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# Polyamine Metabolism

Produced for the CRC for Premium Quality Wool undergraduate program by;  
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# Polyamines and their functions

- found in all eukaryotic cells
- highly-regulated enzymes, active in tissues undergoing cell division and protein synthesis
- low molecular weight, polycationic amines
  - putrescine, spermidine, spermine
    - involved in RNA, DNA and protein synthesis
- The hair follicle is one of the most active tissues in the body
  - What regulates cellular and molecular events in the hair follicle?

**Polyamines are likely to be present and have an important role in cell division and differentiation in the follicle**

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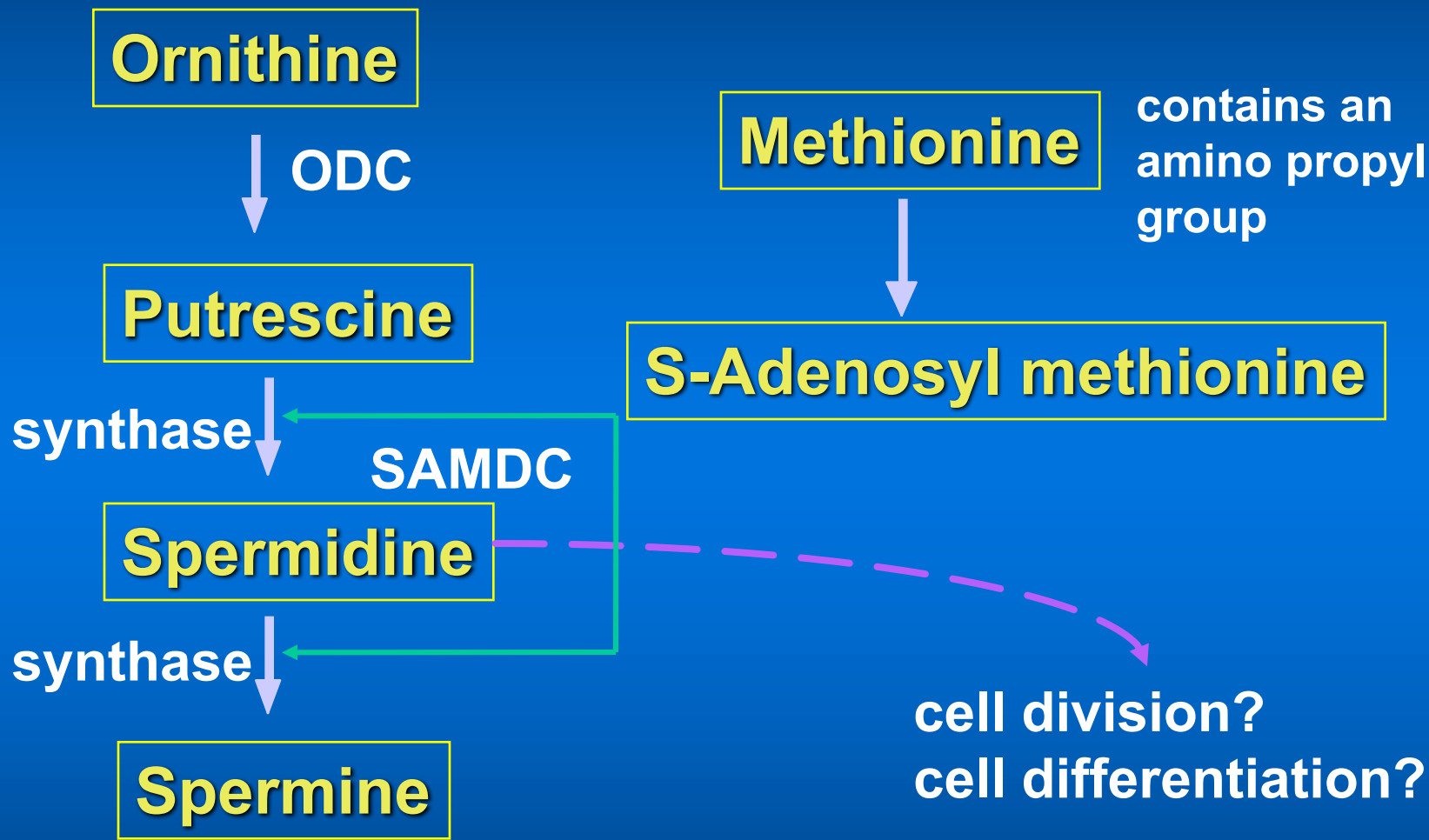
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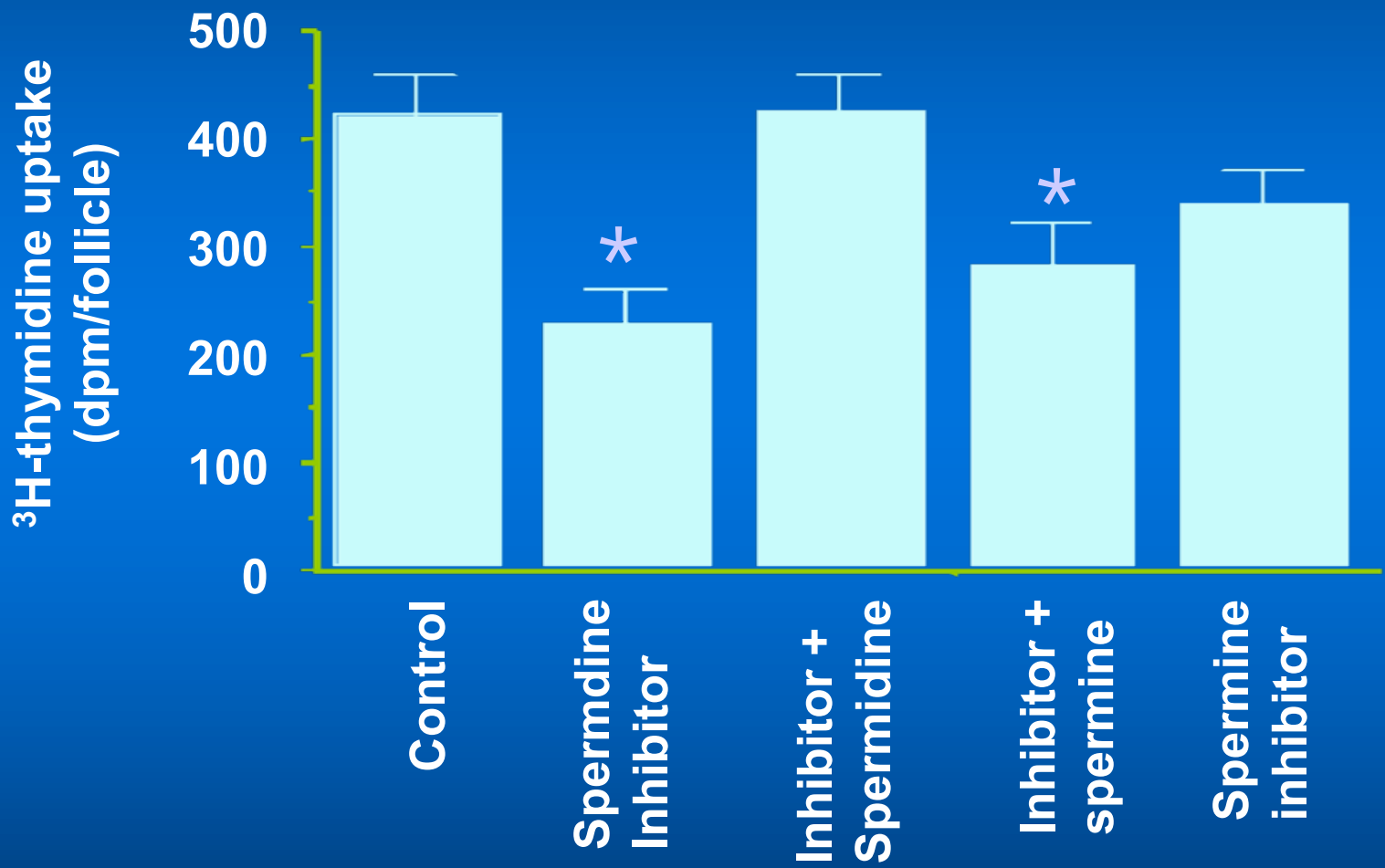
# Polyamine metabolism



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# Spermidine is required for normal follicle function

