

A Novel Messaging System for Passive Mate Guarding in *Lygus hesperus*



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Reproductive Behavior Cycle

Assessment



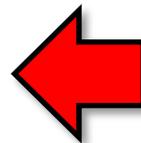
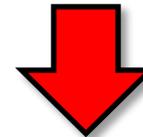
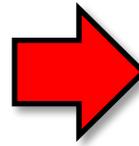
Courtship



Post-Mating
Transitional
Period



Insemination



Female Post-Mating Changes



**Increased
Egg
Deposition**

Brent CS, Fasnacht MP, Judd TM (2011) Post-mating enhancement of fecundity in female *Lygus hesperus*. *Physiol. Ent.* 36: 141-8.



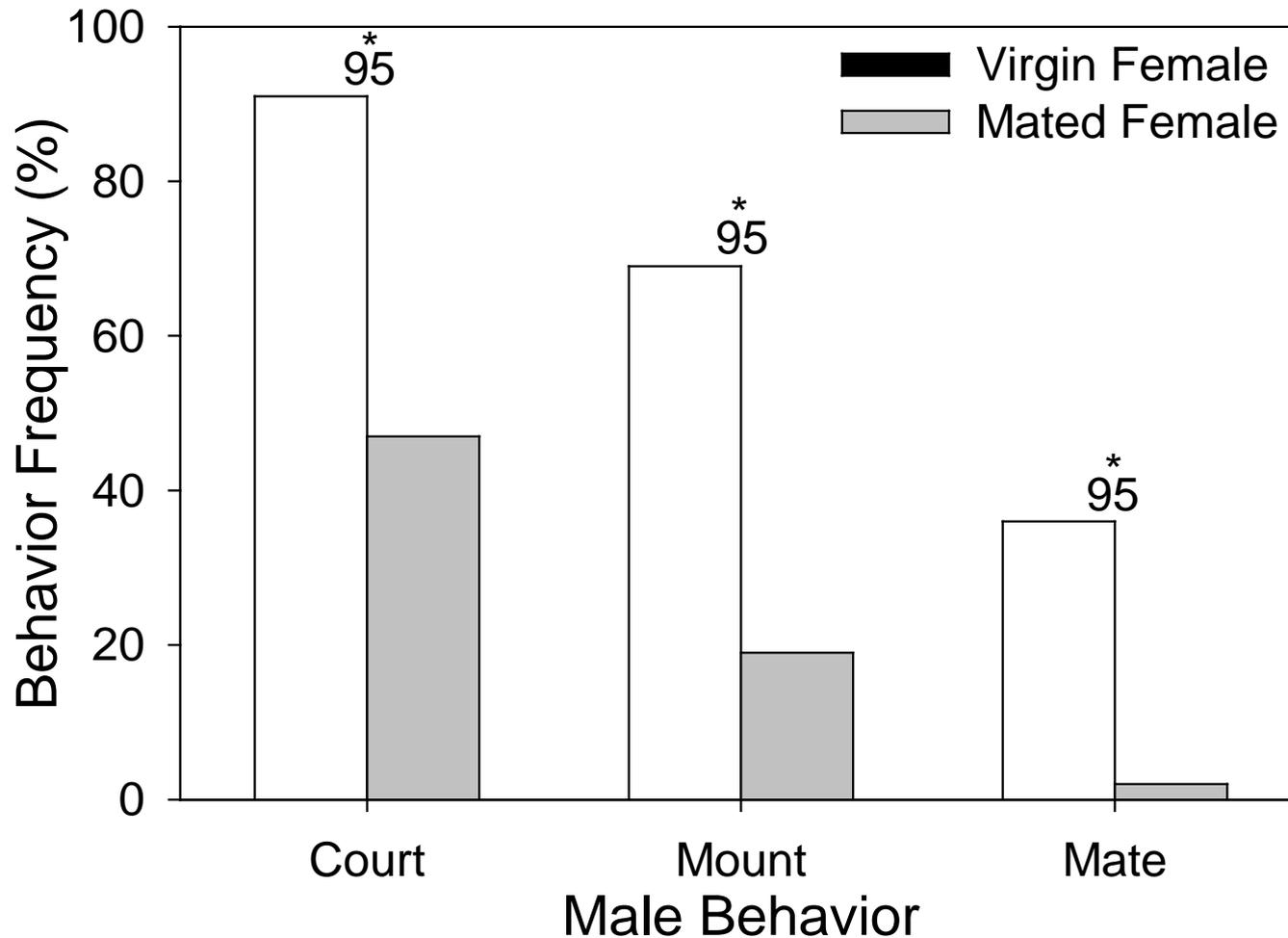
**Reduced
Attractiveness
To Males**



**Decreased
Sexual
Receptivity**

Brent CS (2010) Reproductive refractoriness in the western tarnished plant bug (Hemiptera: Miridae). *Ann. Entomol. Soc. Am.* 102: 300-6.

