The Secret Life of Mosquitoes: Mosquito-Plant Interactions

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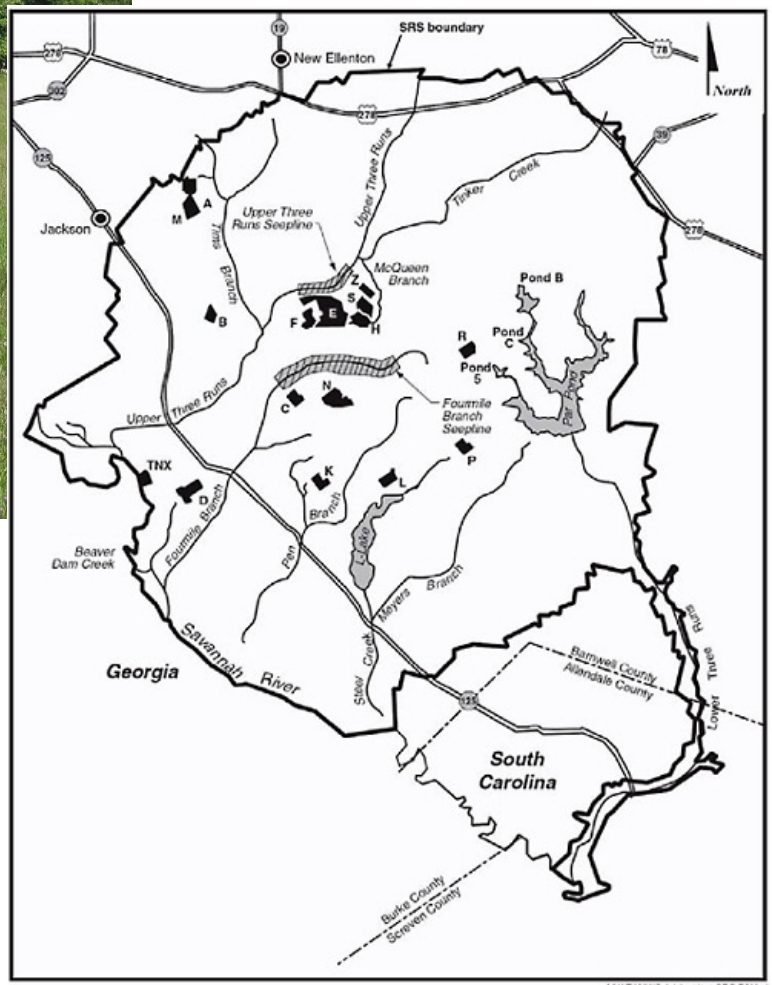
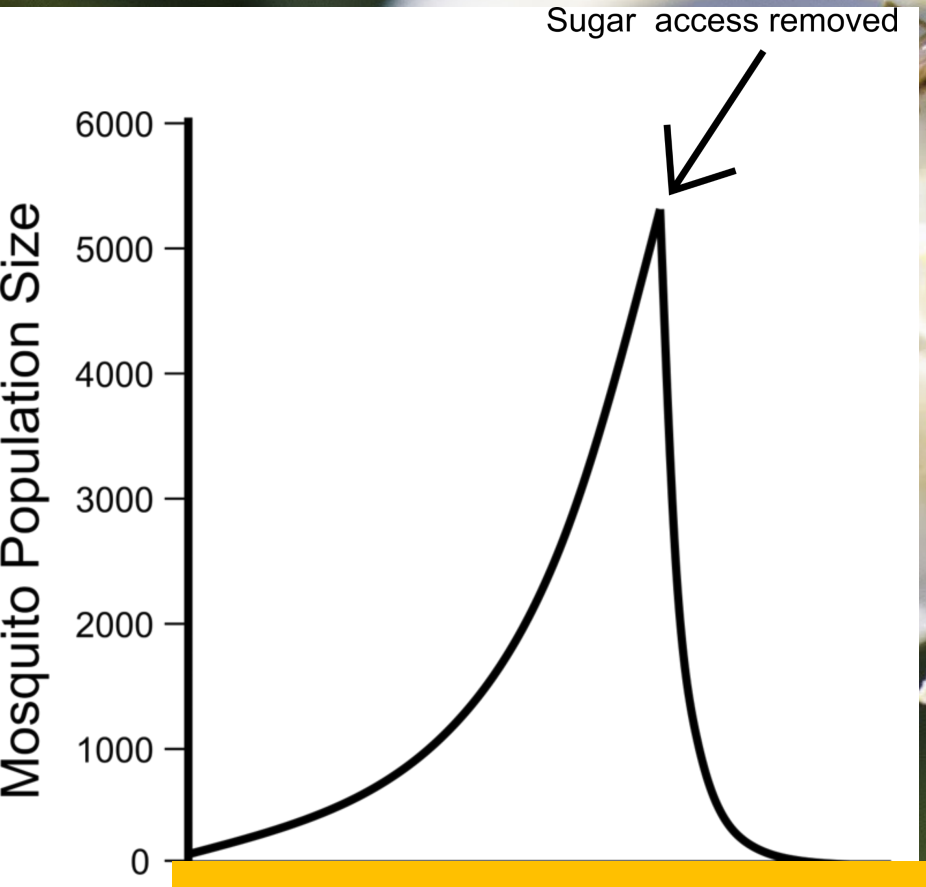

