

# EFFECT OF PROCESSED MEAT RELATED COMPOUNDS ON COLON CELLS

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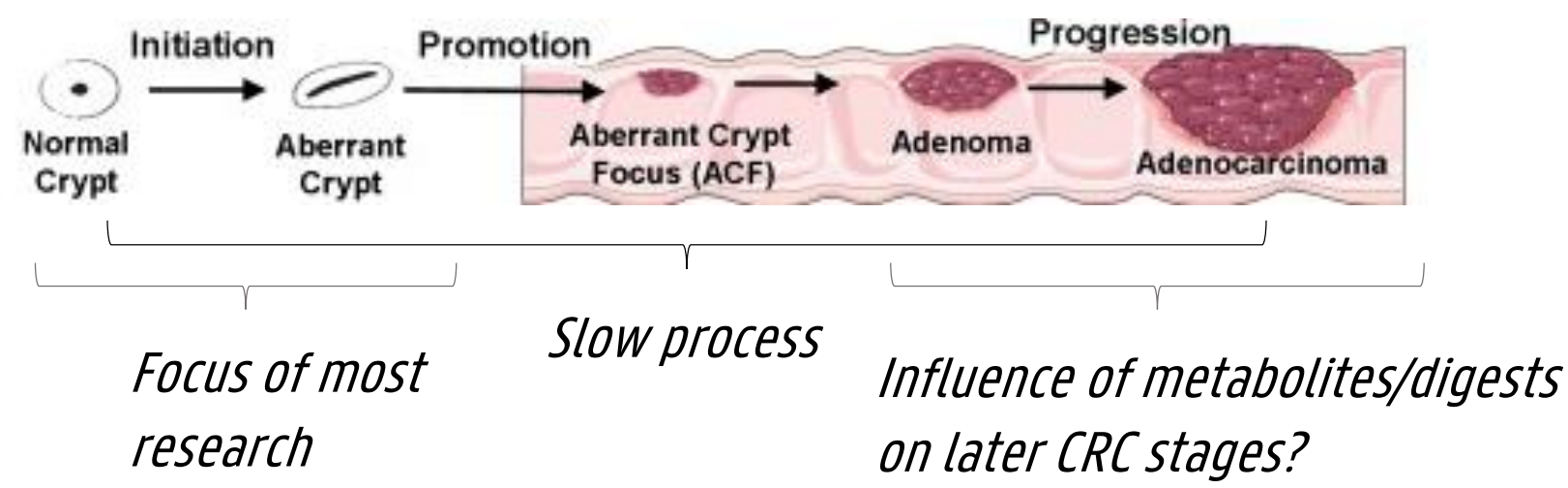
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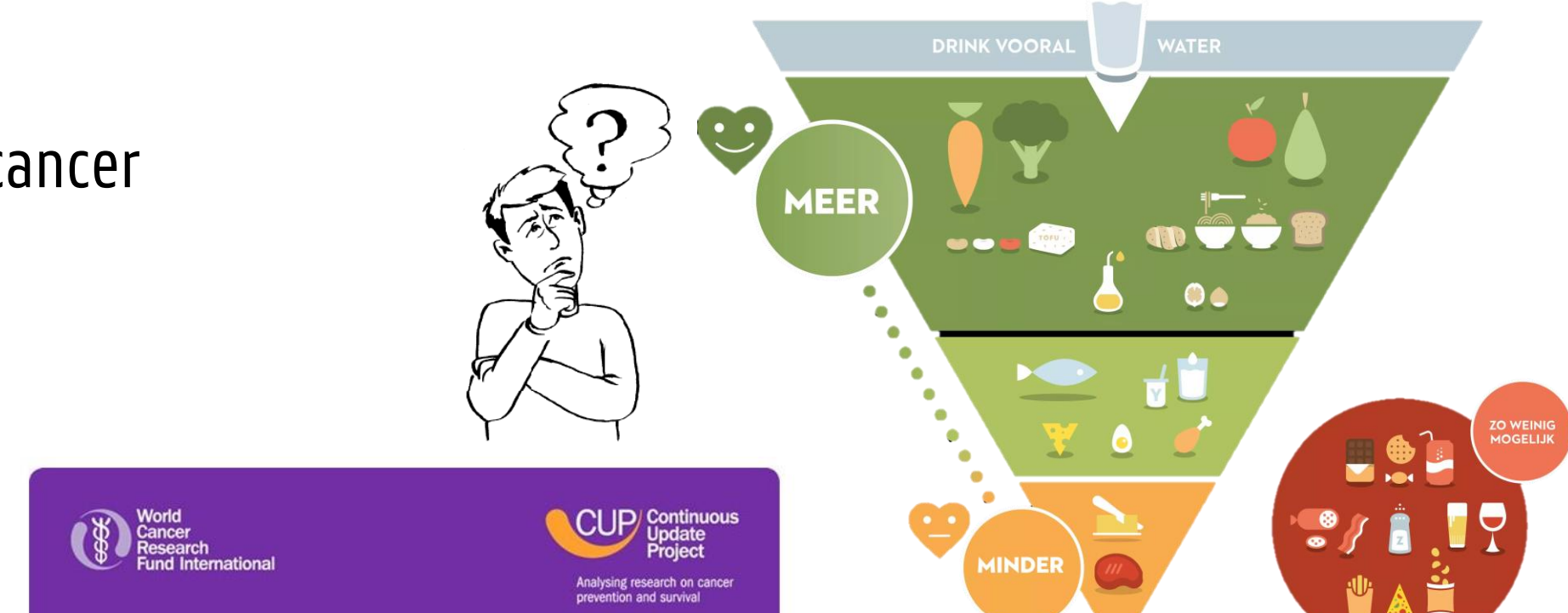
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## Introduction