Effect of Female Mating Status on Male Behavior



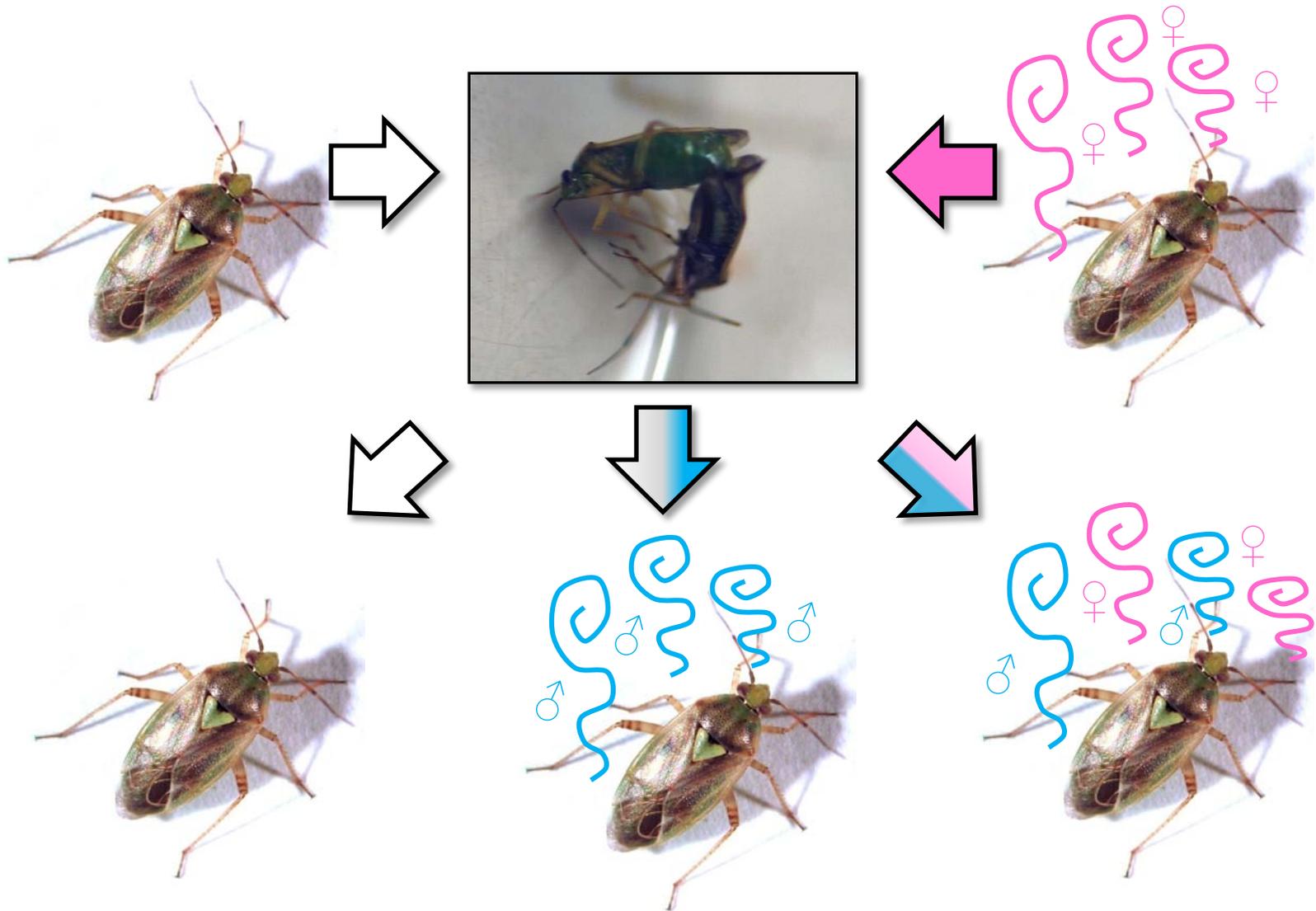
Pre-Mating Assessment Behavior



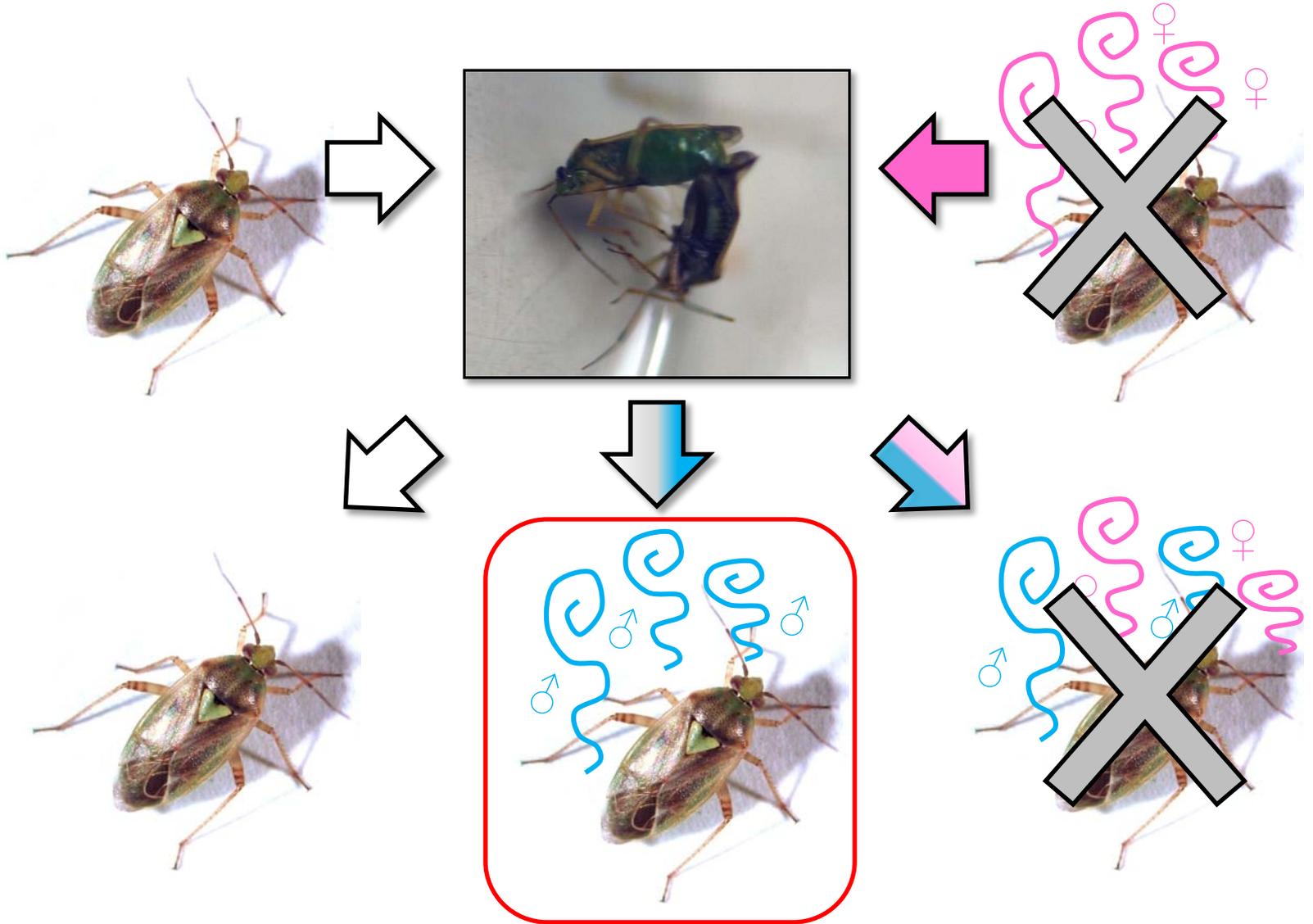
Possible Post-Mating Odor Changes



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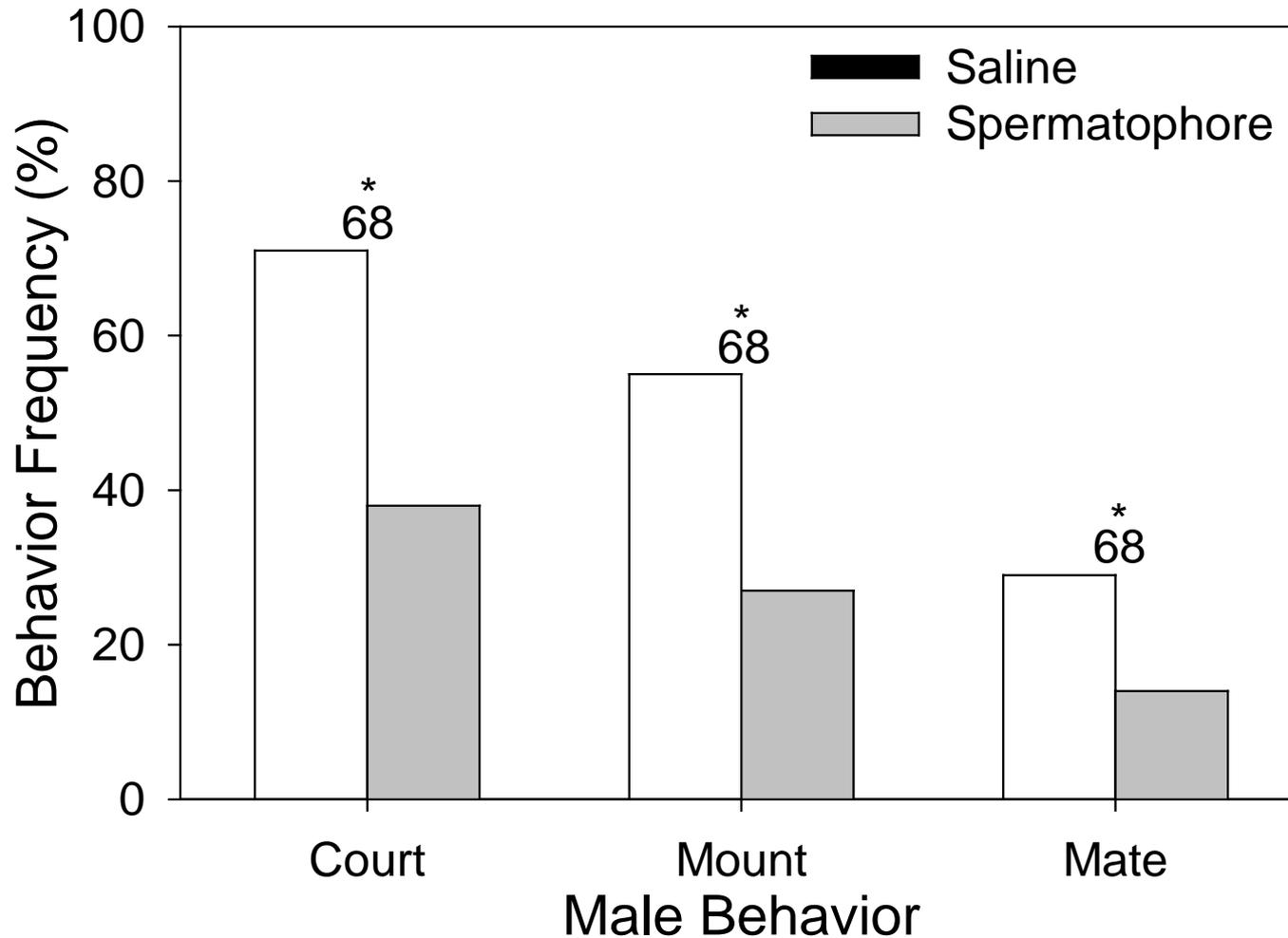


Male Spermatophore

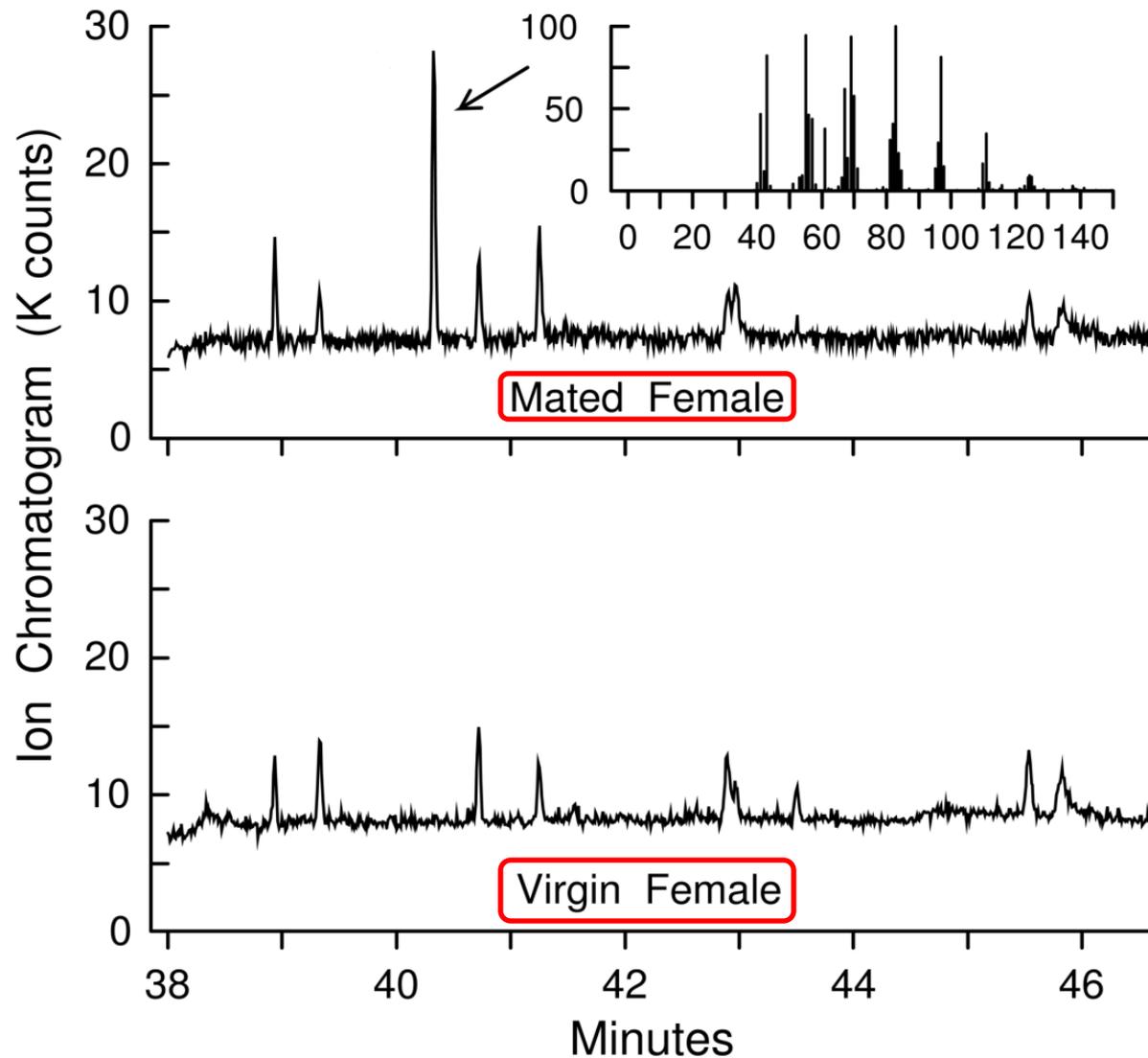


- Contents made in testes & accessory glands
- Consists of sperm & **other components**
- Persists in female for several days

