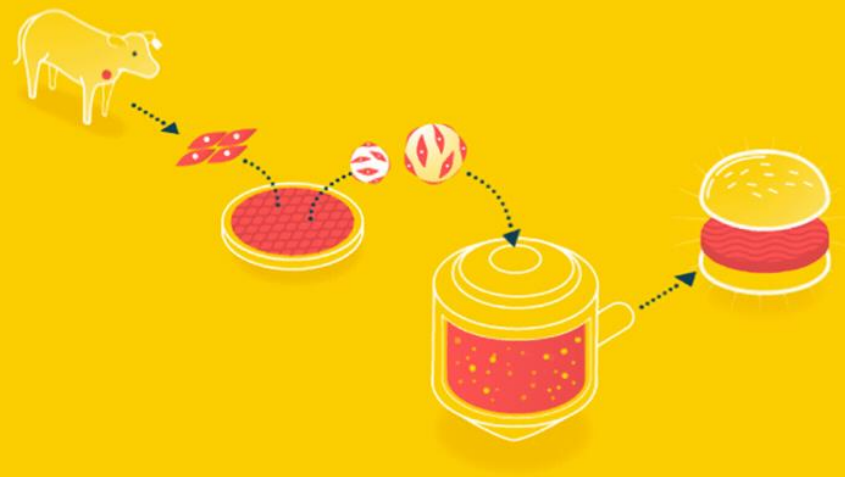
Tufts University BME174 – Cultured Meat Lab



Week 13: Oxidation Assay

TBARS (Thiobarbituric acid reactive substance)

Red/processed meat & lipid oxidation

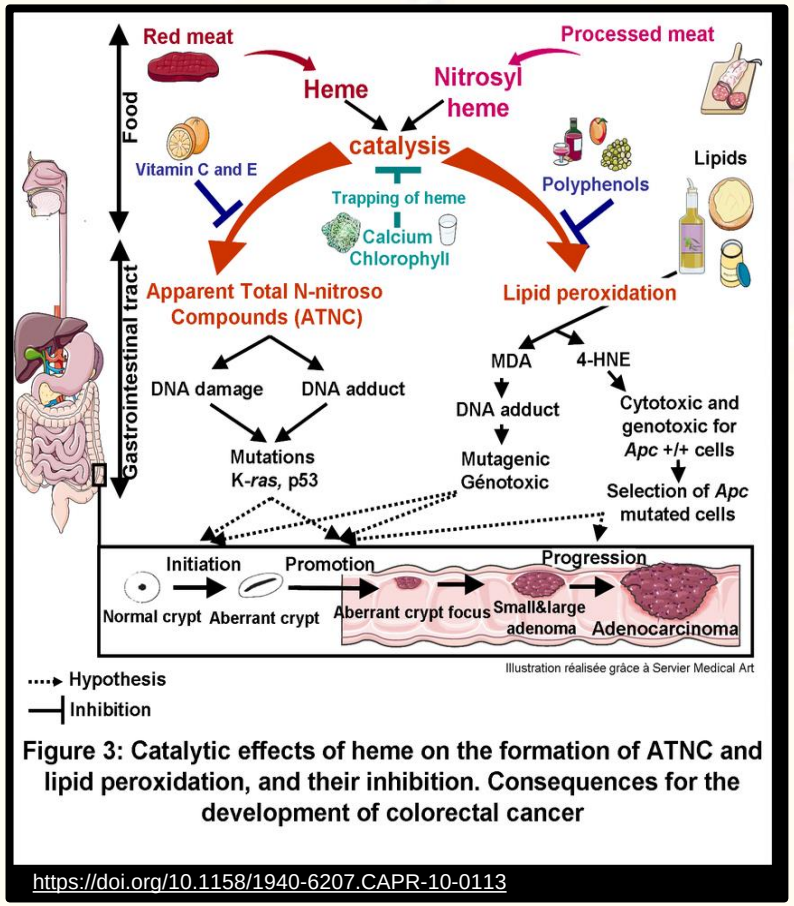


Figure 3: Catalytic effects of heme on the formation of ATNC and lipid peroxidation, and their inhibition. Consequences for the development of colorectal cancer