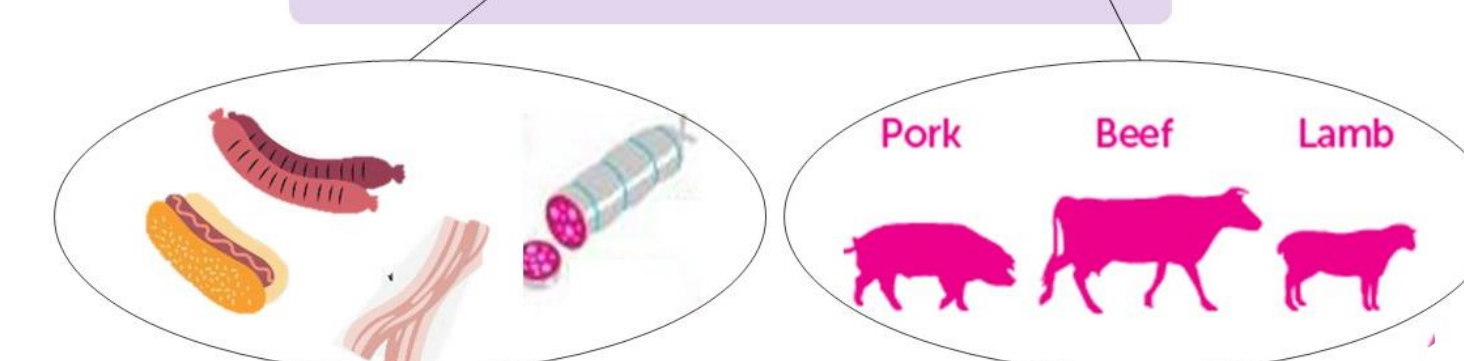
- Red and processed meat consumption is correlated with a higher risk for colorectal cancer  
→ recommendations for maximum intake
- The underlying mechanisms remain unclear



- Our approach:
  - In vitro cell-based models
  - Single compounds related to meat consumption
  - Exposure with low doses for a longer time



World Cancer Research Fund International  
CUP Continuous Update Project  
RECOMMENDATION  
**Limit consumption of red and processed meat**  
Eat no more than moderate amounts of red meat, such as beef, pork and lamb. Eat little, if any, processed meat  
dietandcancerreport.org