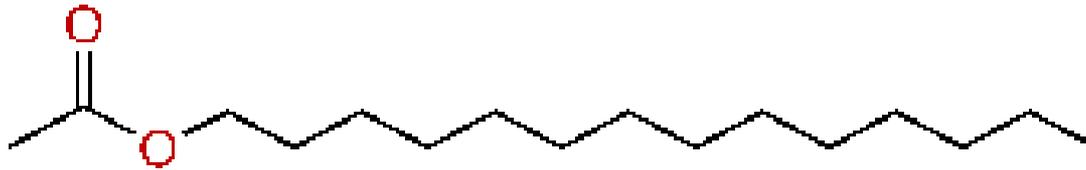
Effect of Spermatophore Odor on Male Behavior



Whole Body Chemical Analysis

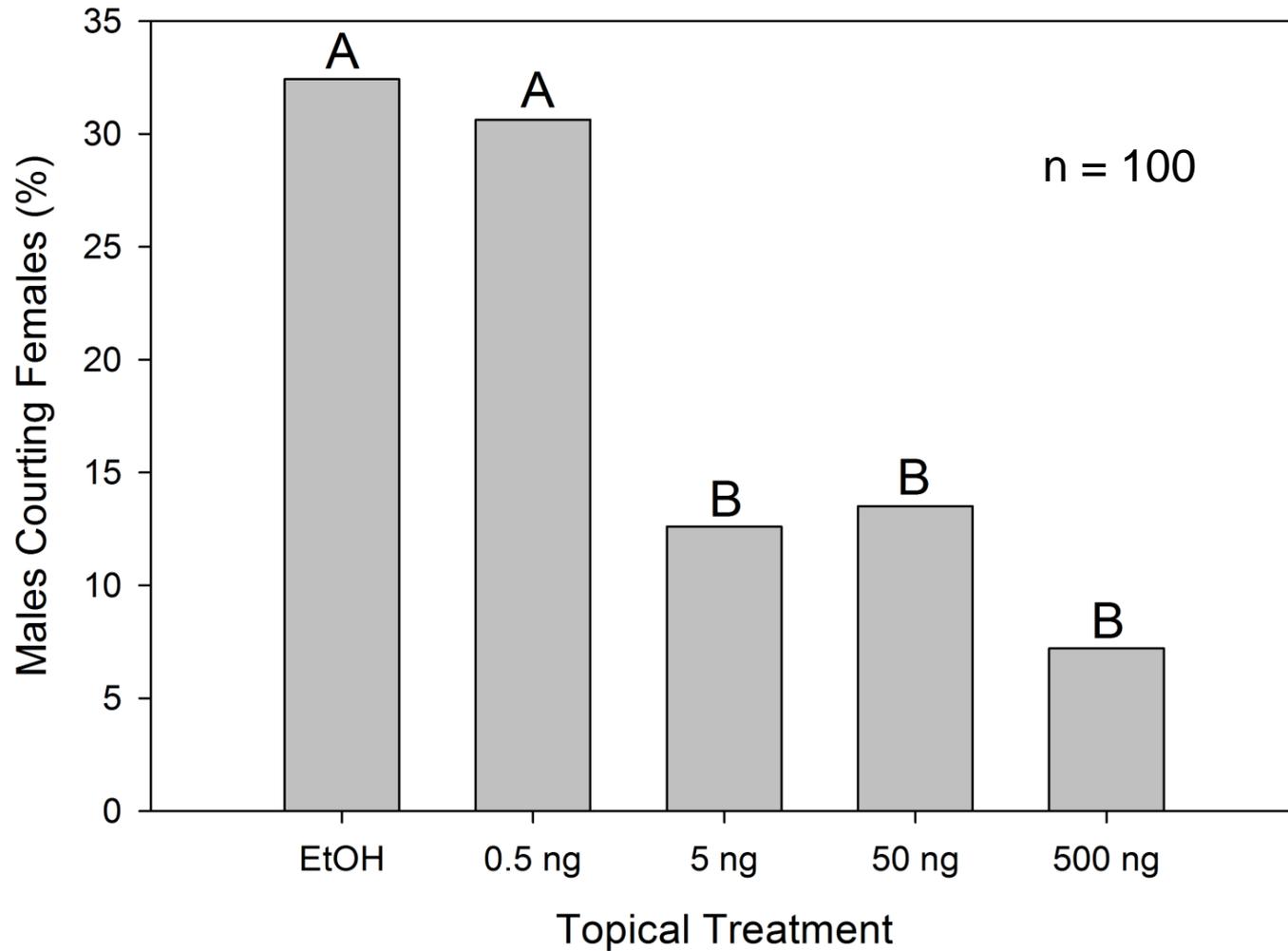


Myristyl Acetate

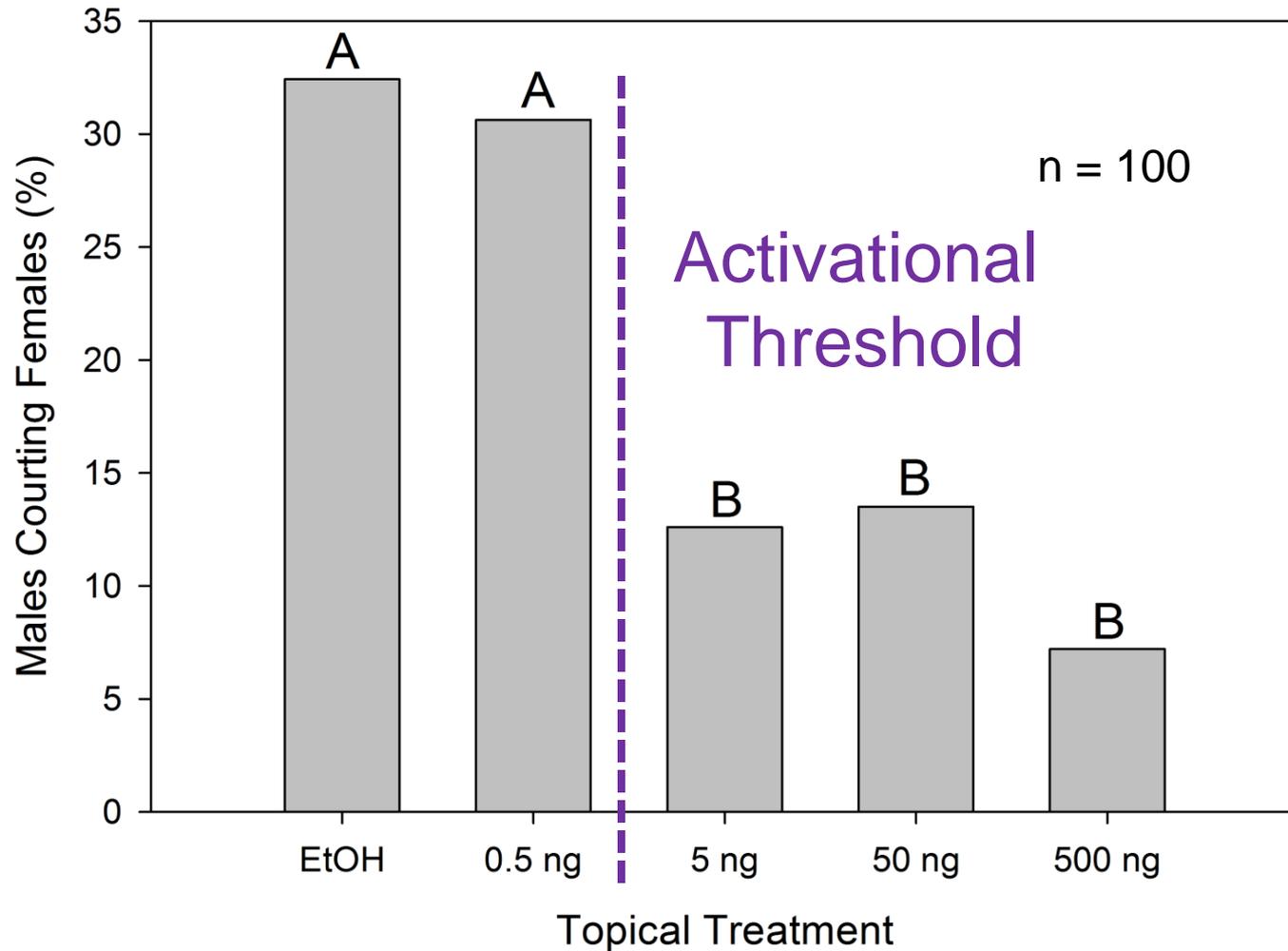


- 14 carbon saturated lipid
- Found in mated but not virgin females
- Produced by male accessory glands