SRS boundary
New Ellenton
North
Jackson
Upper Three Runs
Tinker Creek
Upper Three Runs Seepline
McQueen Branch
Pond B
Pond C
Pond 5
Fourmile Branch Seepline
Upper Three Runs
TNX
Fourmile Branch
Beaver Dam Creek
Pen Branch
Lake
Meyers Branch
Steel Creek
Savannah River
Georgia
South Carolina
Barnwell County
Allendale County
Burke County
Screven County
Lower Three Runs

Plant sugars are essential for mosquitoes



Question: Do plants benefit by interacting with mosquitos?

Adapted fr
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nacio Torres

U.S. | GENERAL NEWS

Mosquitoes Are Deadly, So Why Not Kill Them All?

Published online 21 July 2010 | *Nature* **466**, 432-434 (2010) |
doi:10.1038/466432a

News Feature

Ecology: A world without mosquitoes

Eradicating any organism would have serious consequences for ecosystems — wouldn't it? Not when it comes to mosquitoes, finds Janet Fang.

Why can't we just kill all mosquitoes?

By Carina Storrs, Special to CNN

Updated 5:21 PM ET, Fri February 5, 2016

Pollination

Mosquito Species	**Plant Pollinated**	**Location**
Aedes spp.	*Dryas integrifolia*	Canada
Aedes spp.	*Platanthera obtusata*	Canada, USA
Armigeres sp. and *Culex* sp.	*Burmannia lutescens*	Malaysia
Unidentified mosquitoes	*Sciaphila secundiflora*	Malaysia
Culex pipiens	*Lopezia coronata*	Germany (indoors)
Culex pipiens and *Culiseta annulata*	*Silene otites*	The Netherlands
Anopheles spp., *Aedes* spp., and *Culex* spp.	*Pterostylis procera*	Australia

Peach and Gries (2020). *Entomol Exp et Appl*. 168: 120-136

Lack on Investigation into Pollination

Mosquito Species	**Plant Visited**	**Location**
Anopheles spp., *Aedes* spp., *Culex* spp., and more.	*Tanacetum vulgare*	Denmark, Sweden, Russia, and western Canada
	Solidago spp.	Minnesota, Connecticut, the Dakotas, Wisconsin, Alabama, South Carolina, Sweden, and western Canada
	Achillea millefolium	Wisconsin, Sweden, Russia, and western Canada
	Eupatorium spp.	Wisconsin, Ohio, Alabama, and South Carolina

Peach and Gries (2020). *Entomol Exp et Appl*. 168: 120-136

Pollination

Hypothesis: Mosquitoes pollinate generalist flowers.

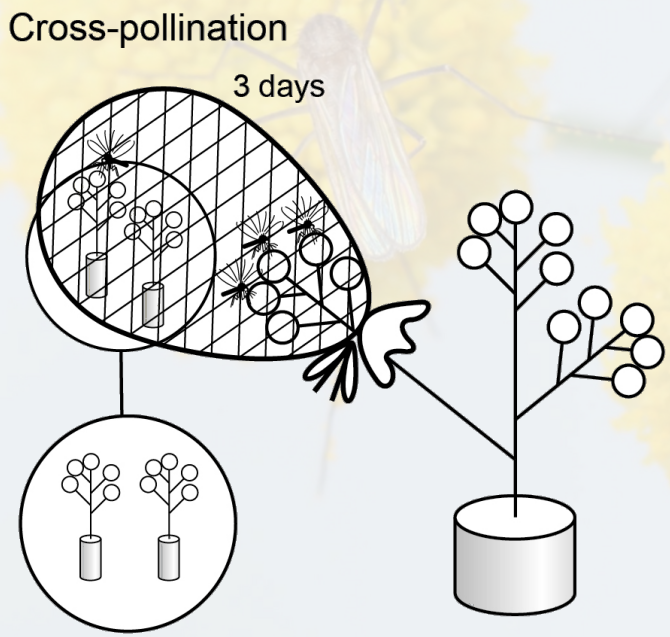
Do mosquitoes pick up pollen?

