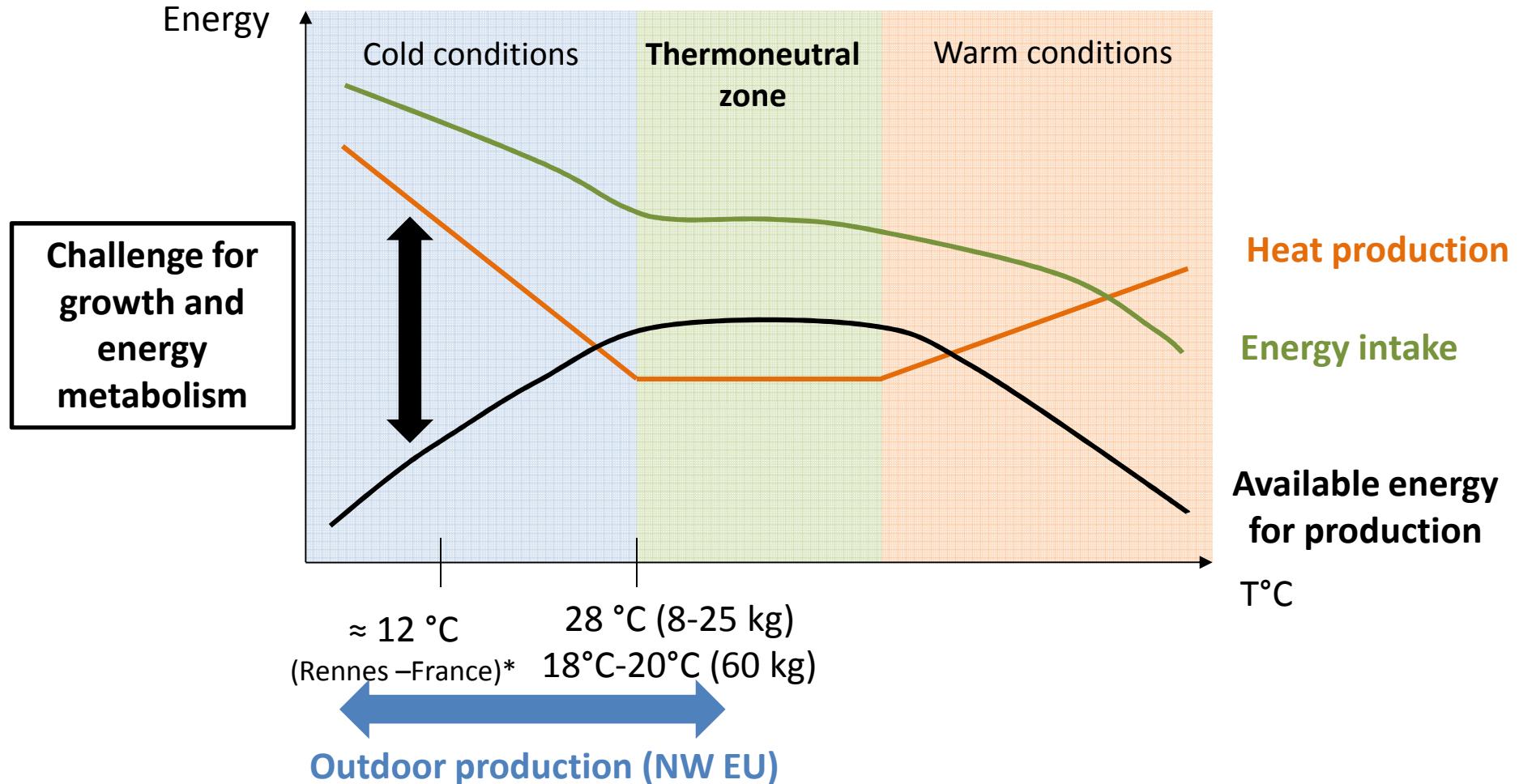
INRA-Agrocampus Ouest



63rd Annual Meeting of the EAAP
27 August - 31st August 2012 - Bratislava, Slovakia