Effect of Myristyl Acetate on Male Behavior

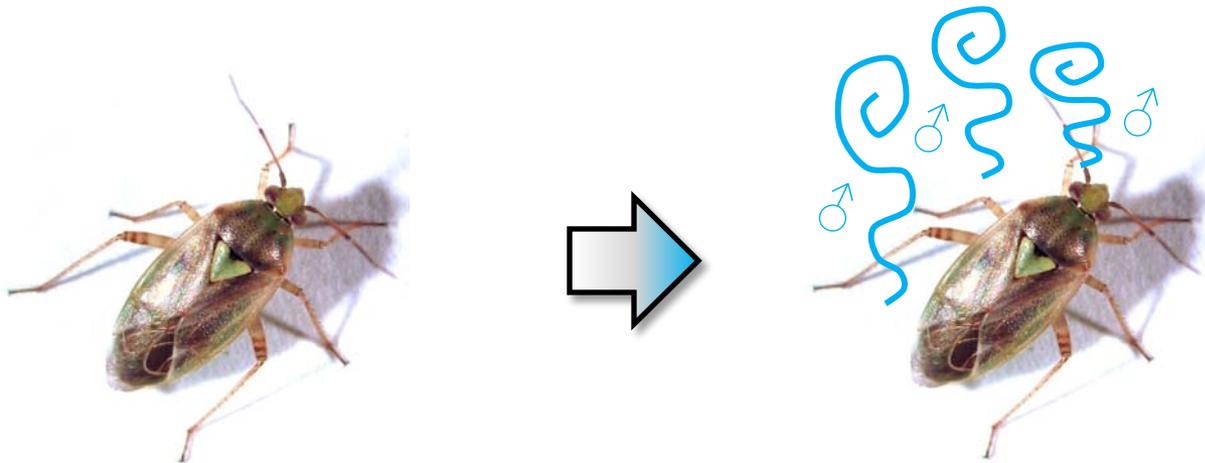


Effect of Myristyl Acetate on Male Behavior



Summary

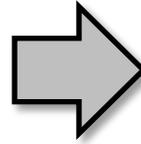
Myristyl Acetate (MA) is a dose-dependent anti-aphrodisiac, reducing male interest in courting recently mated females



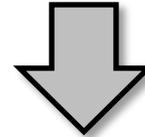
Brent CS, Byers JA (2011) Female attractiveness modulated by a male-derived antiaphrodisiac pheromone in a plant bug. *Animal Behaviour* 82: 937-943.

