Association between milk fatty acids in early lactation and subsequent reproductive performance of modern high-yielding dairy cows

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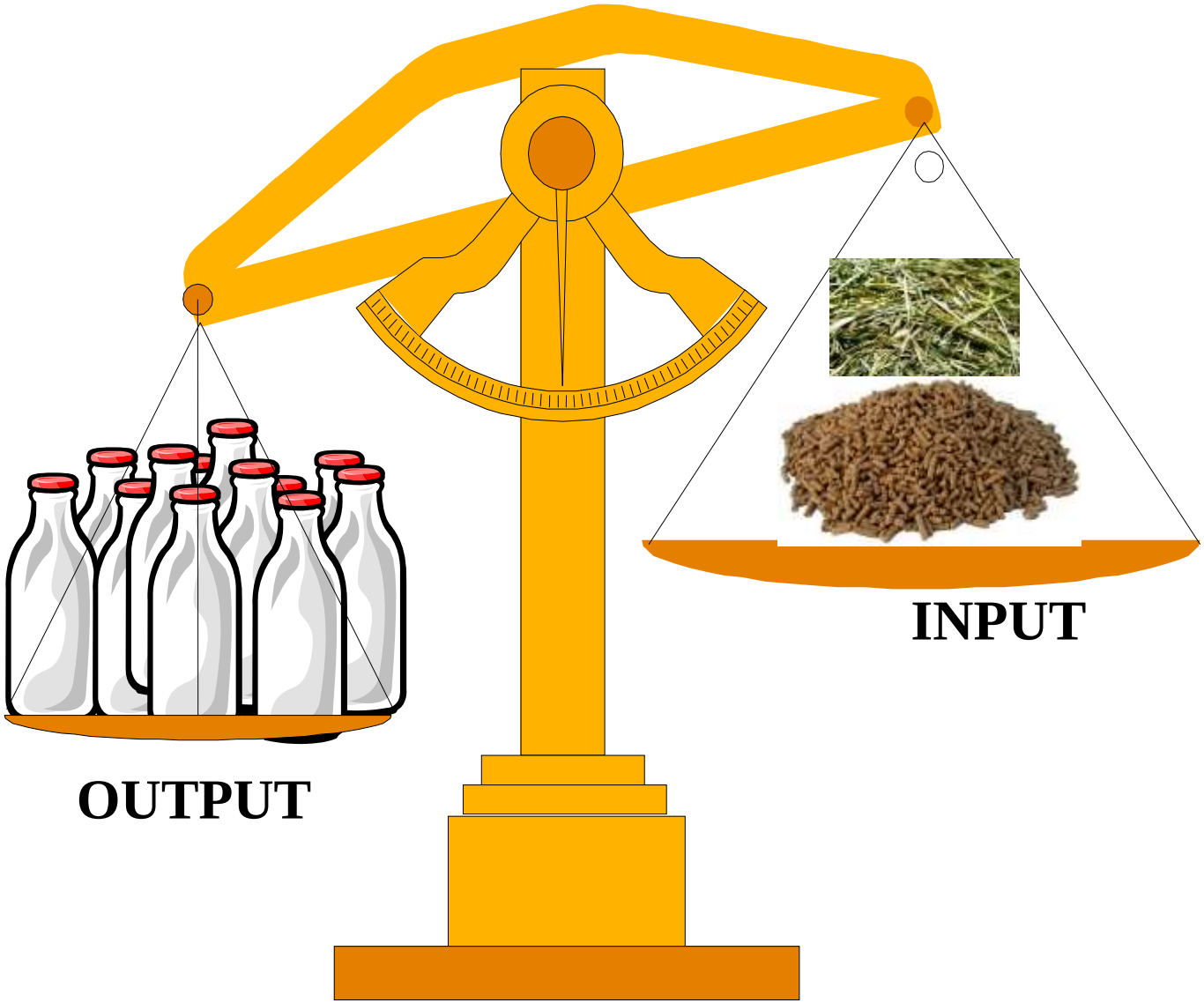
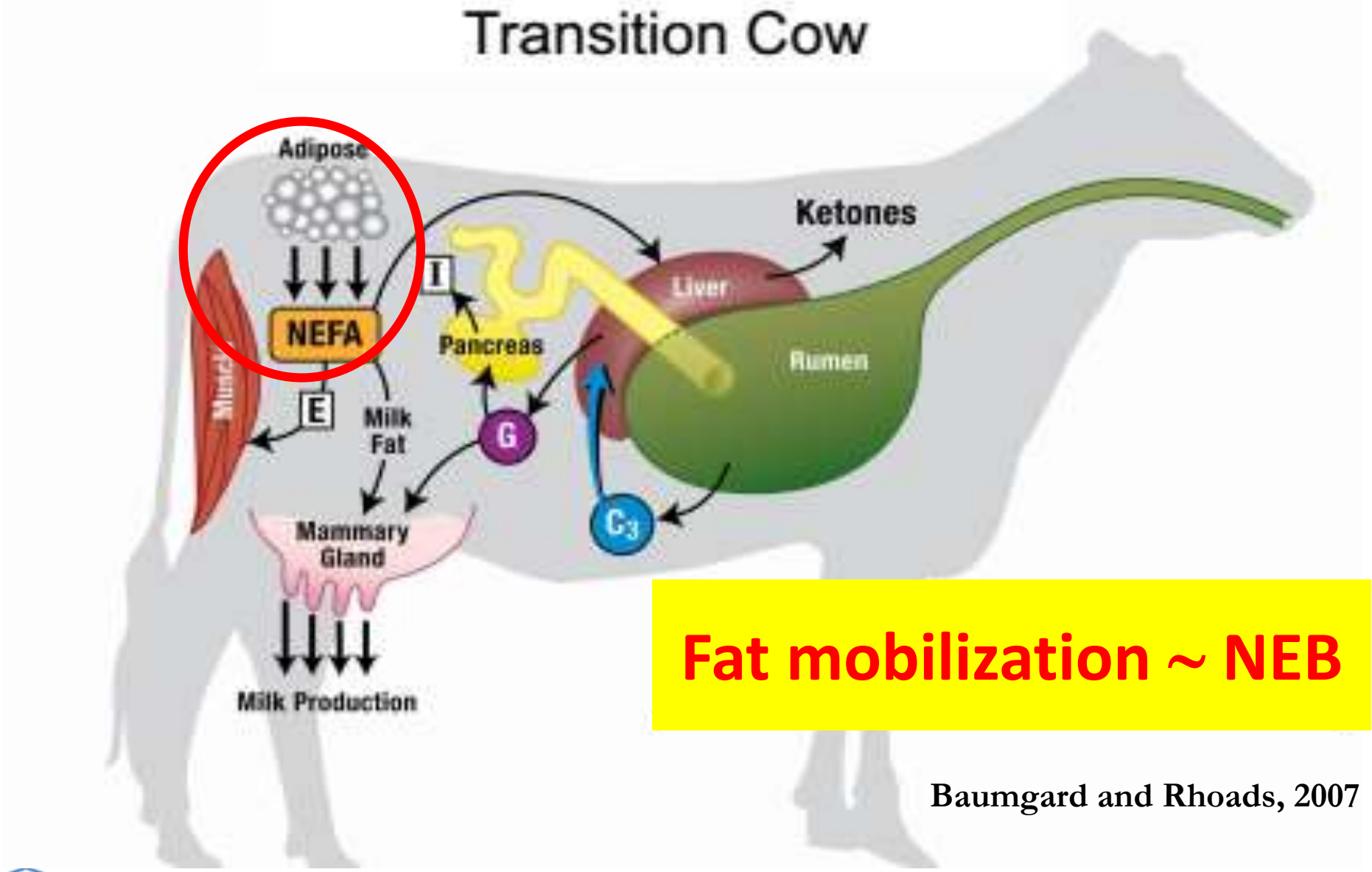
Early lactation: period of NEB