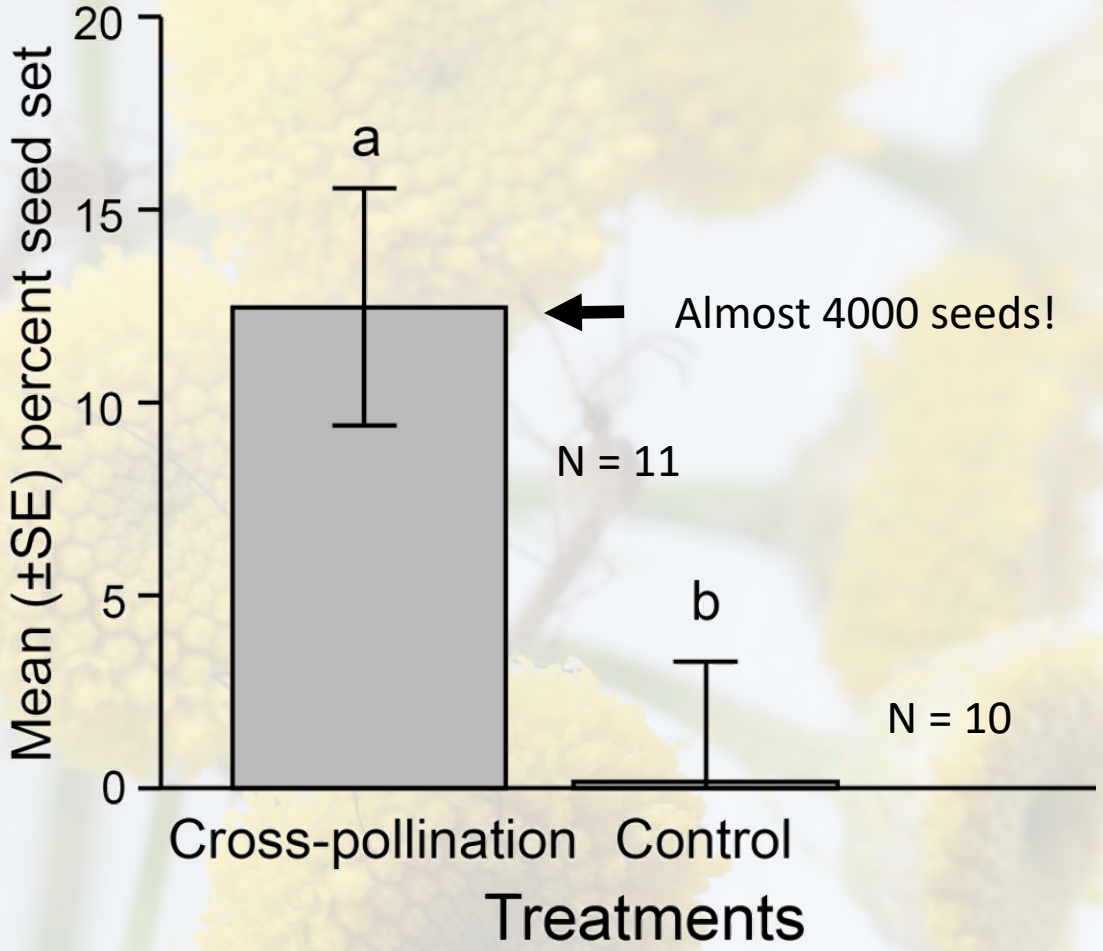
Criteria recorded	Tansy			Yarrow	
	Cx. pipiens	*Cx. tarsalis*	*Cs. incidens*	*Cx. pipiens*	*Cs. incidens*
Total mosquitoes collected	164	2	6	6	2
Percent mosquitoes carrying pollen	25%	50%	16.6%	83.3%	0%
Mean number of pollen grains on pollen-carrying mosquitoes	9.4	39	9	108.8	-