Reproductive Behavior Cycle

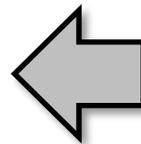
Assessment



Courtship



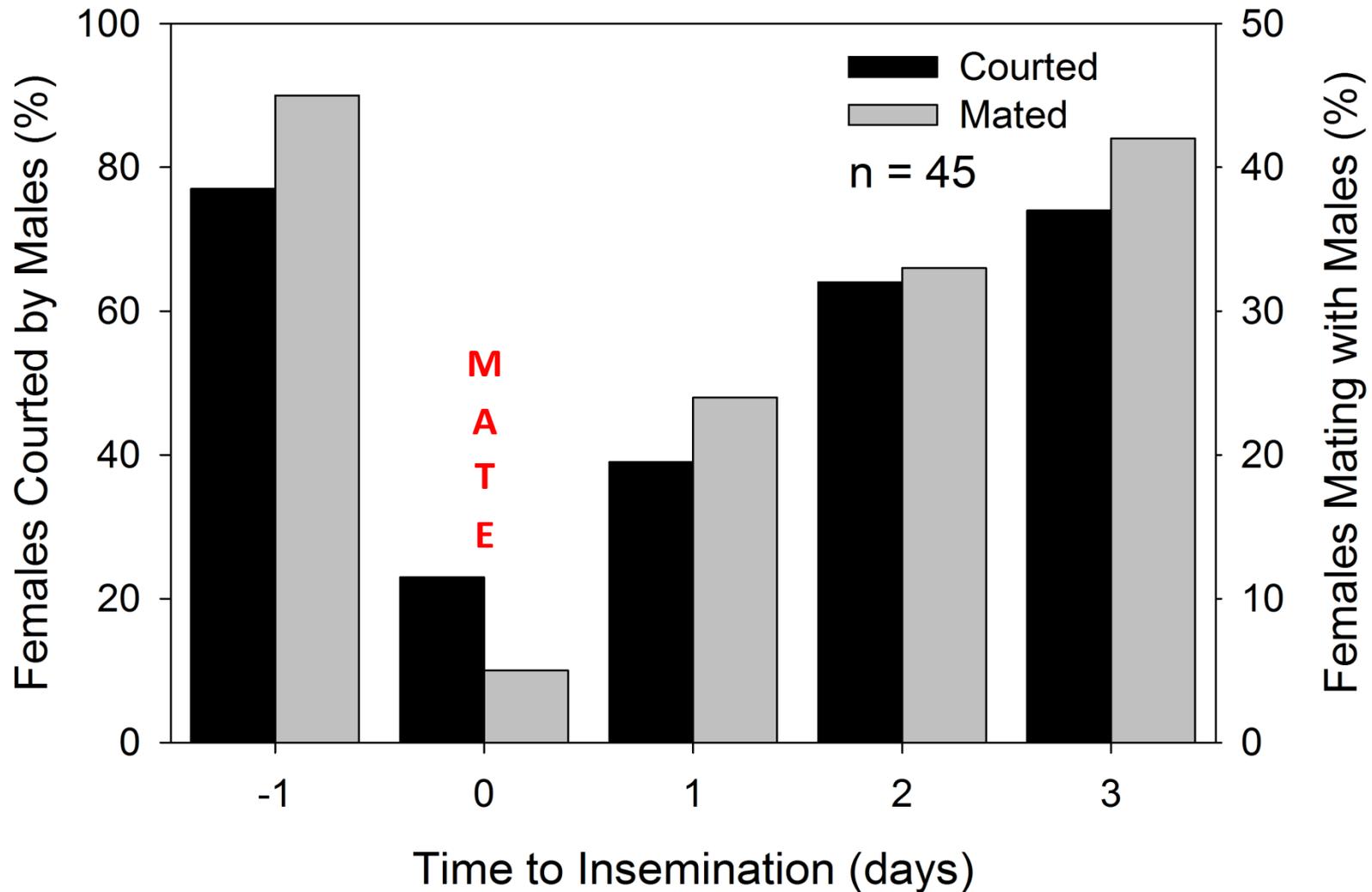
Insemination



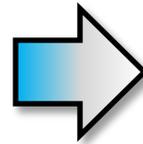
Post-Mating
Transitional
Period



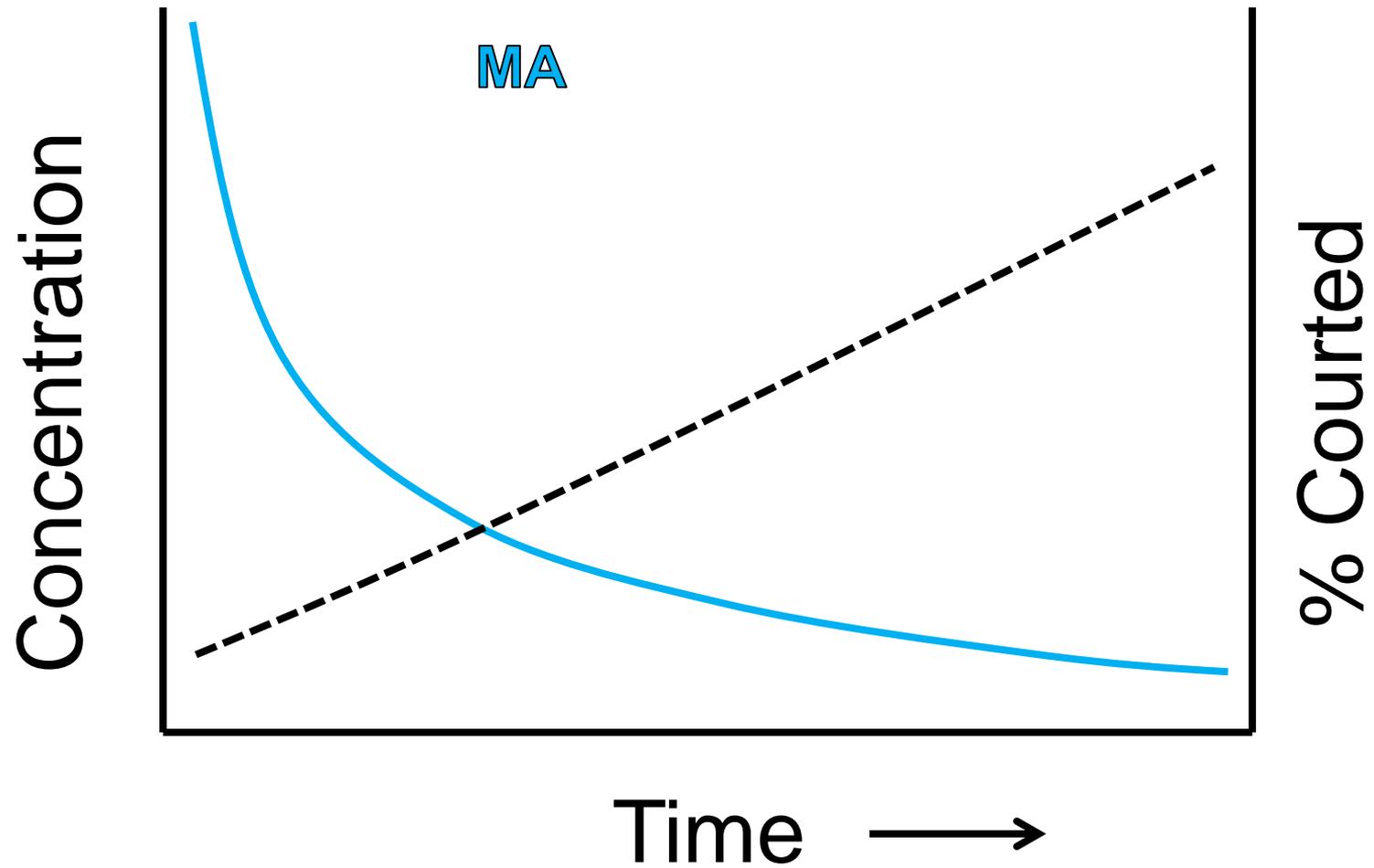
Post-mating Changes in Behavior