## Materials and methods

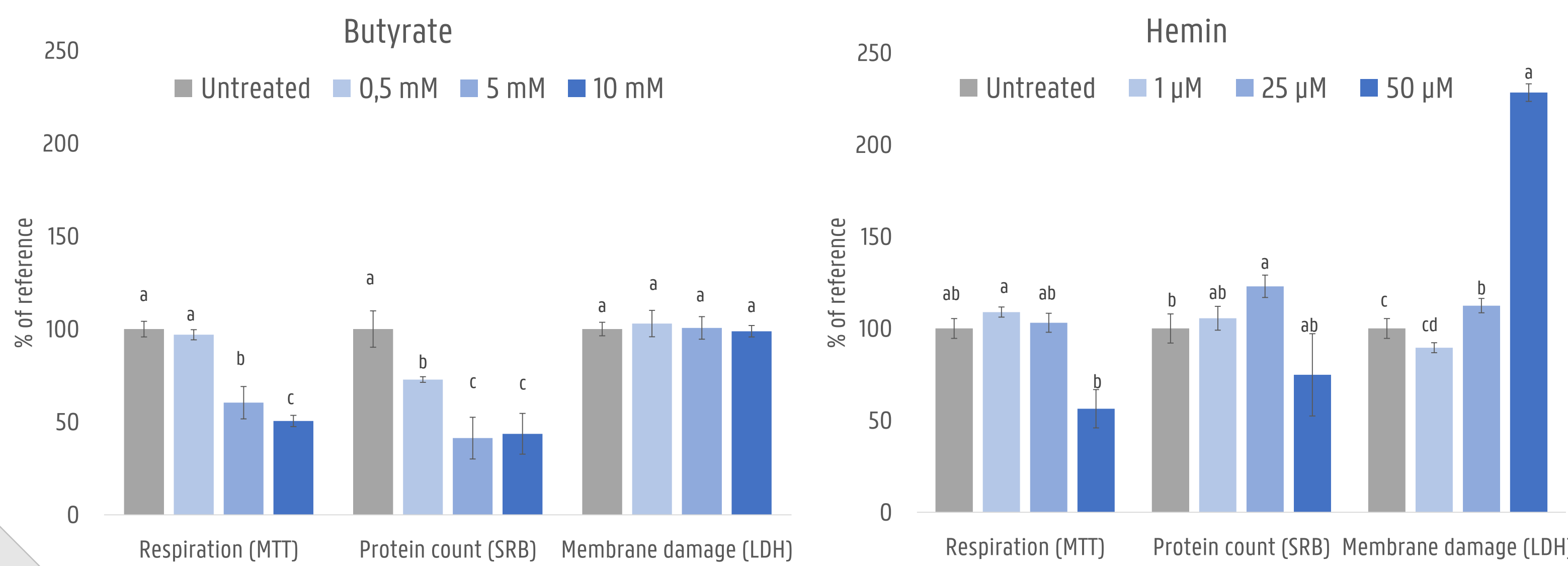
- Colon cancer cell lines



- Metabolites linked to meat consumption

## Short-time-high-dose exposure

HT-29 cells were exposed to the compounds for 3 days

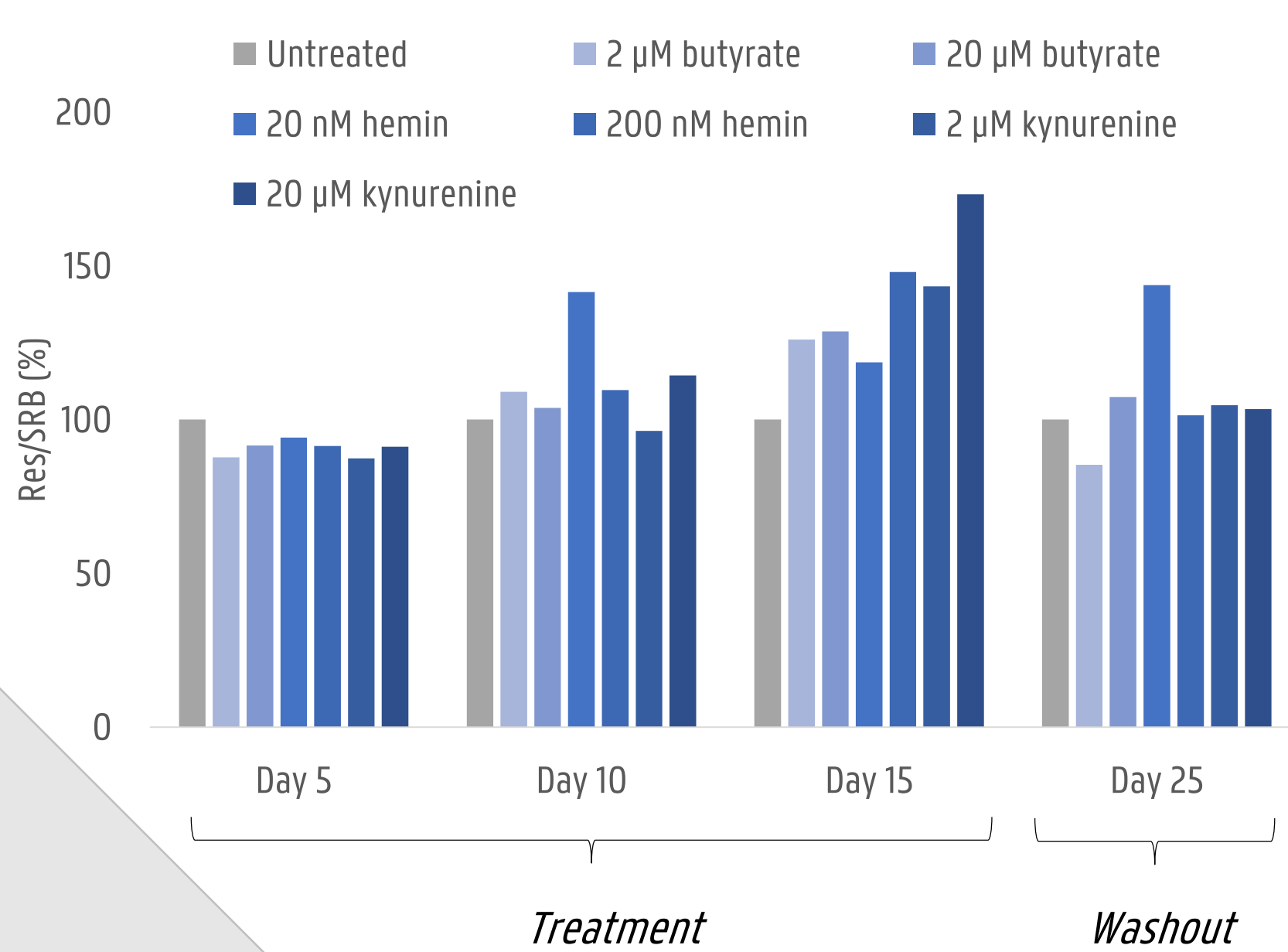


Compound	Origin	Expected effect
Butyrate	Undigested fiber	+