Peach and Gries (2016). *Arthropod-Plant Interact*. 10 :497-506

Pollination

Culex pipiens pollination of *Tanacetum vulgare*



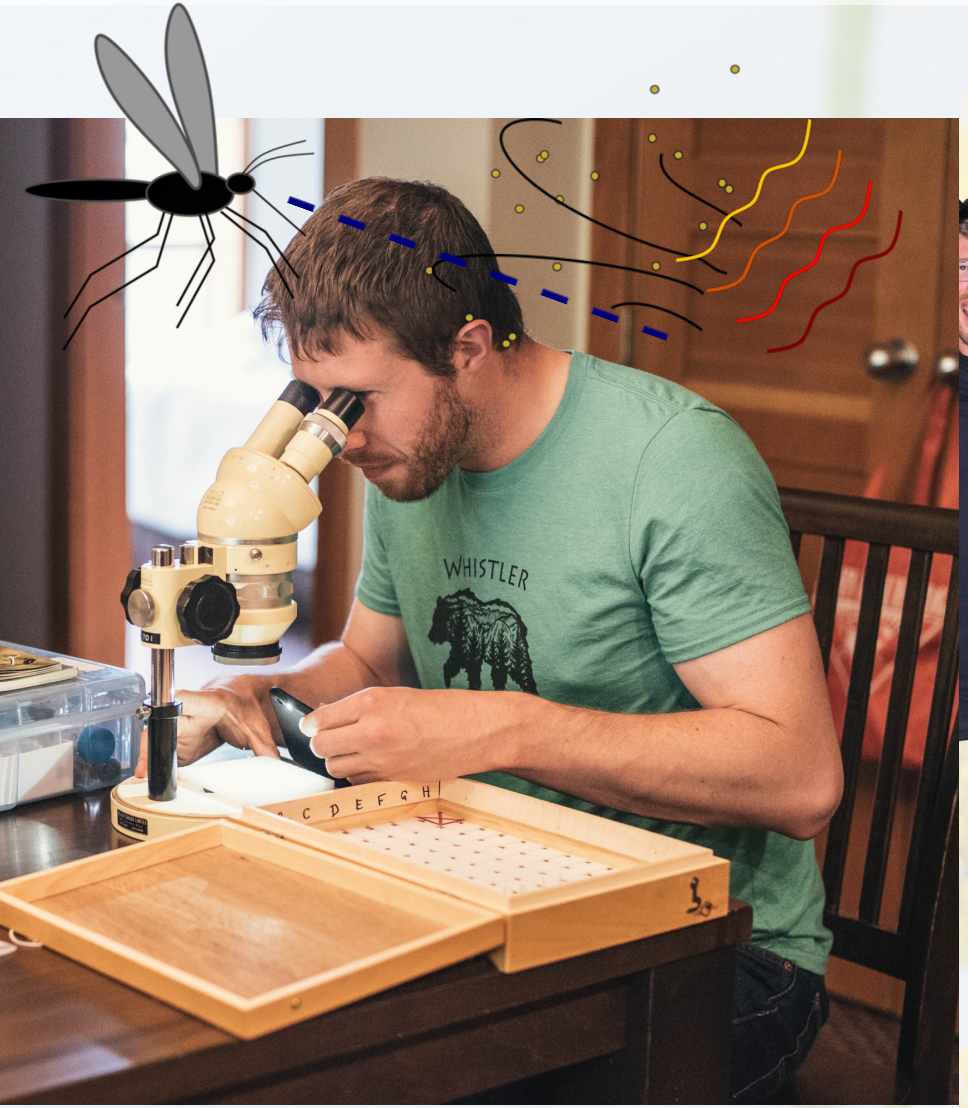


Conclusion: Mosquitoes can pollinate tansy!