Pig adaptation to ambient temperature

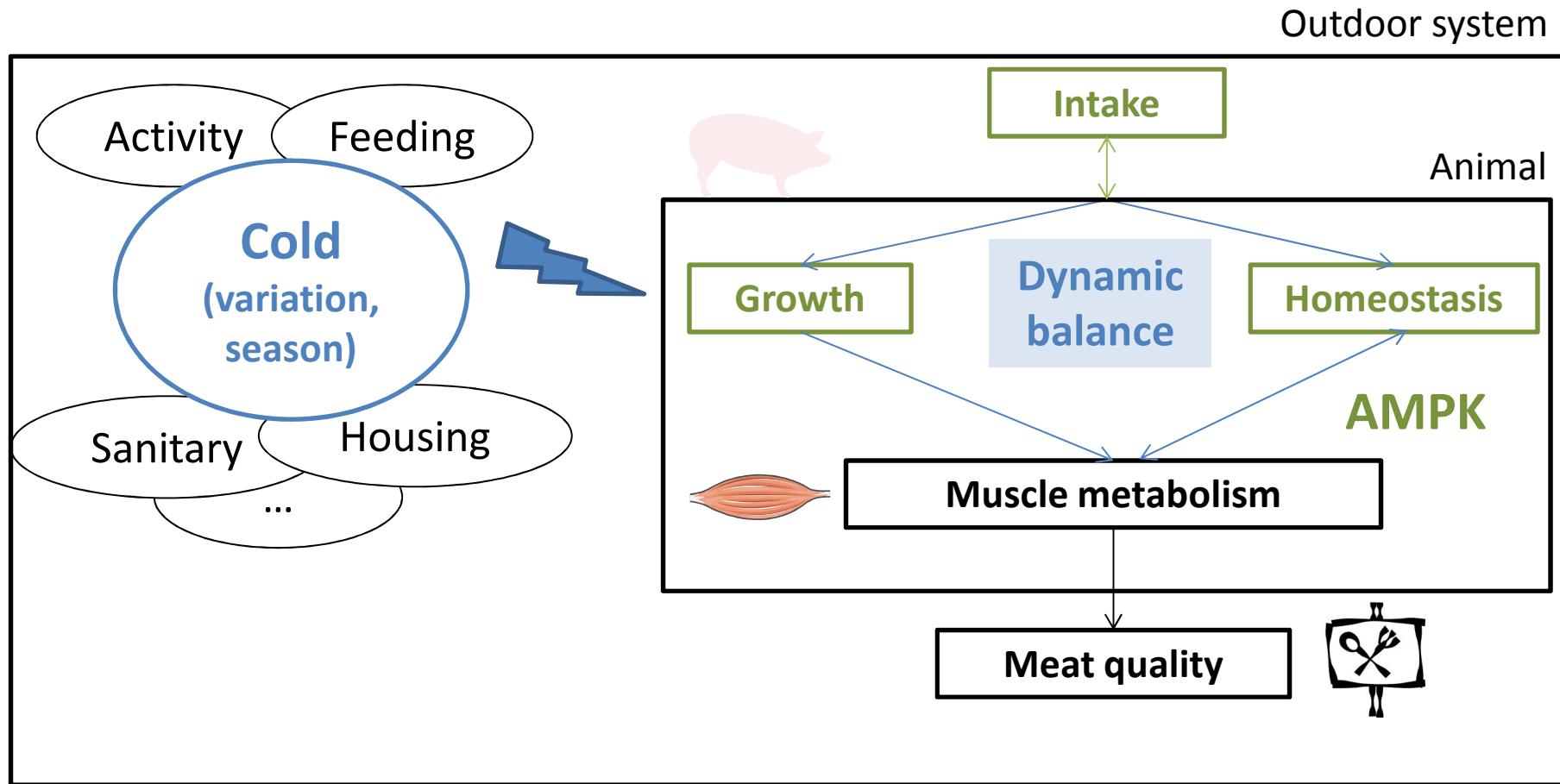


Adapted from Quiniou et al., 2000 , Le Dividich et al., 1998

* mean/year source: Météo France

Complex pig adaptation to cold environment