https://doi.org/10.1158/1940-6207.CAPR-10-0113

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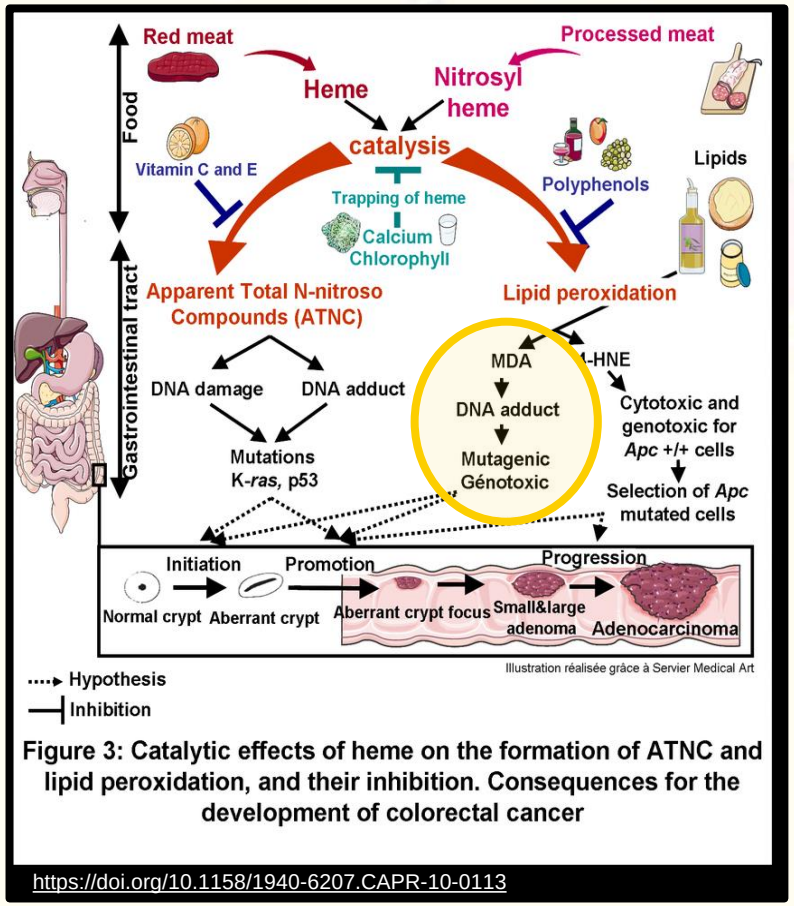

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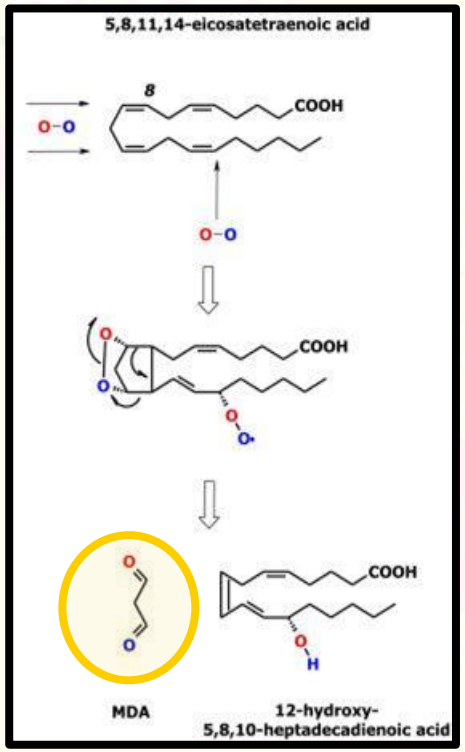