:497-506

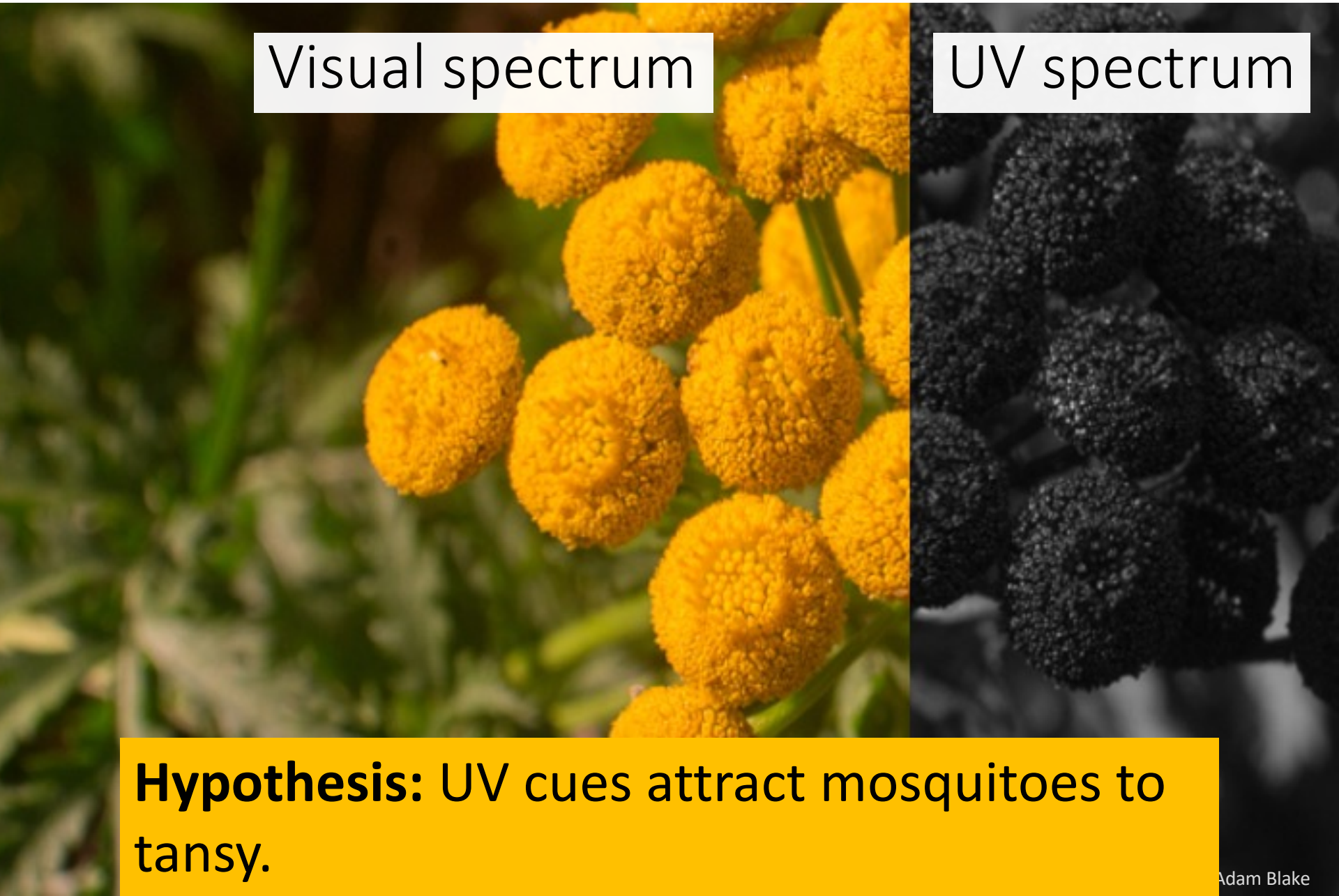
- Investigations continue in Alberta, Canada and at SREL in South Carolina.