Hemin	Red meat matrix	-
Kynurenine	Red meat digests [1]	-

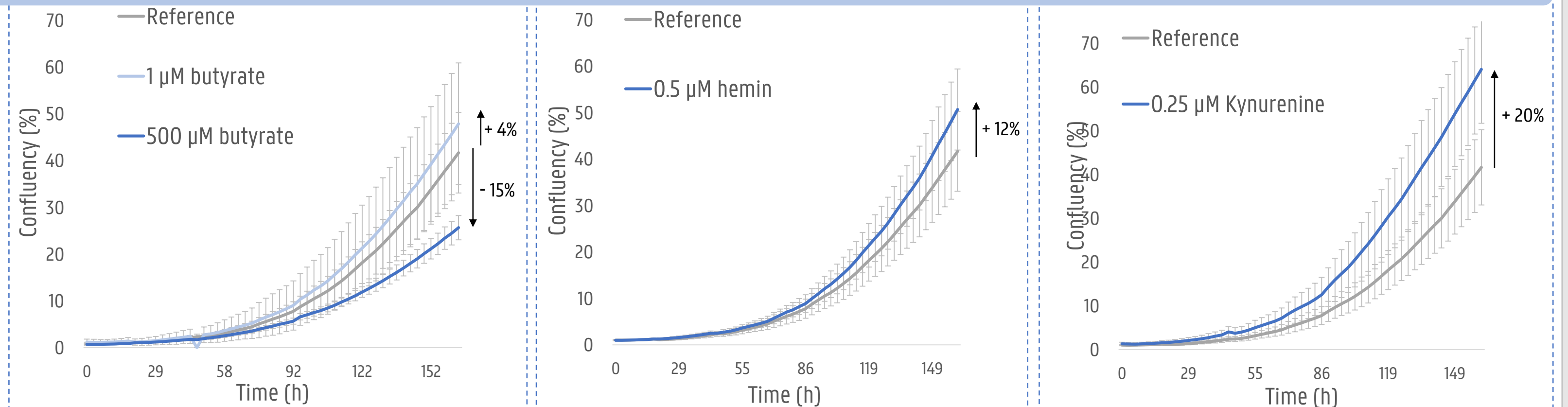
- 2 major setups:
  - short term exposure (3 days)
  - long term exposure (>10 days)
- Follow-up: cell viability, protein content, colony-forming capacity, IncuCyte Live Cell Analysis technology, Seahorse XF technology.