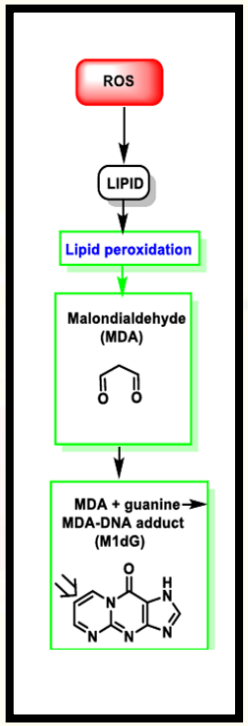

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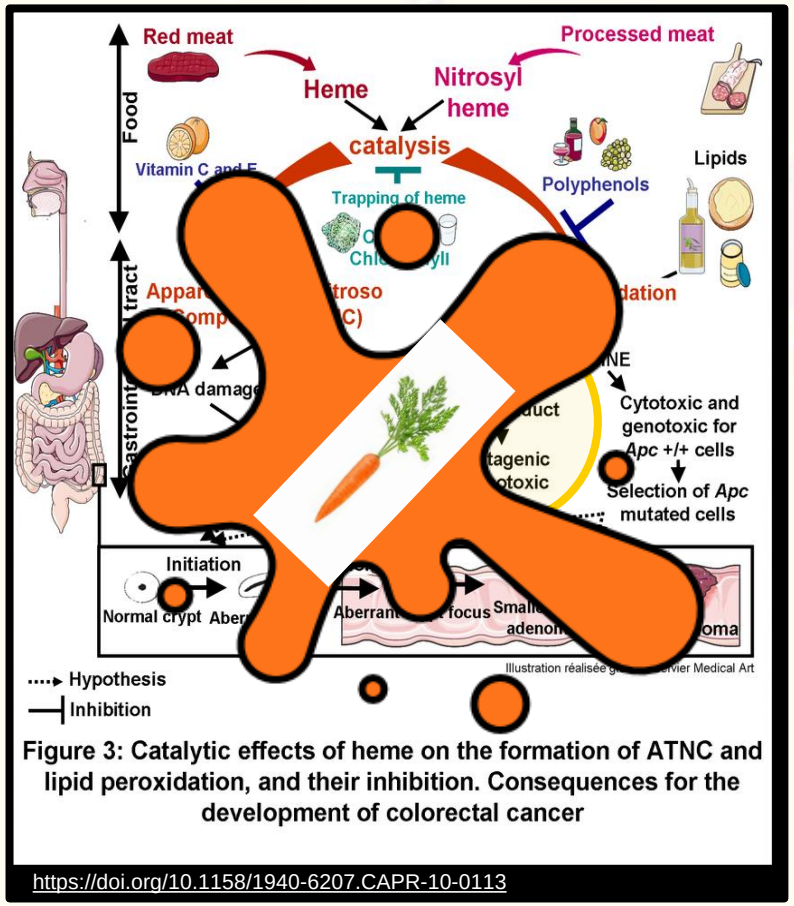

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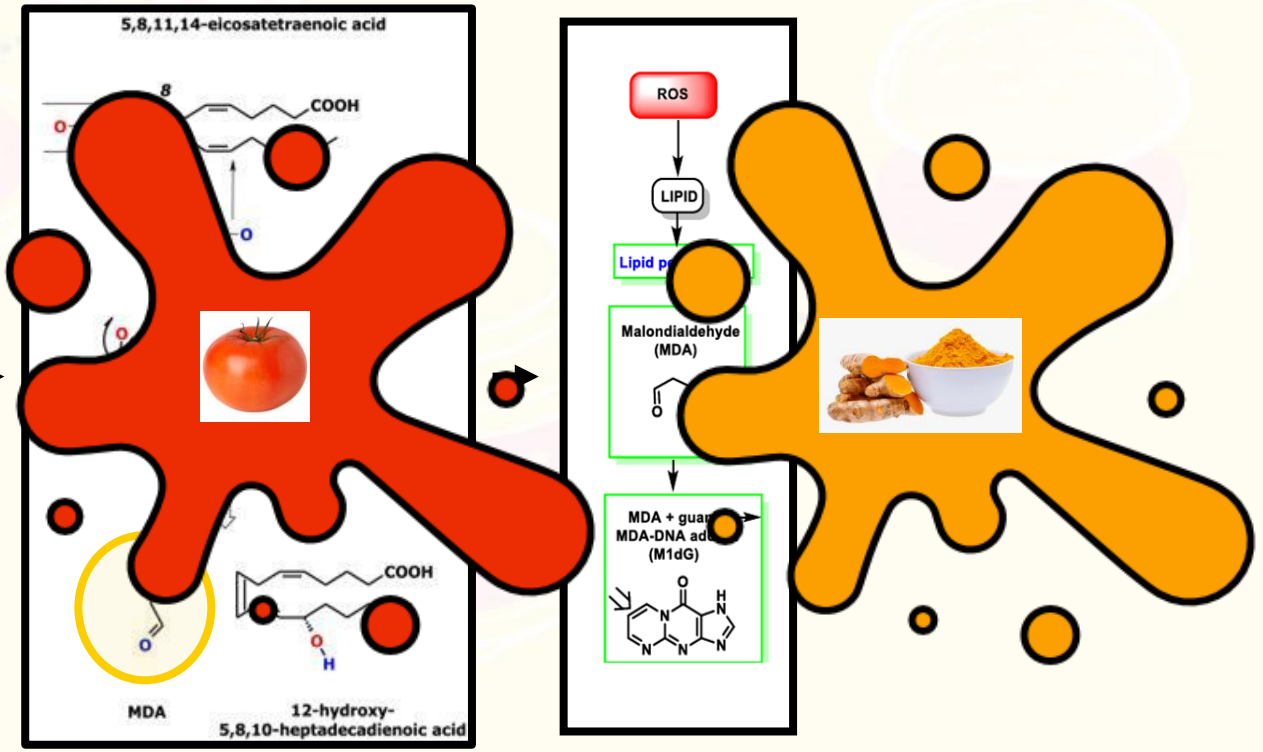