The mosquito sensory Gestalt



The mosquito sensory Gestalt: Vision

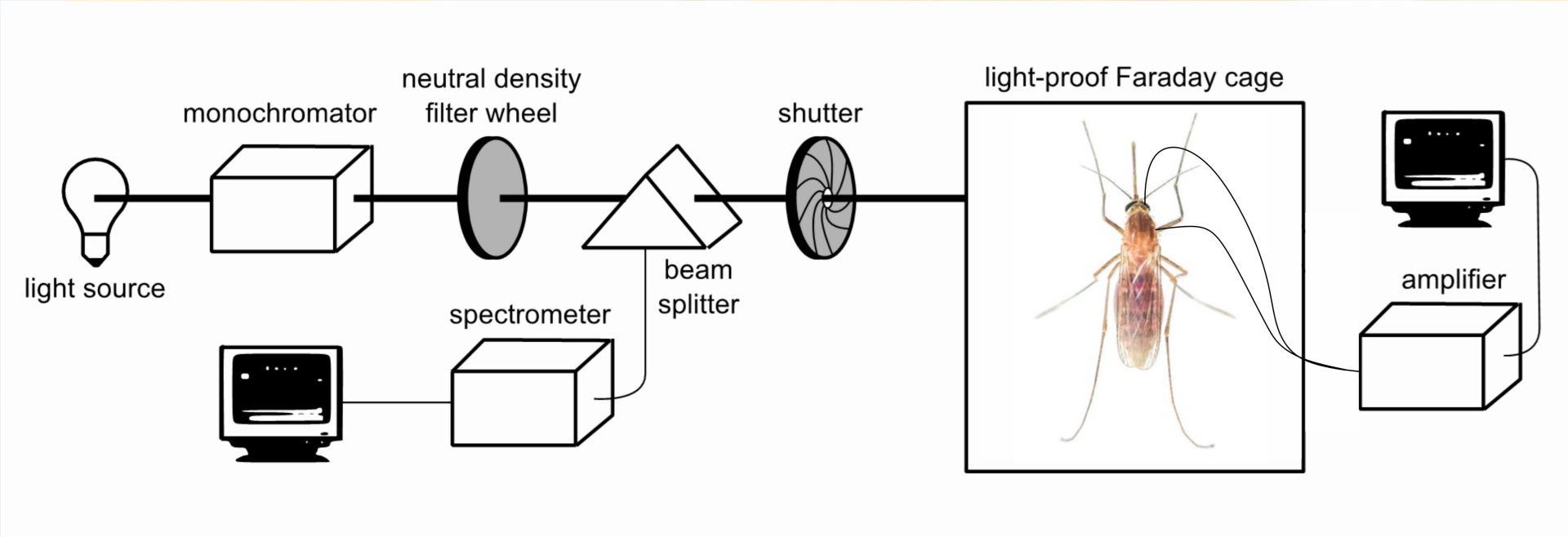
The mosquito sensory Gestalt: Vision



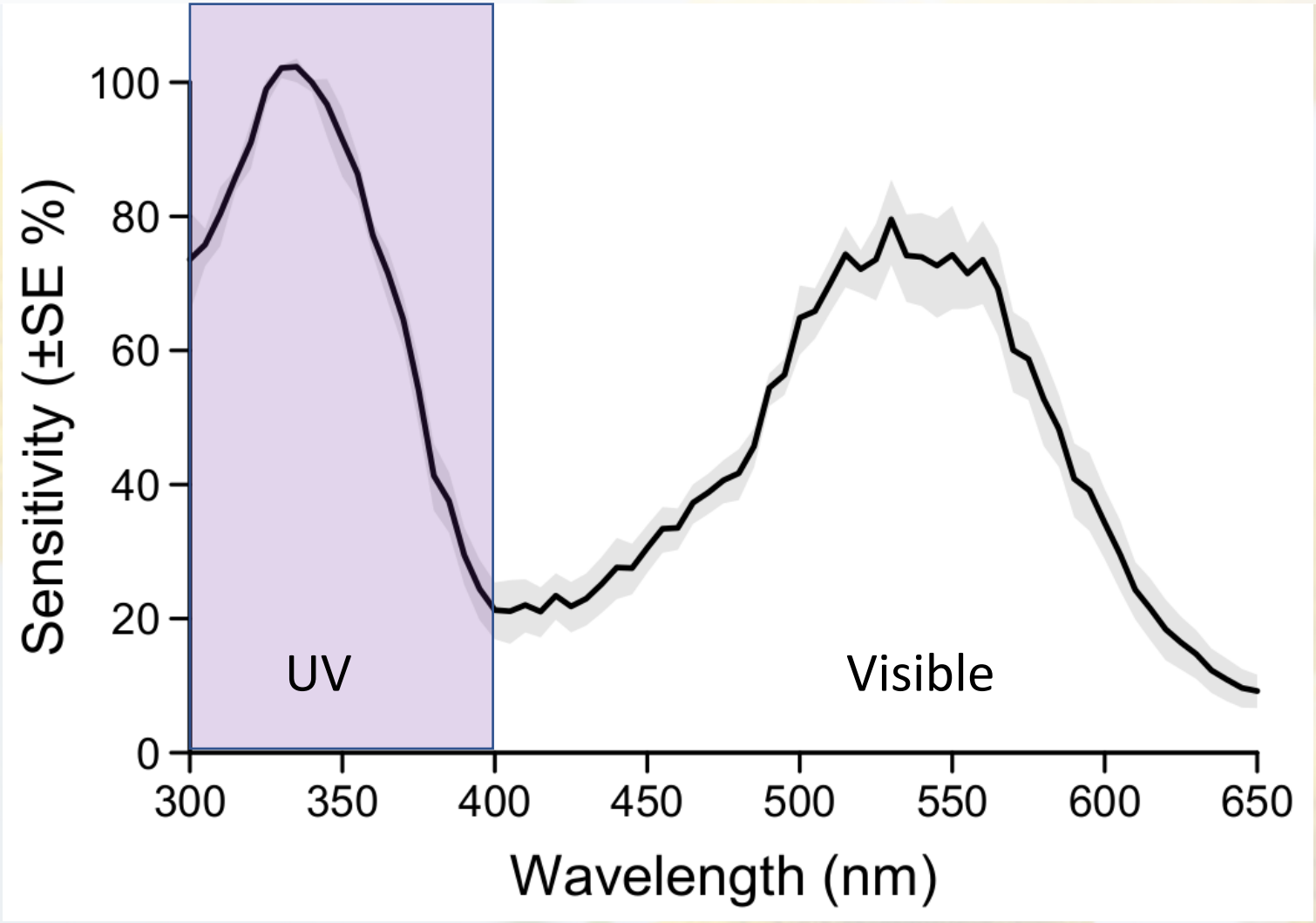
Hypothesis: UV cues attract mosquitoes to tansy.