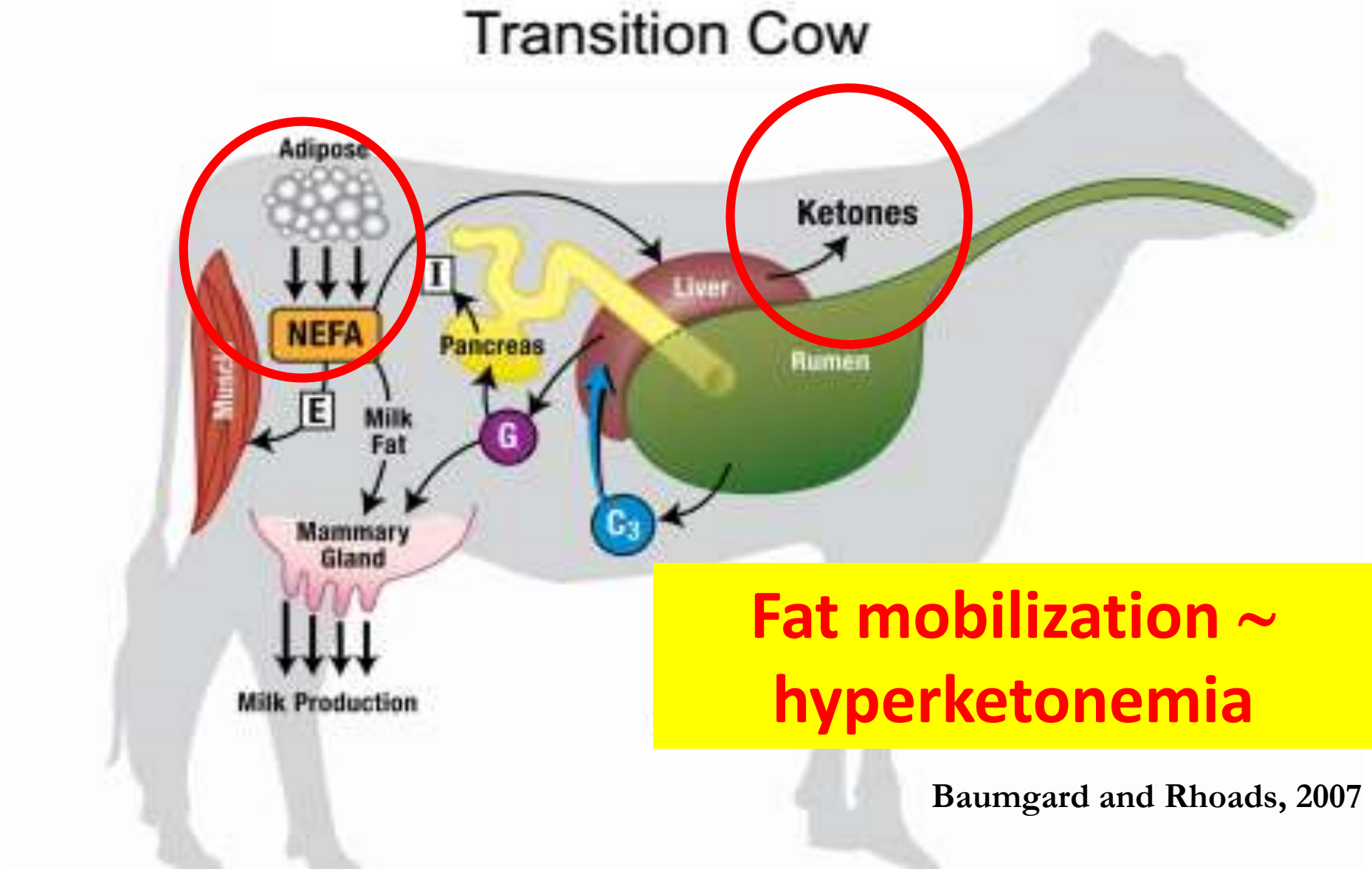
Early lactation: period of NEB



Fat mobilization ~ NEB