TBARS (Thiobarbituric acid reactive substance)

Measures MDA

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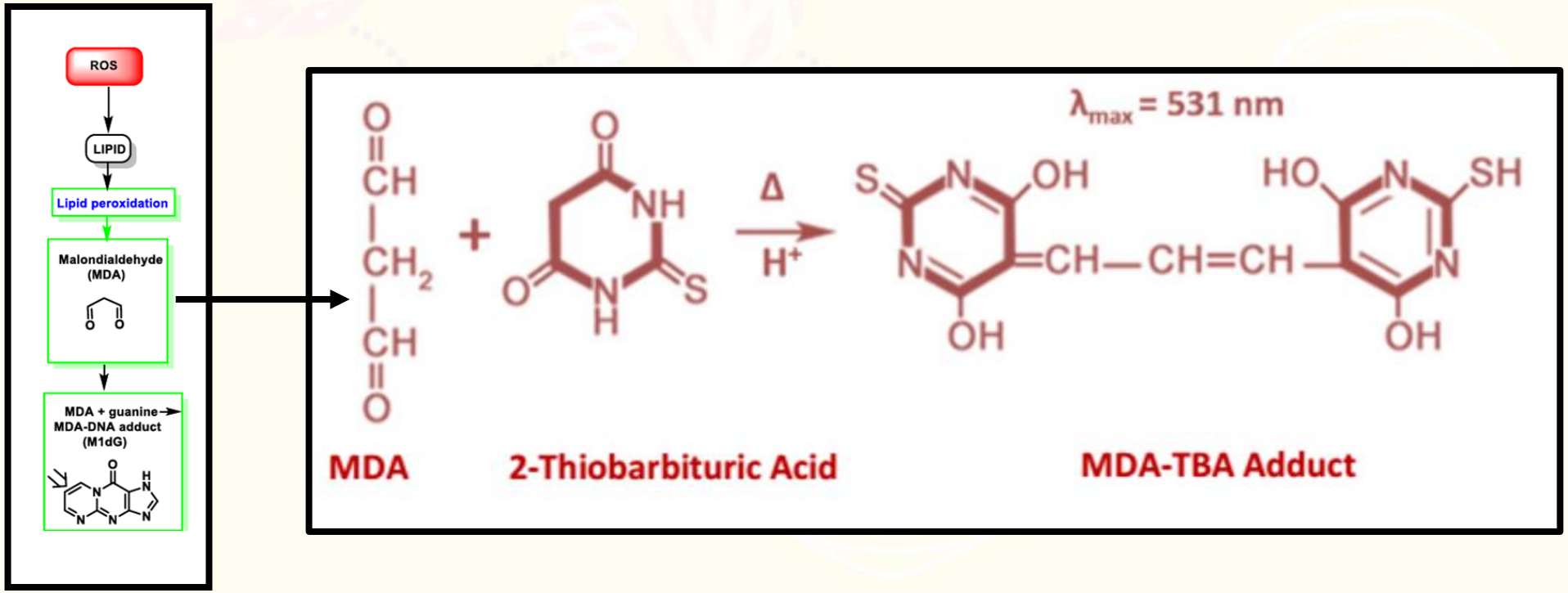
*Measures MDA – **relevant** byproduct of lipid oxidation*