Adam Blake

Spectral sensitivity of the *Cx. pipiens* compound eye

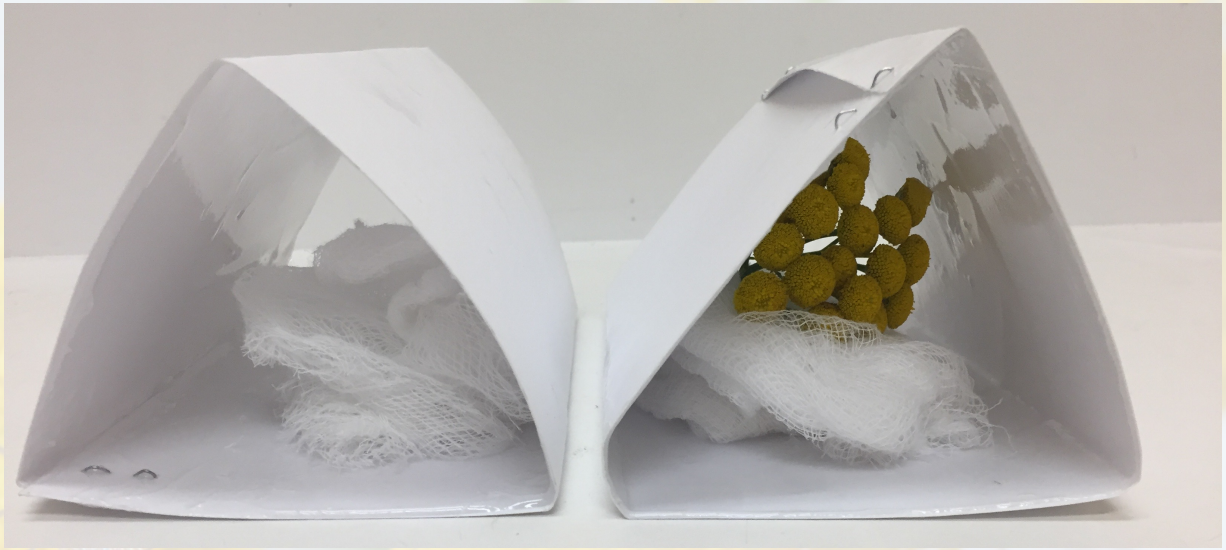


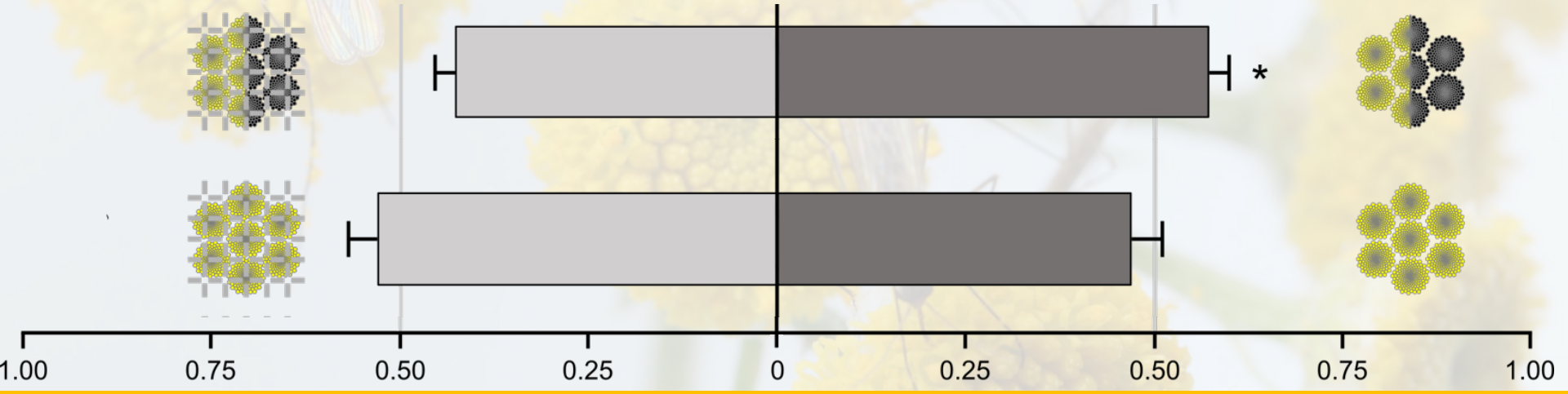
Spectral sensitivity of the *C. pipiens* compound eye



Peach *et al.* (2019). *PLoS ONE* 14: e0217484

The role of UV cues





Conclusion: UV cues are responsible for the visual attraction of *C. pipiens* to tansy.

Future plans

- Pollination ecology and applications for control.