Baumgard and Rhoads, 2007

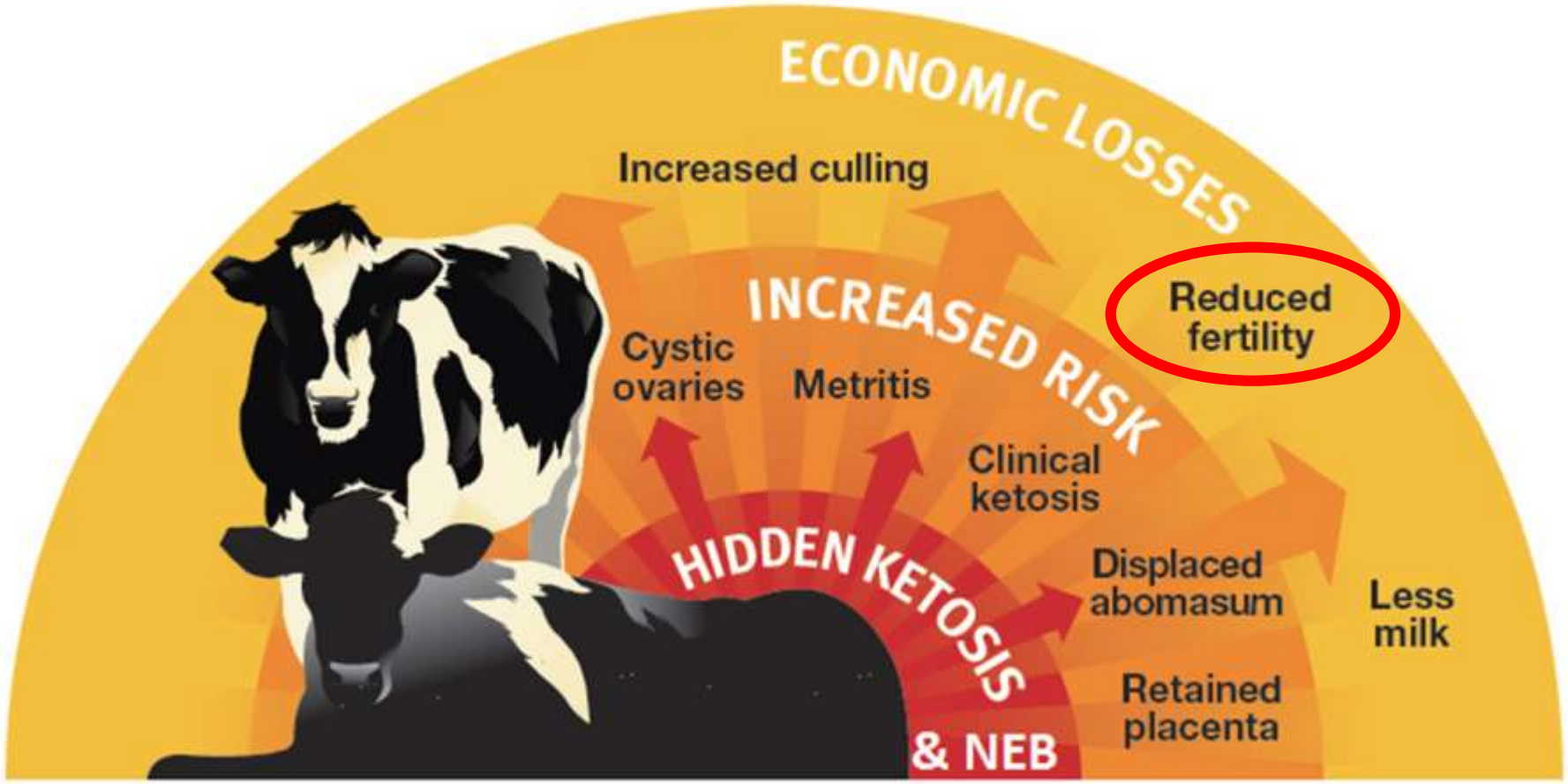
Early lactation: risk for hyperketonemia