Introduction



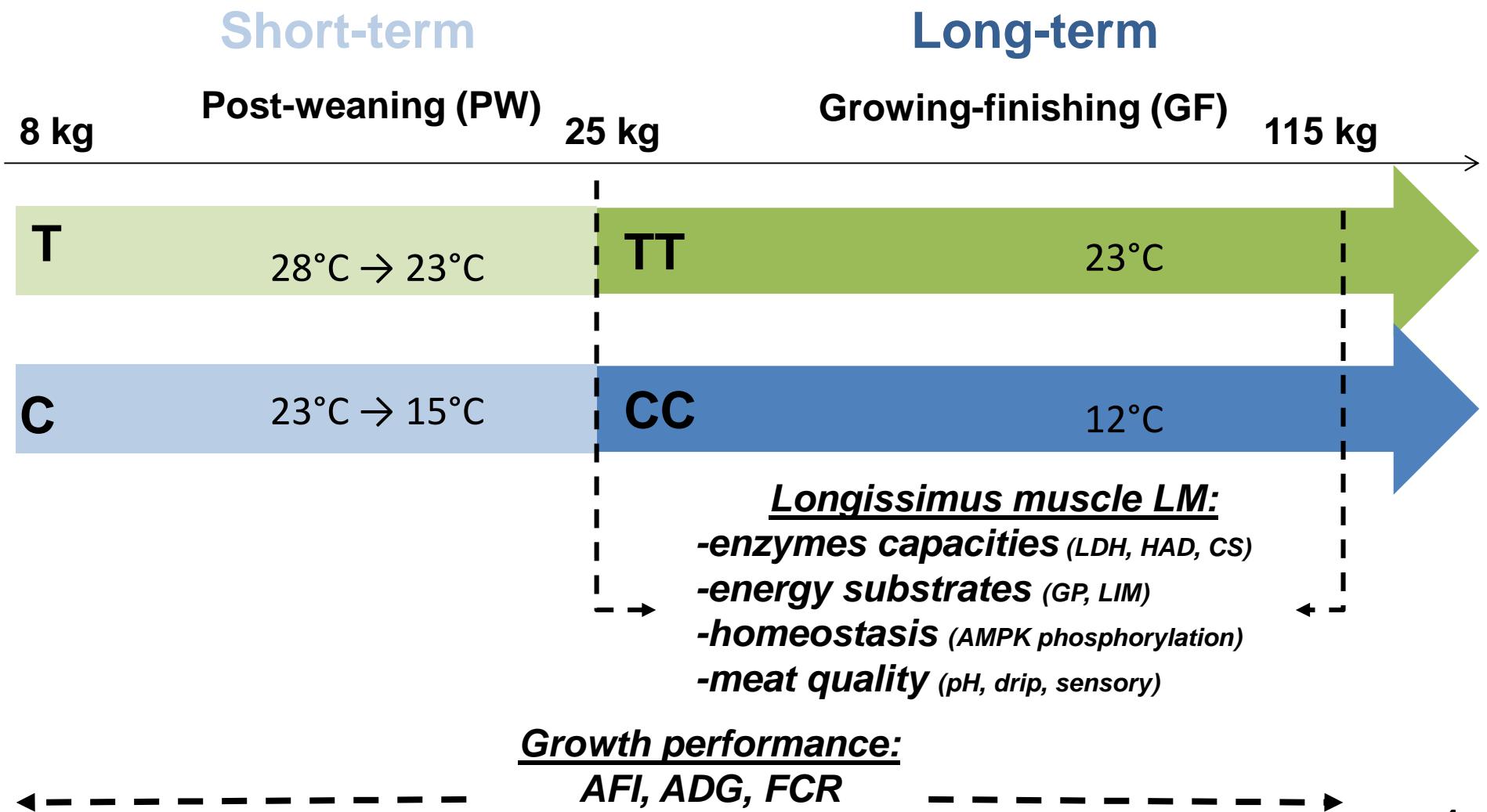
Bare effects of a constant cold exposure
during growth until commercial stage (115 kg)?

Experimental conditions

LW x (LW x Landrace)