- Investigate olfactory, visual and microbial cues with ATSBs.

Photo: Adam Blake

Acknowledgements

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  - Adam Blake
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  - Mike Hraber
  - Sean McCann
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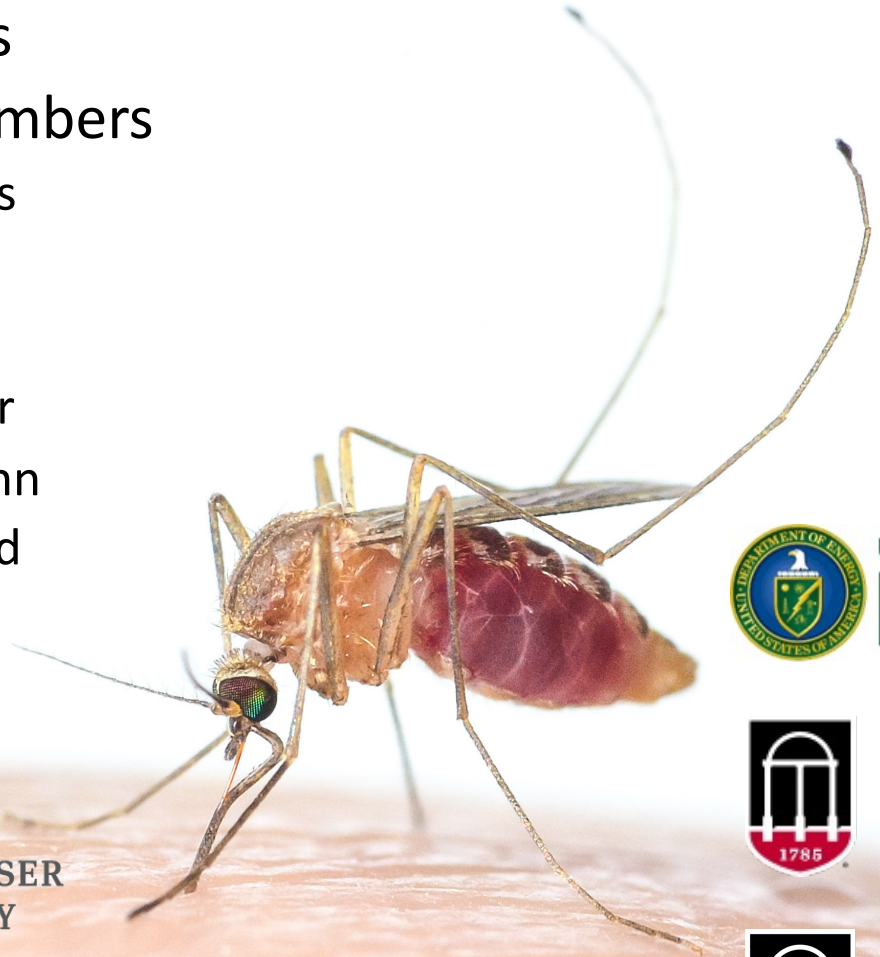

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Thank you!

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Photo: Sean McCann