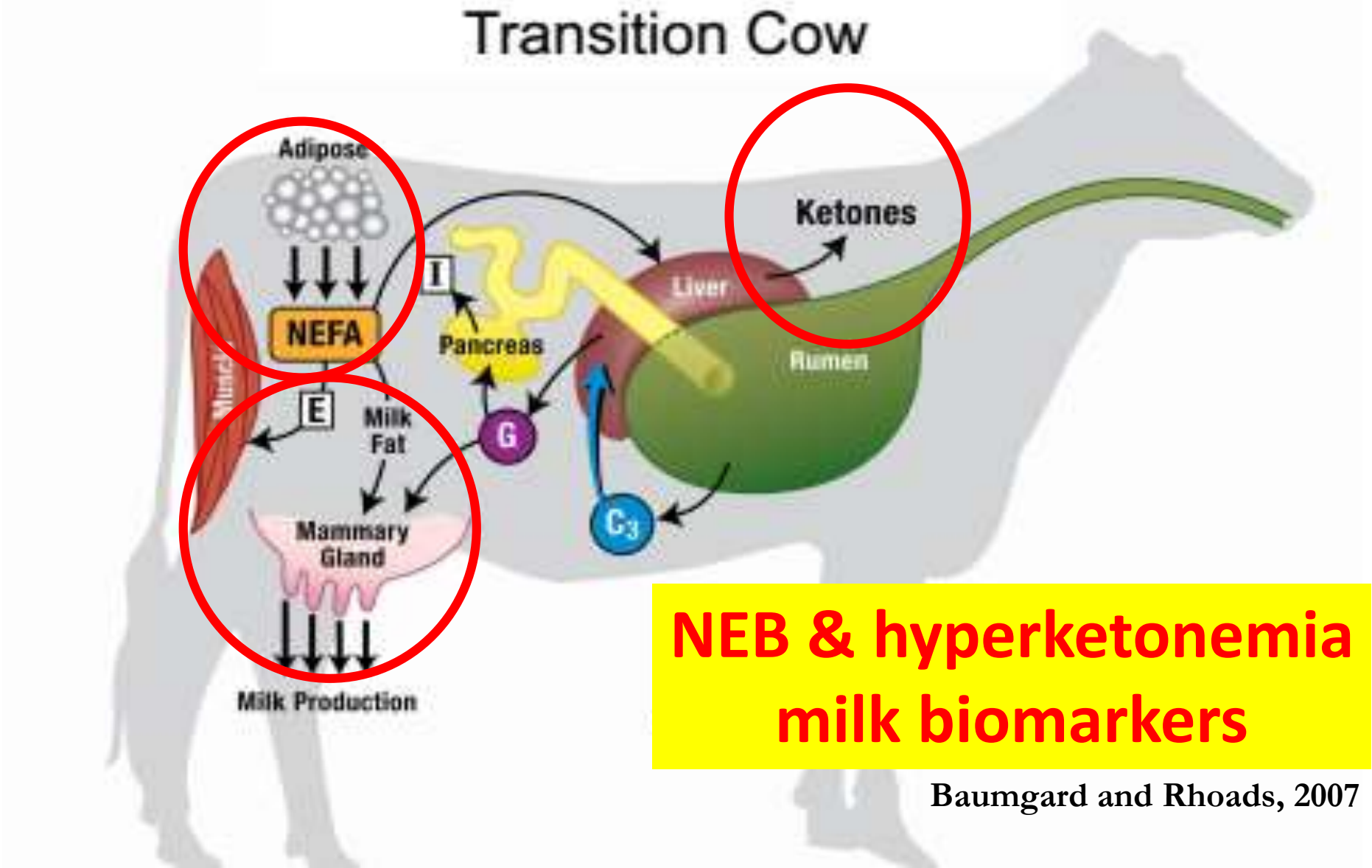
Fat mobilization ~ hyperketonemia

Baumgard and Rhoads, 2007

NEB ~ Reduced fertility



NEB ~ biomarker in milk



NEB & hyperketonemia milk biomarkers

Baumgard and Rhoads, 2007

NEB ~ biomarker in milk

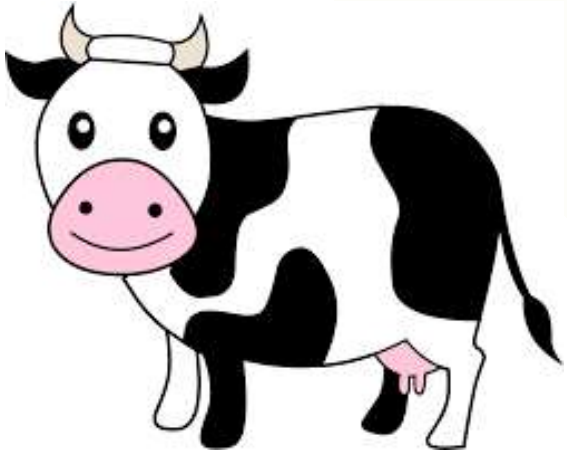
biomarker

NEB:↑ plasma NEFA
Hyperketonemia

NEB ~ C18:1 cis-9 in milk

Corrected C18:1 cis-9

(g/100 g FA) ≥ 3.98