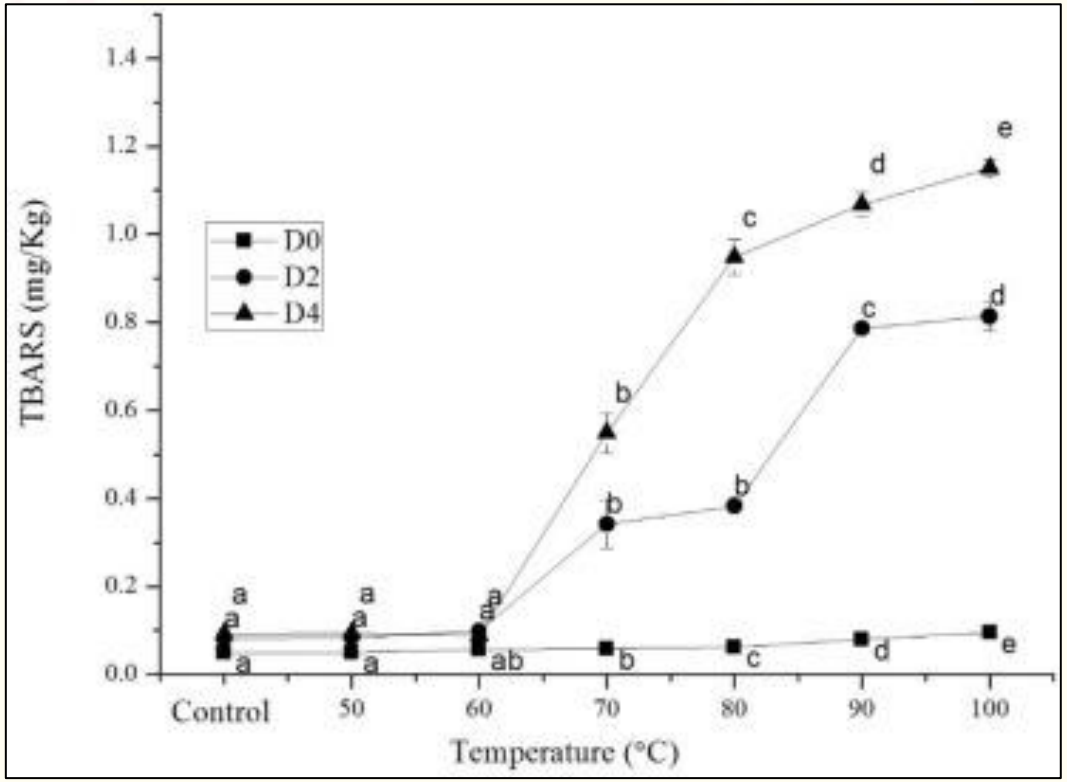


Today:

1. "Cook" cells to introduce oxidative challenge
   - Heat at 100C

2. TBARS assay
   - Lyse cells (freeze-thaw)
   - Prepare standard curve
   - Heat samples to 100C for 1 hr
   - Place on ice for 10 mins
   - Centrifuge for 10 mins
   - Read absorbance at 535 nm

Lipid oxidation in chicken w/ storage and heating



https://doi.org/10.1016/j.psj.2019.11.013

Module 3 Lab Report Suggestions

- Overall the quality has greatly improved since Lab Report 1
- Be sure that results can be read mostly in isolation of other sections (how most scientific papers are read)
  - Figures appear after relevant results have been explained
  - Add figures after they are introduced in text (not all at end of section)
- Discussion should explain your own results
  - Provide hypothesis for outcome of experiments (with citations to support)
  - Also include how these results will inform your next test

Module 3 Lab Report Suggestions

- We suggest you make the following figures and maybe 1 or 2 more:
  - Class 10: Original table/figure clearly showing the different antioxidant media being tested (feel free to be creative on presentation-graphical abstracts are very in right now)
  - Class 11: Two bar charts comparing cell viability of different concentrations for each antioxidant. Make sure to include error bars and appropriate axis titles.
  - Class 13: Scatter plot of standard curve with line of best fit (appropriate axis titles). Bar chart comparing lipid oxidation of 3 conditions (with error bars).

DUE: MAY 9TH @ 5:59PM