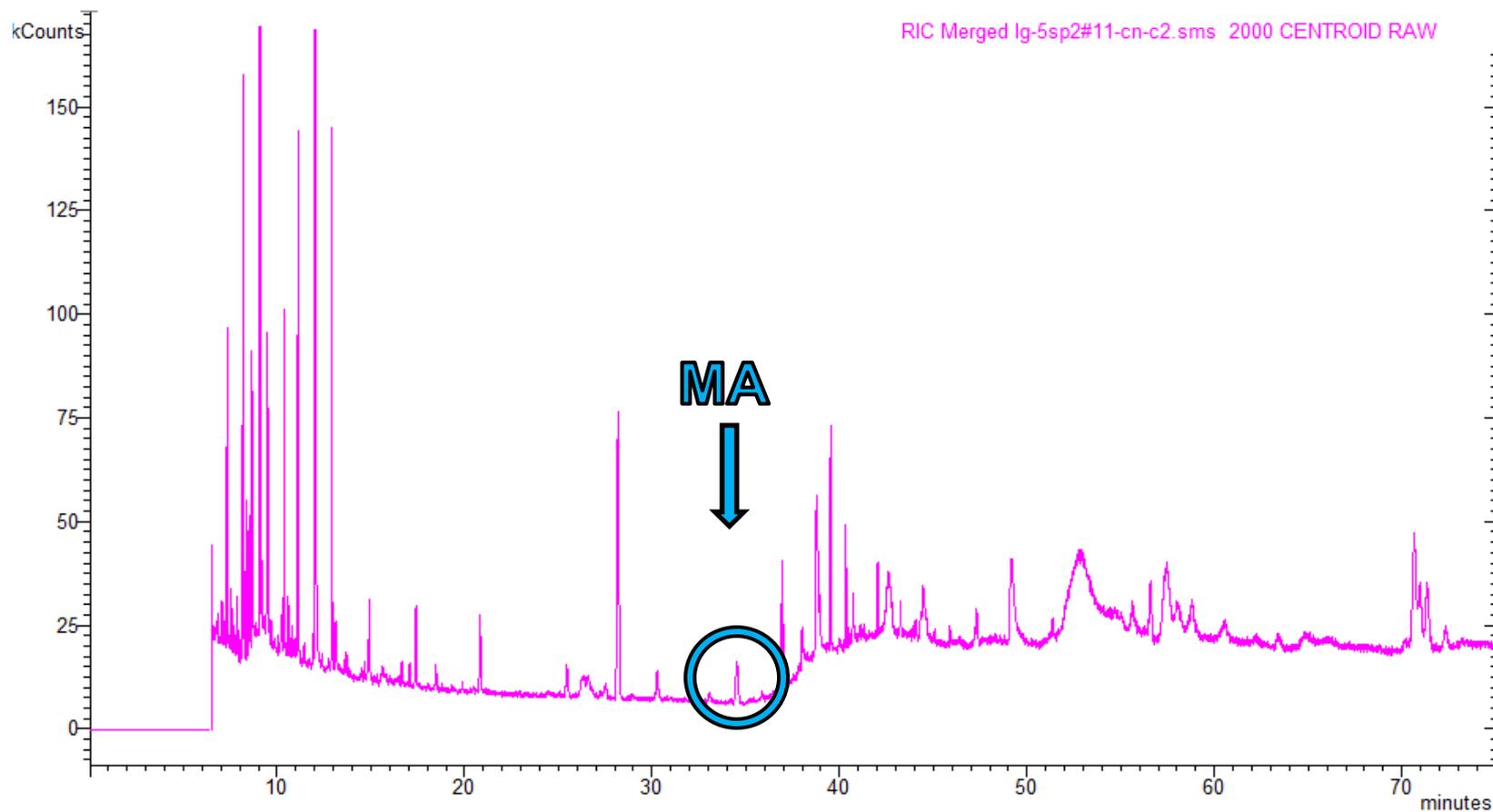
Further Post-Mating Odor Changes



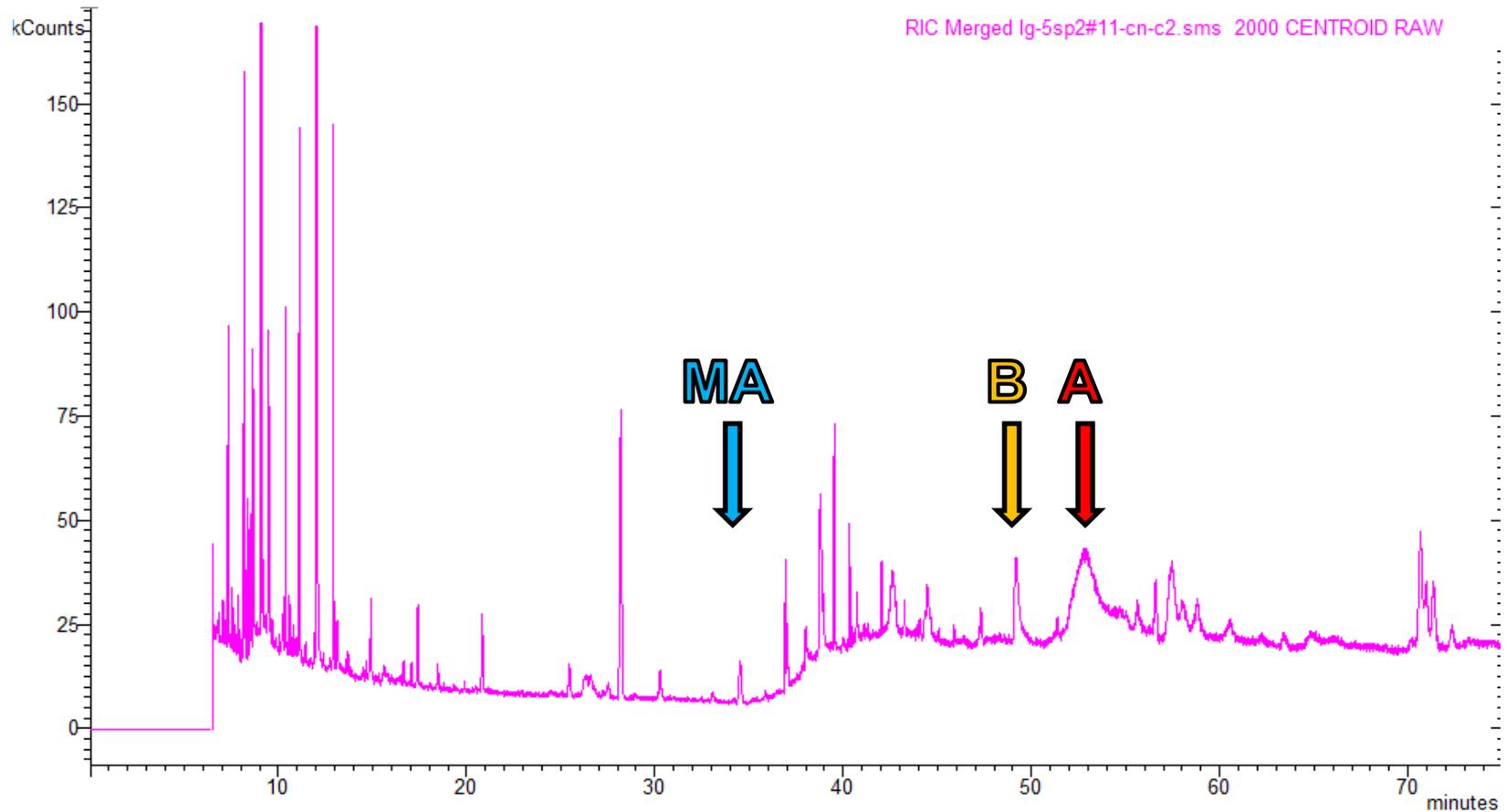
Post-Mating Changes



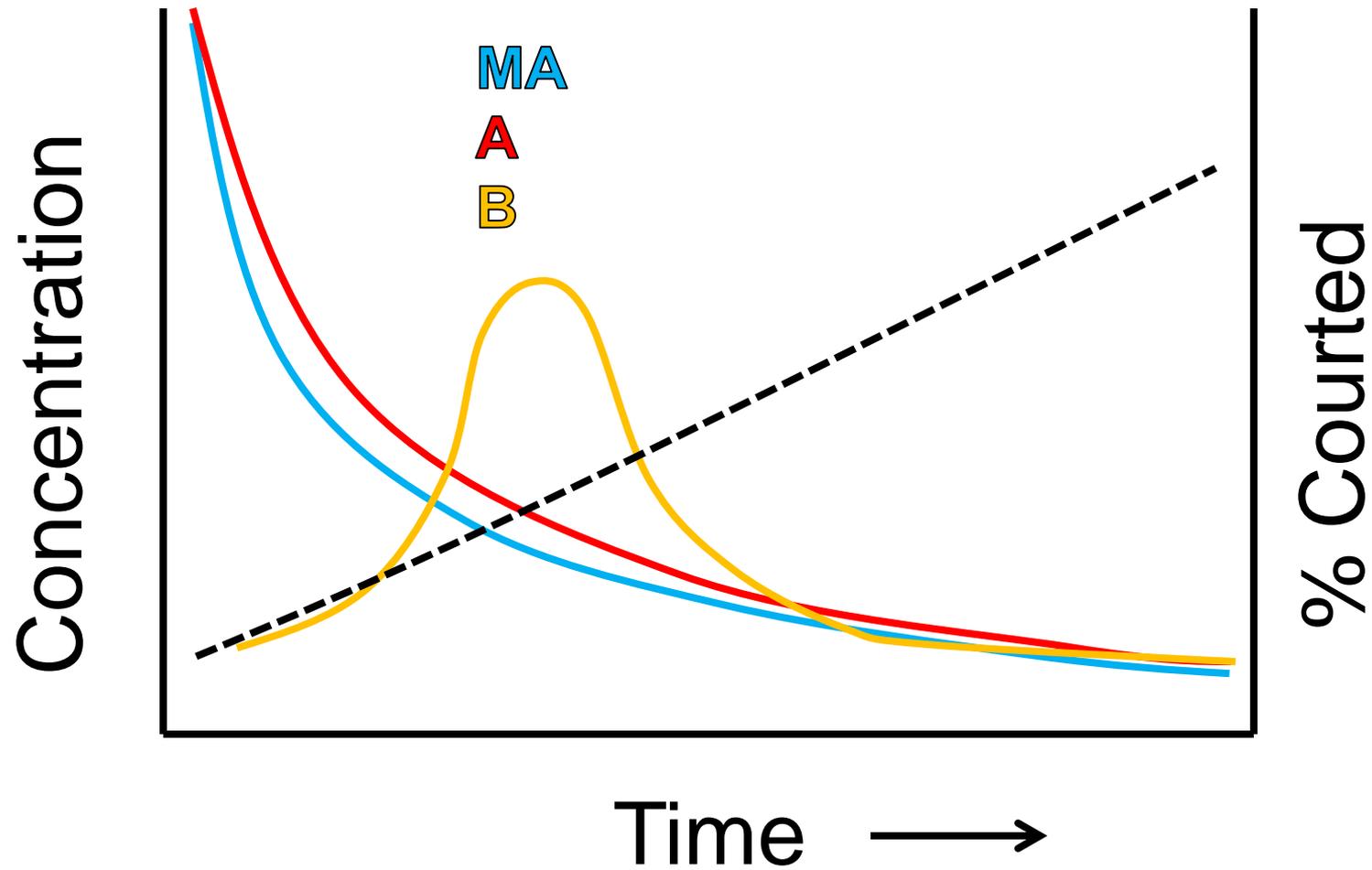
Whole Body Chemical Analysis 2 Days After Mating



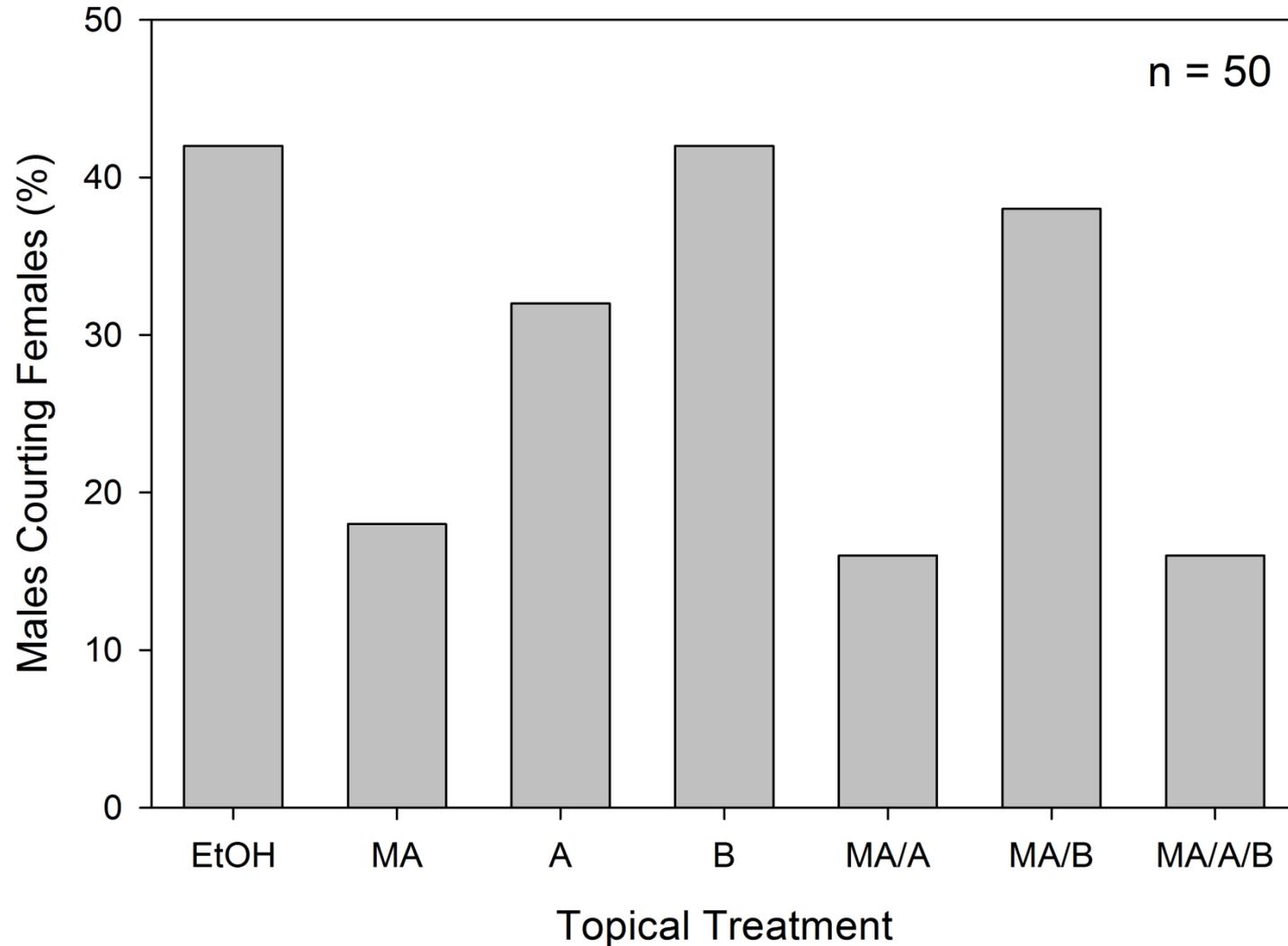
Whole Body Chemical Analysis 2 Days After Mating