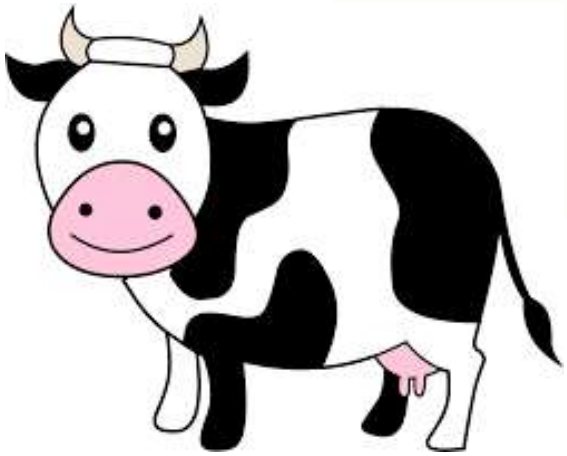
Corrected C18:1 cis-9

(g/100 g FA) < 3.98

Hyperketonemia ~ C18:1 cis-9/C15:0 in milk

C18:1 cis-9/C15:0

(g/g) ≥ 45



C18:1 cis-9/C15:0

(g/g) < 45

Biomarkers in milk ~ reproduction

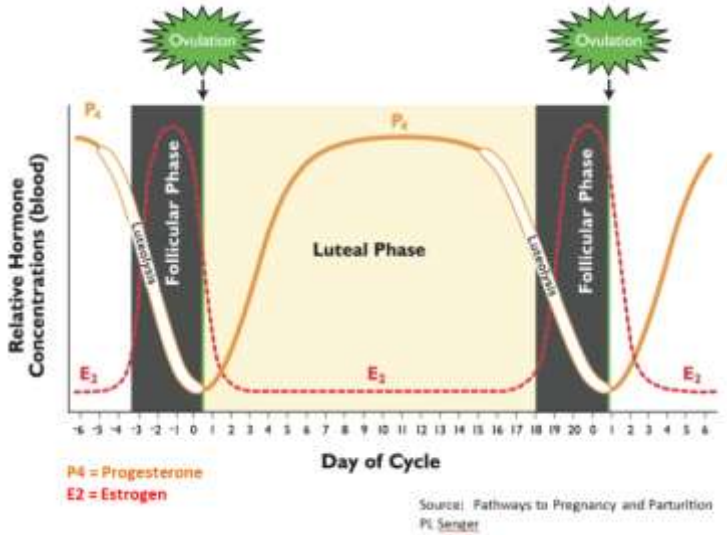
biomarker

Reproductive performance

Biomarkers in milk ~ reproduction

biomarker

Resumption of ovarian cyclicity?
Calving to pregnancy?