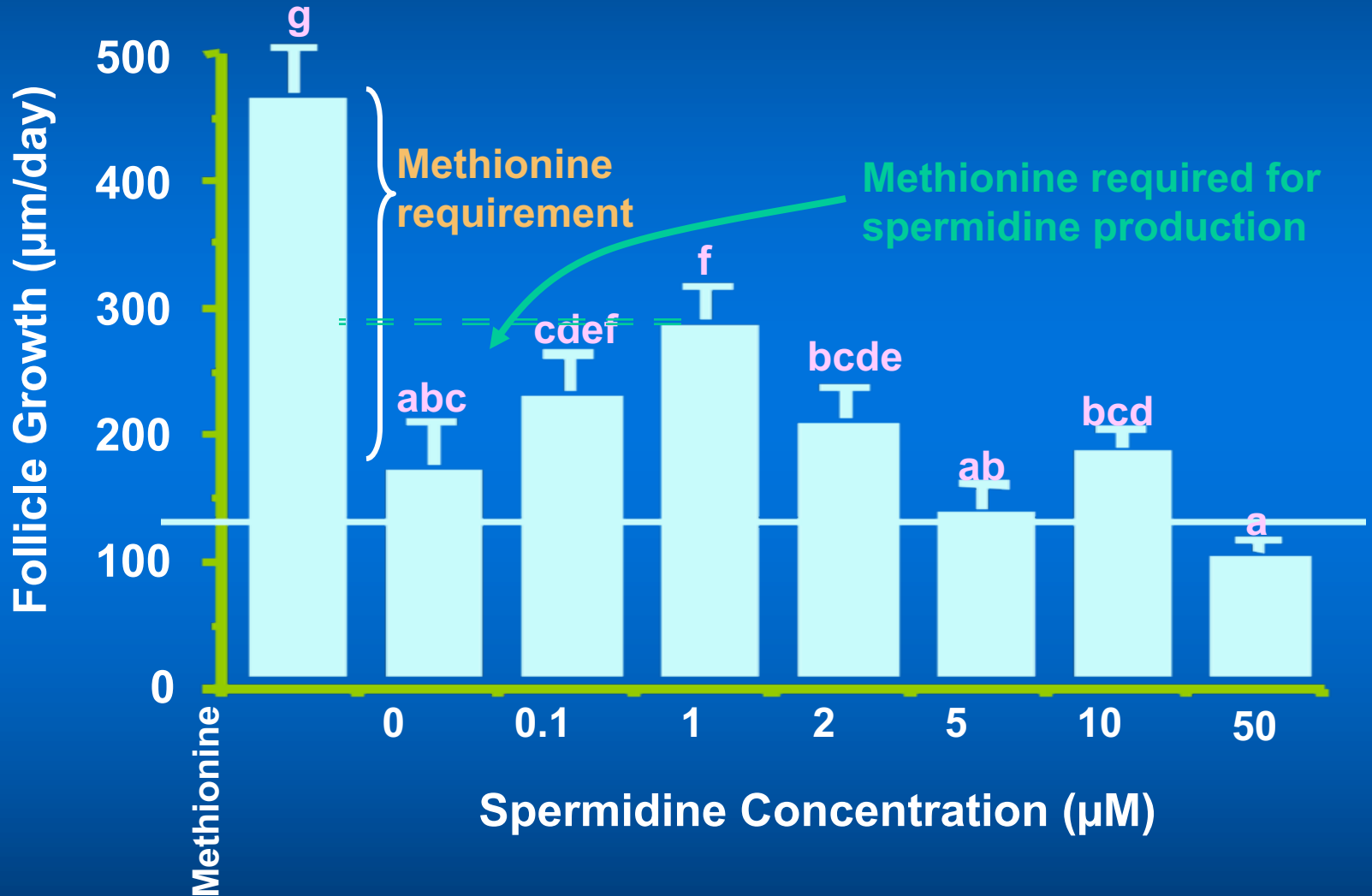


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Phil Hynd & Michelle Nancarrow  
Source: Hynd and Nancarrow (1996)



# Methionine is required as a spermidine precursor



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# Polyamines and wool growth

- ODC and SAMDC are present in skin
- ODC present in the cell division and differentiation zones of the follicle
- DFMO perturbed these functions
- Spermidine is the key polyamine
- ODC mRNA varies with the hair cycle
- Strong indirect evidence for a major role

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