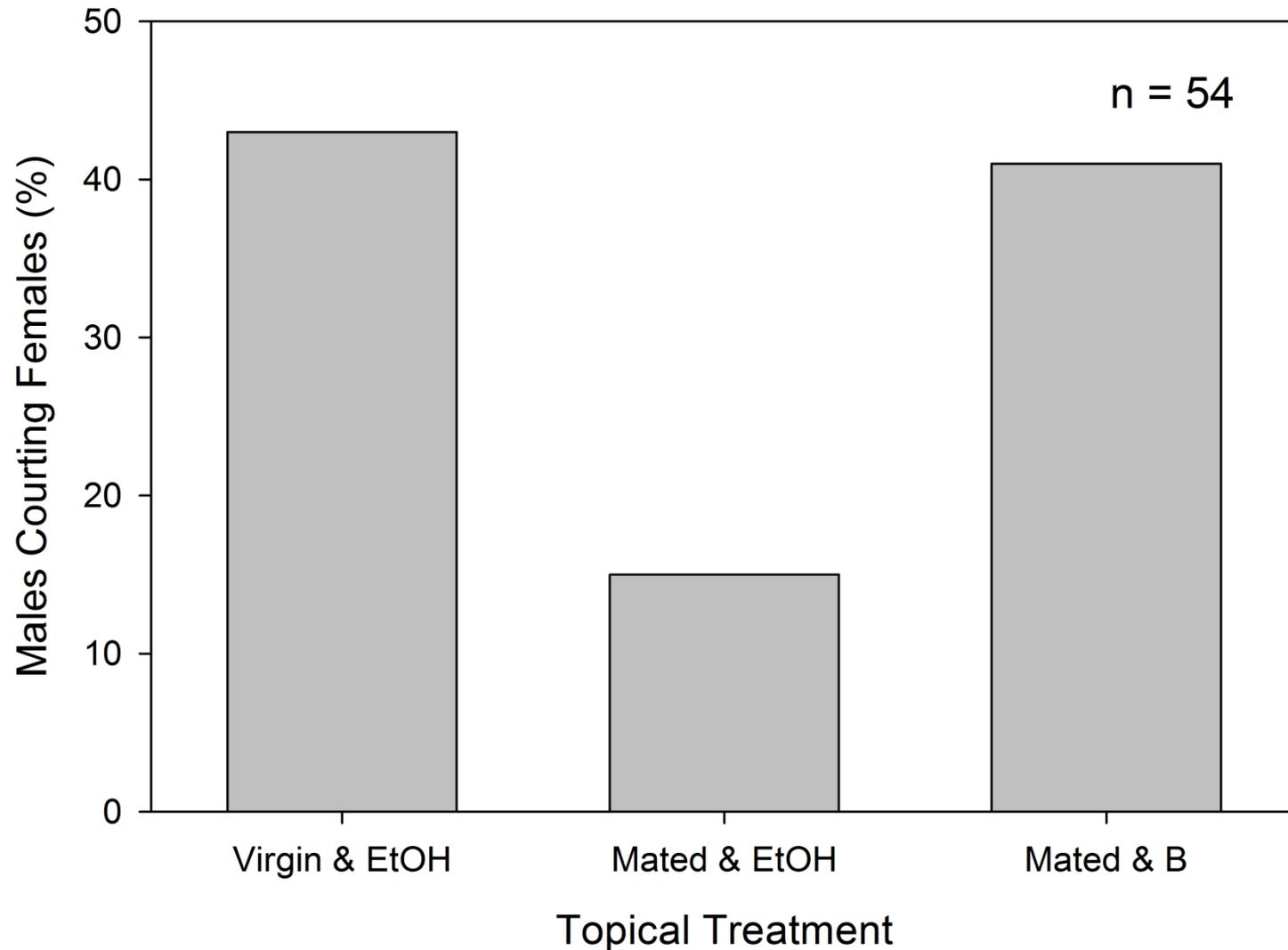
Post-mating Changes



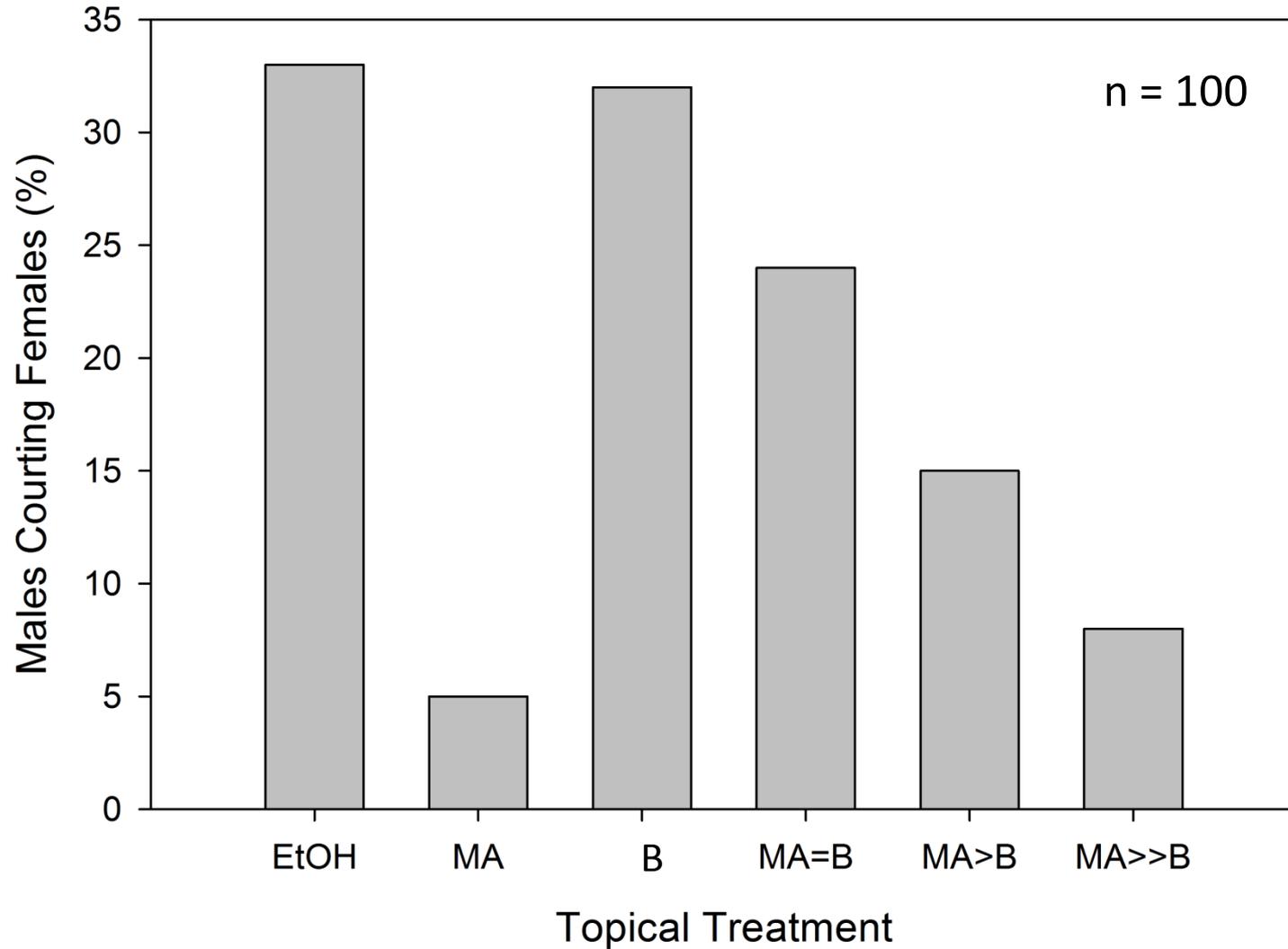
Male Response to MA/A/B



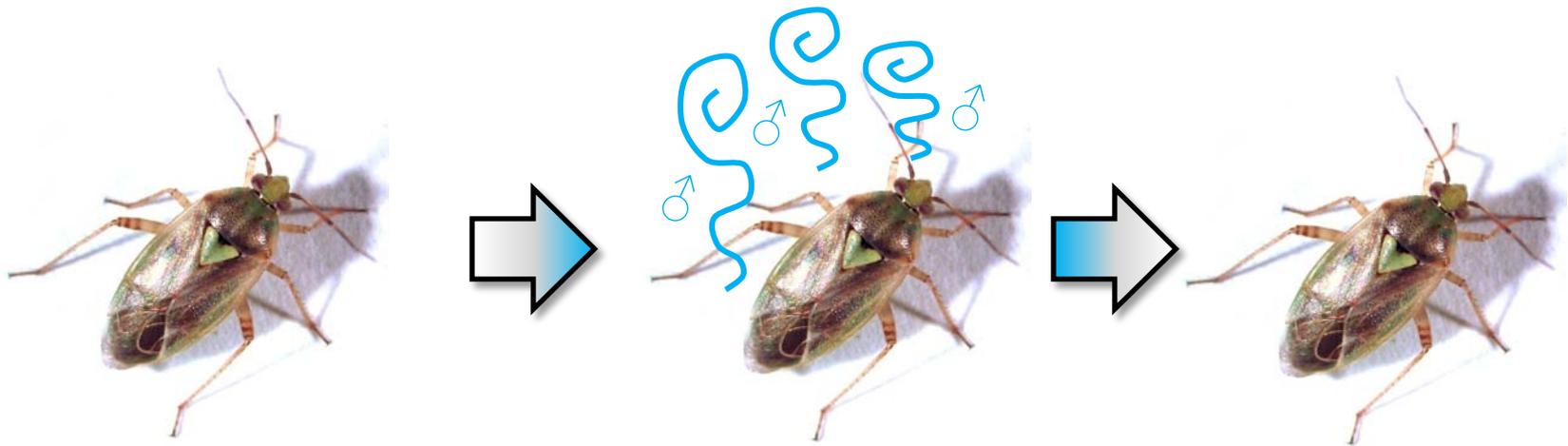
Male Response to MA/A/B



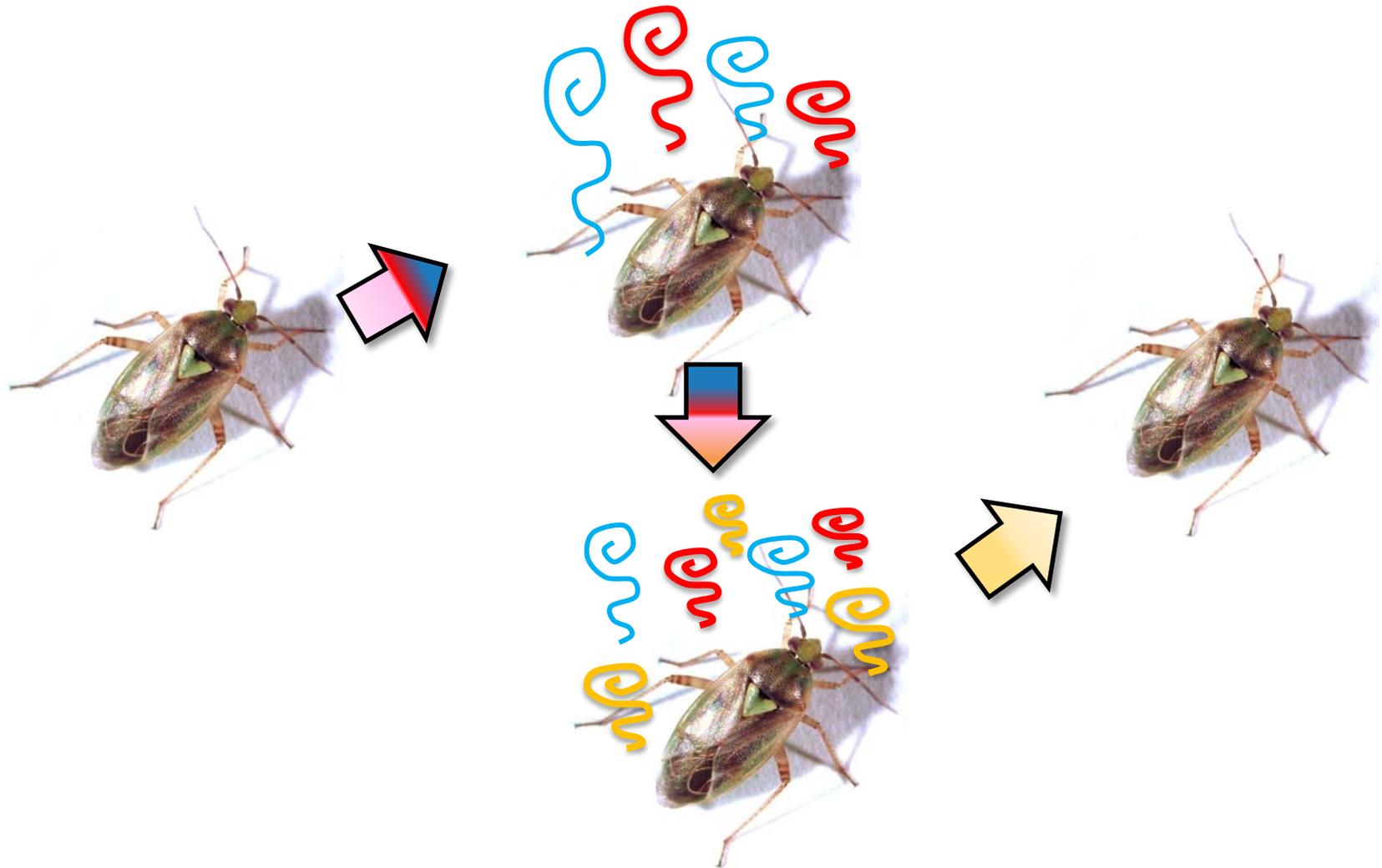
Male Response to Relative Amounts



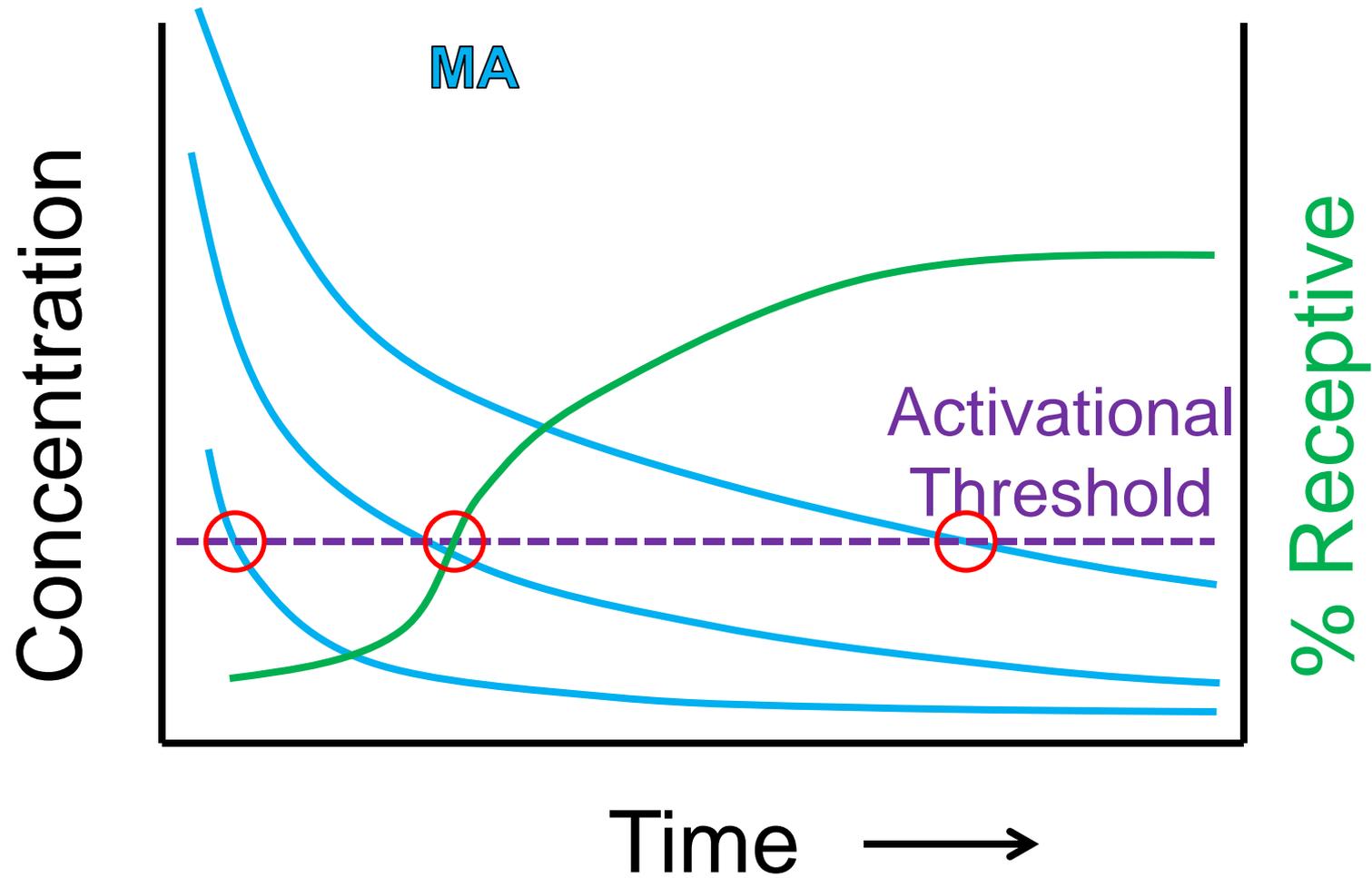
Anticipated Post-Mating Odor Change



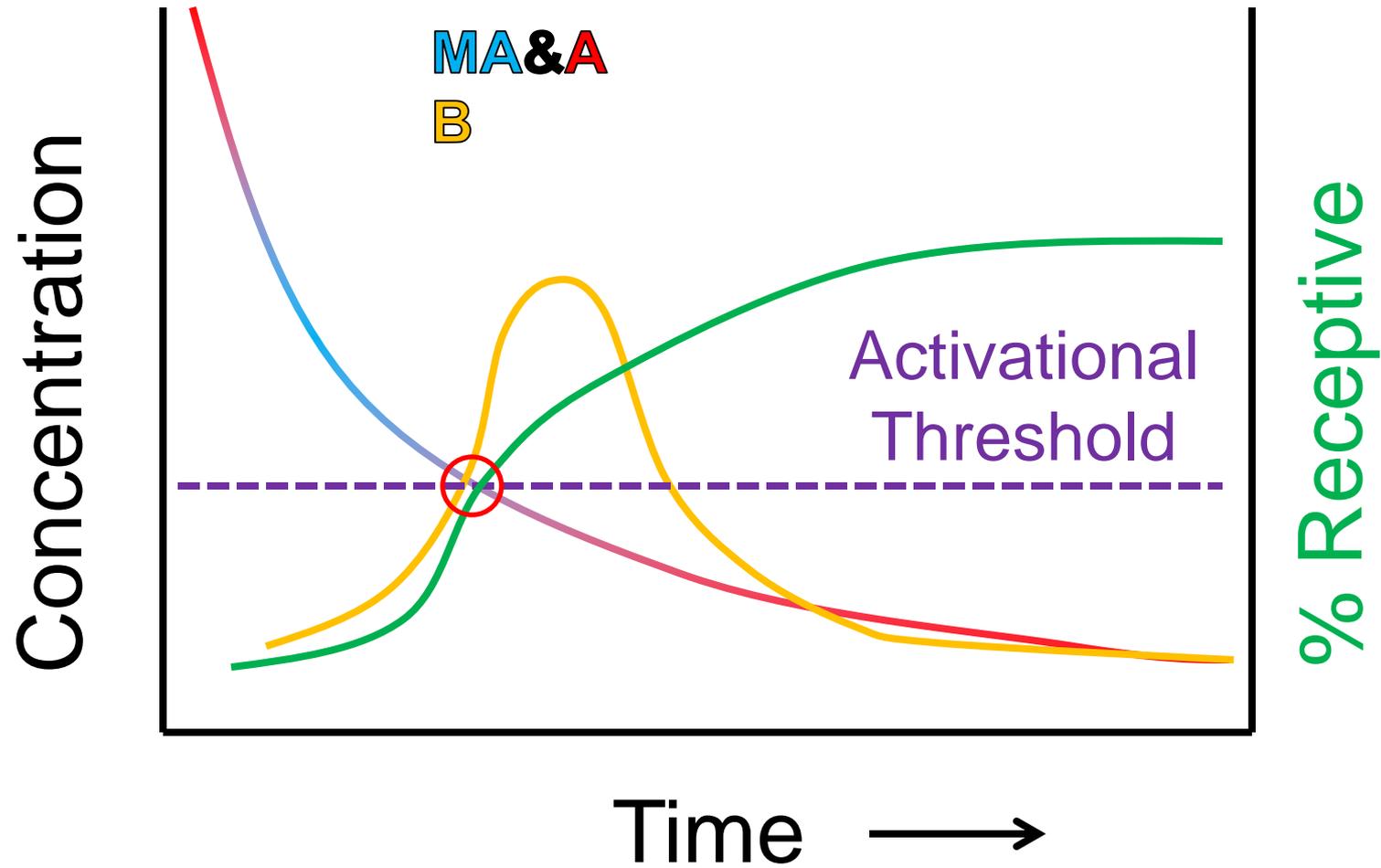
Actual Post-Mating Odor Change



Post-mating Changes



Post-mating Changes



Summary

- Males produce an anti-aphrodisiac (MA) that limits sperm competition



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- A second male-derived compound (A) also inhibits male courtship, and once metabolized by a female it becomes an anti-anti-aphrodisiac (B)
- **Ratio of MA&A:B dictates male behavior, indicating when a mated female is again likely to be receptive to courting**



Acknowledgements



Leanne Elhoff



Dan Langhorst



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