Biomarkers in milk ~ reproduction: set up

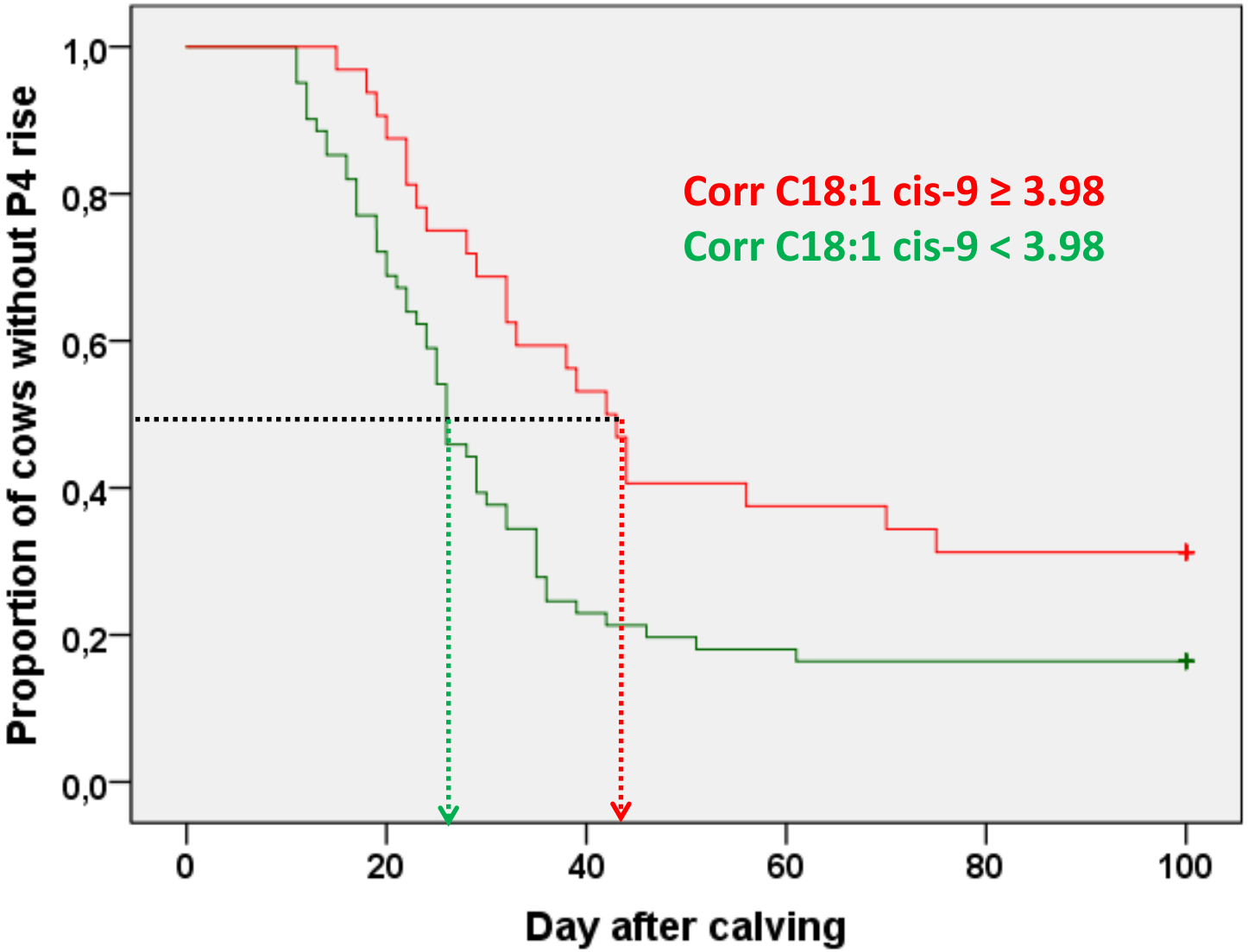
First 100 days of lactation

Experiment 1: 92 cows
Experiment 2: 93 cows

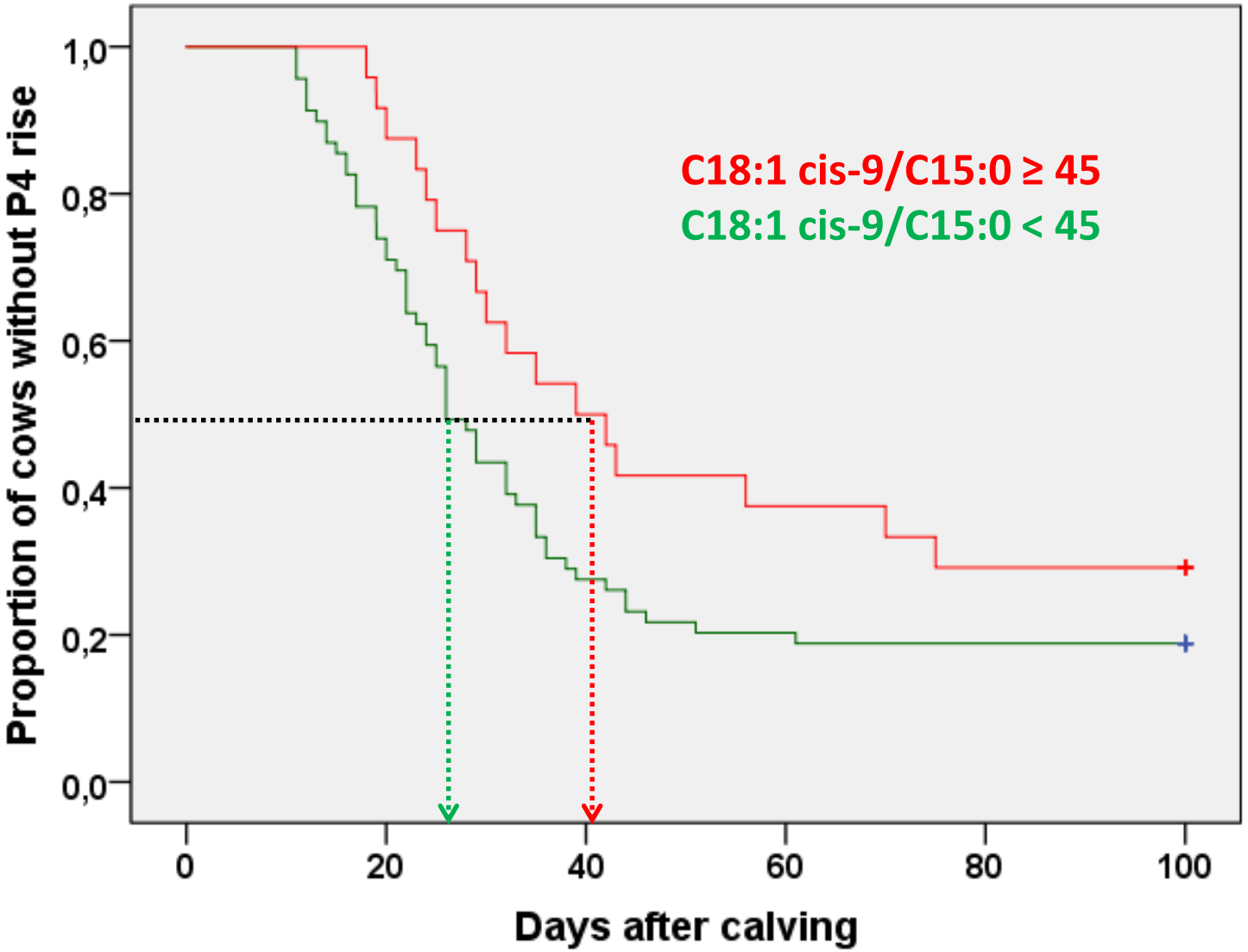
Blood (weeks 2 to 8): NEFA & BHBA

Milk (week 2): fatty acids
Milk (week 2 – d100): progesteron

Biomarkers in milk ~ reproduction: results



Biomarkers in milk ~ reproduction: results



Conclusion

Milk fatty acids & reproductive problems

1/ NEB-biomarker:

- **C18:1cis-9**

2/ Hyperketonemia-biomarker

- **C18:1 cis-9/C15:0**

3/ Milk biomarkers of NEB & hyperketonemia:

- **Delayed first progesteron rise**
- **Prolonged calving - pregnancy**

Thank you for your attention

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