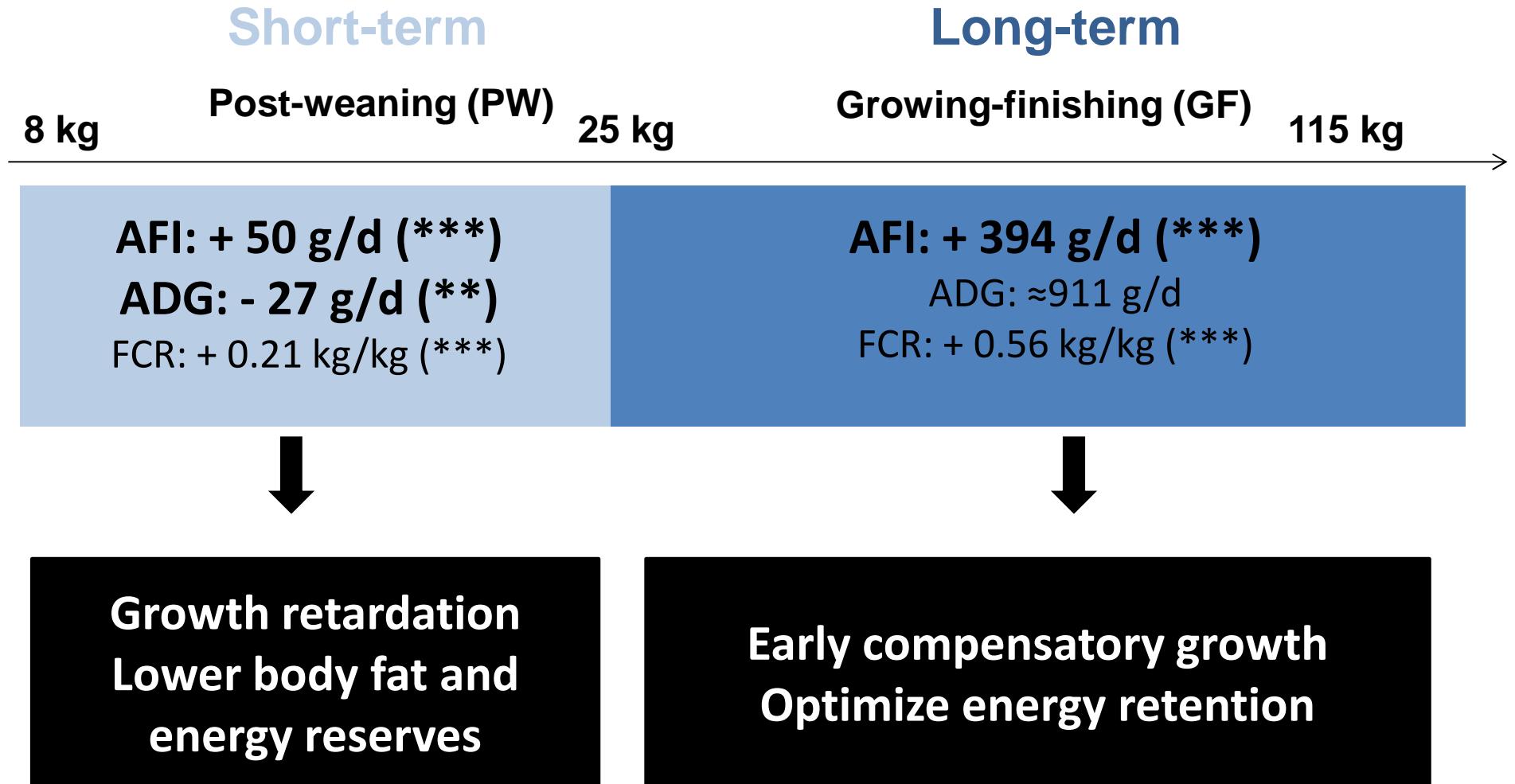
Ad Libitum

Conventional system



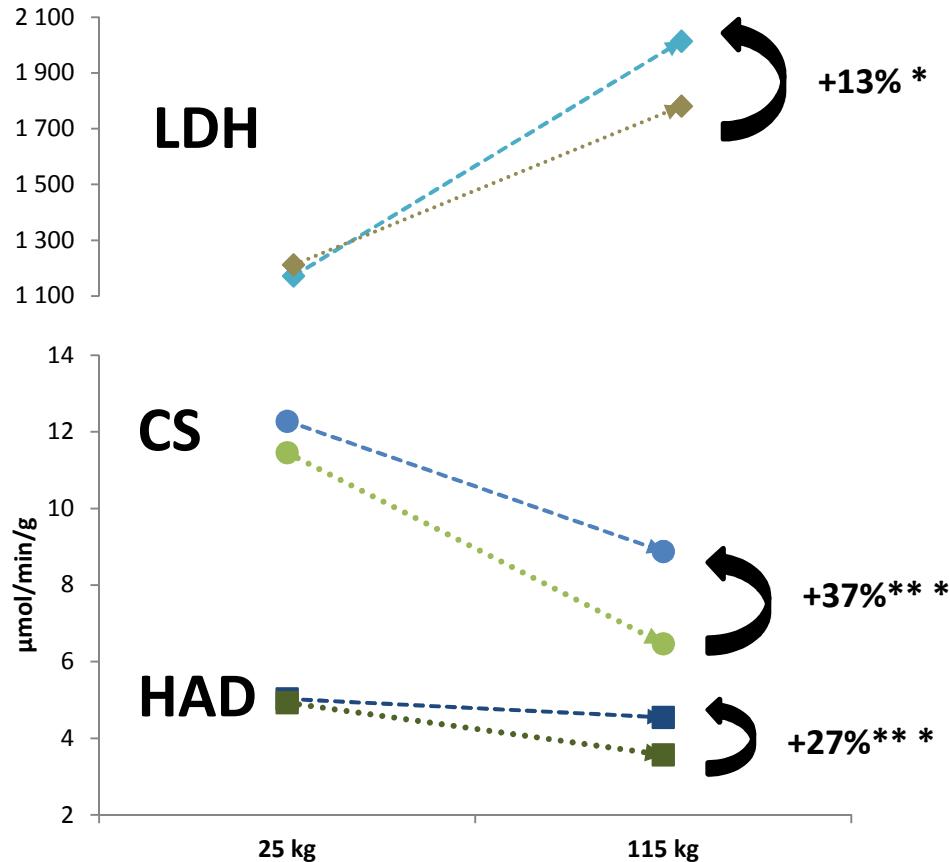


Animal adaptation depending on physiological stage