## Long-time-low-dose exposure

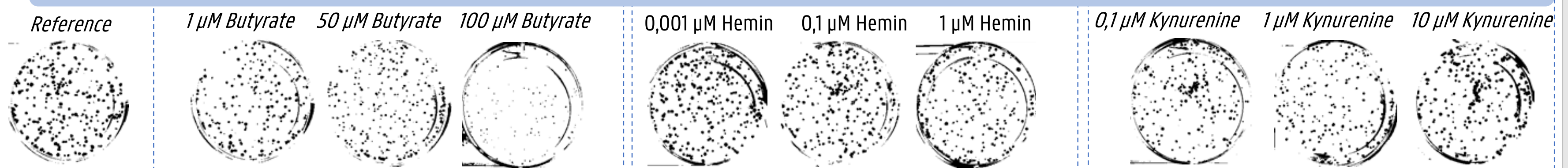
- Effect on viability and washout



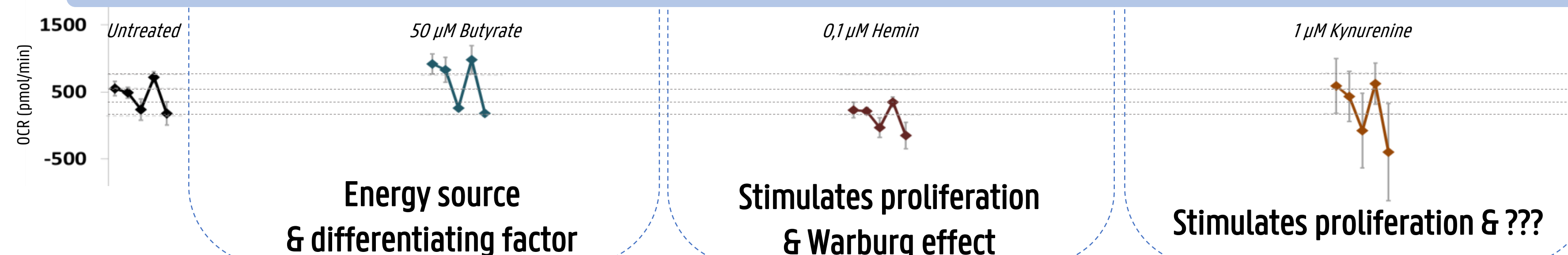
- Effect on proliferation



- Effect on colony-forming capacity



- Effect on energy metabolism



## Conclusions

- "Longer" exposure is possible, relevant and results in measurable effects
- Butyrate induces growth stimulation (energy source) and growth inhibition (differentiation), and is a good control for the different models
  - Hemin and kynurenine increased cell proliferation, total colony area and decreased oxygen consumption rate, and may therefore play a role in the link between red meat and CRC

## Contact

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## References

1. Rombouts, C., et al., *Untargeted metabolomics of colonic digests reveals kynurenine pathway metabolites, dityrosine and 3-dehydroxycarnitine as red versus white meat discriminating metabolites*. Sci Rep, 2017. 7: p. 42514.