Both oxidative and glycolytic capacities enhanced by cold



↗LDH/CS *
Higher glycolysis

Long-term adaptation

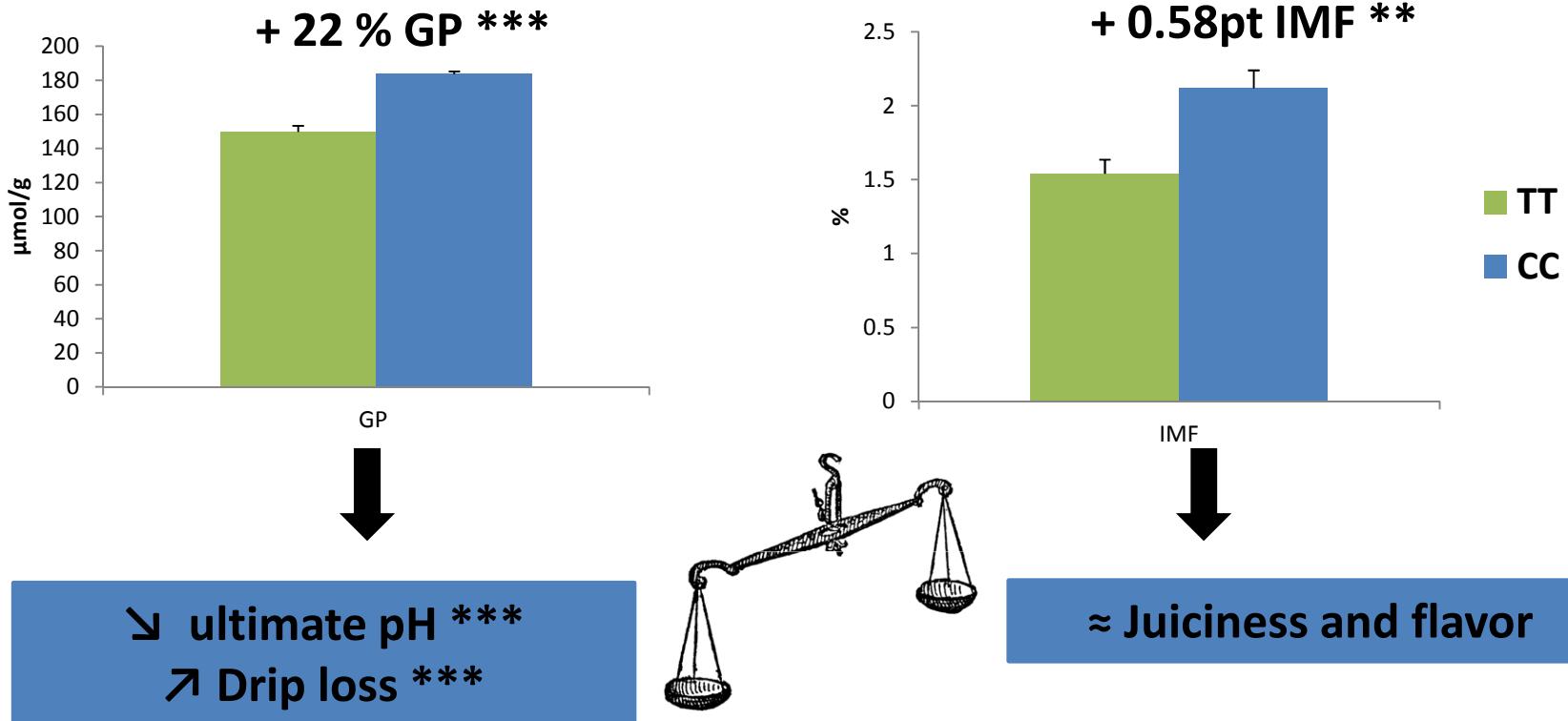
↘HAD/CS **
Increase of mitochondrial oxidation
Increase of carbohydrate use

≈ pAMPK/AMPK
Homeostasis potential preserved

Belated response to cold conditions
Diversity of energy use allowing muscle energy balance



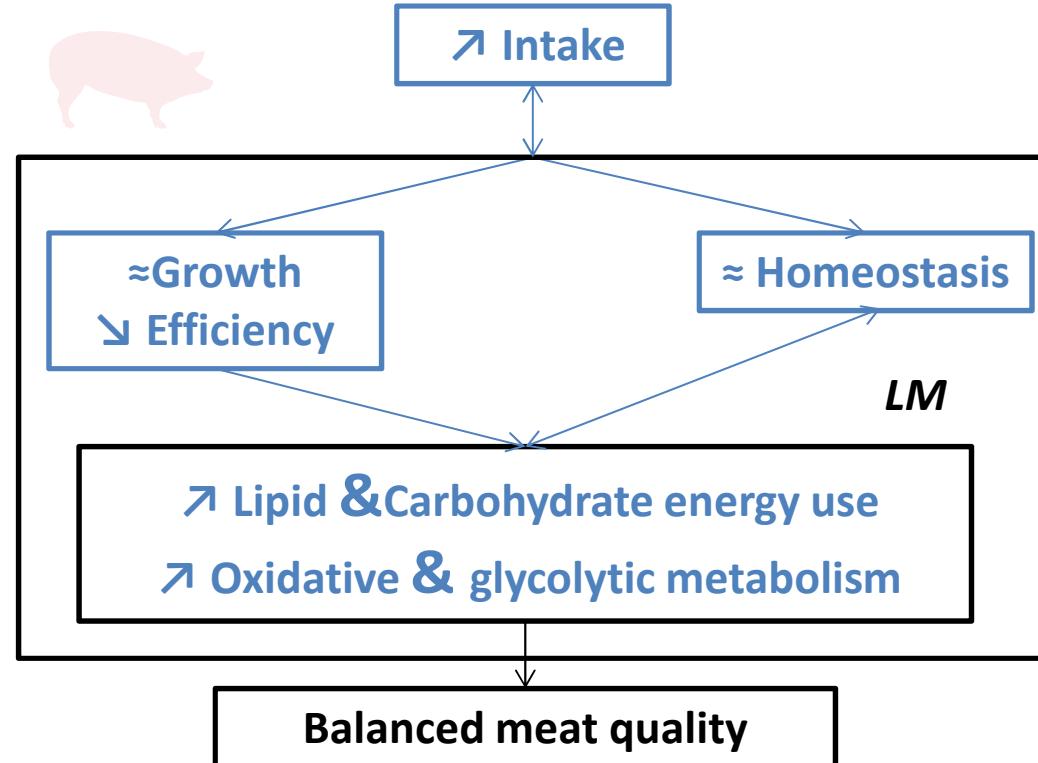
Cold effects of energy substrates modulated meat quality of loin



Impairment of technological meat quality but positive modulation on sensory quality

Long term effects and diversification of LM metabolism

Constant cold environment
(in a conventional pig system)



Muscle type specific strategy = adaptation to cold conditions
LM= higher resistance to protect its energy metabolism to another external stress?



Thank you for your attention!

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