Cecelégy kairomonok és analogonjaik előállítása valamint laboratóriumi és szabadföldi vizsgálata

Ujváry I.

és

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MTA Terpenoidkémiai és Elemorganikus Munkabizottság szakmai előadóülés
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IAEA

Kommunikáció kémiai jelekkel

- **Feromon: fajon belül**

- **Kairomon: fajok között**

  » A felfogó számára előnyös

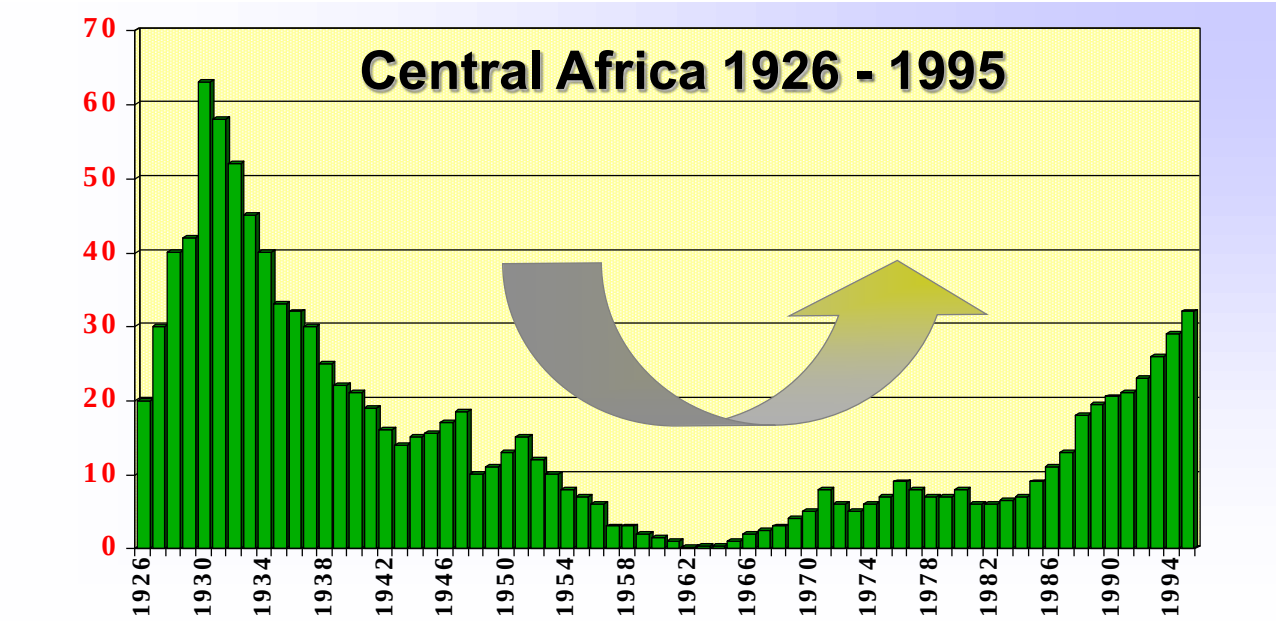
  » A kibocsátó számára hátrányos

Human and Animal Trypanosomosis

- **Sleeping sickness - 55 M people at risk**

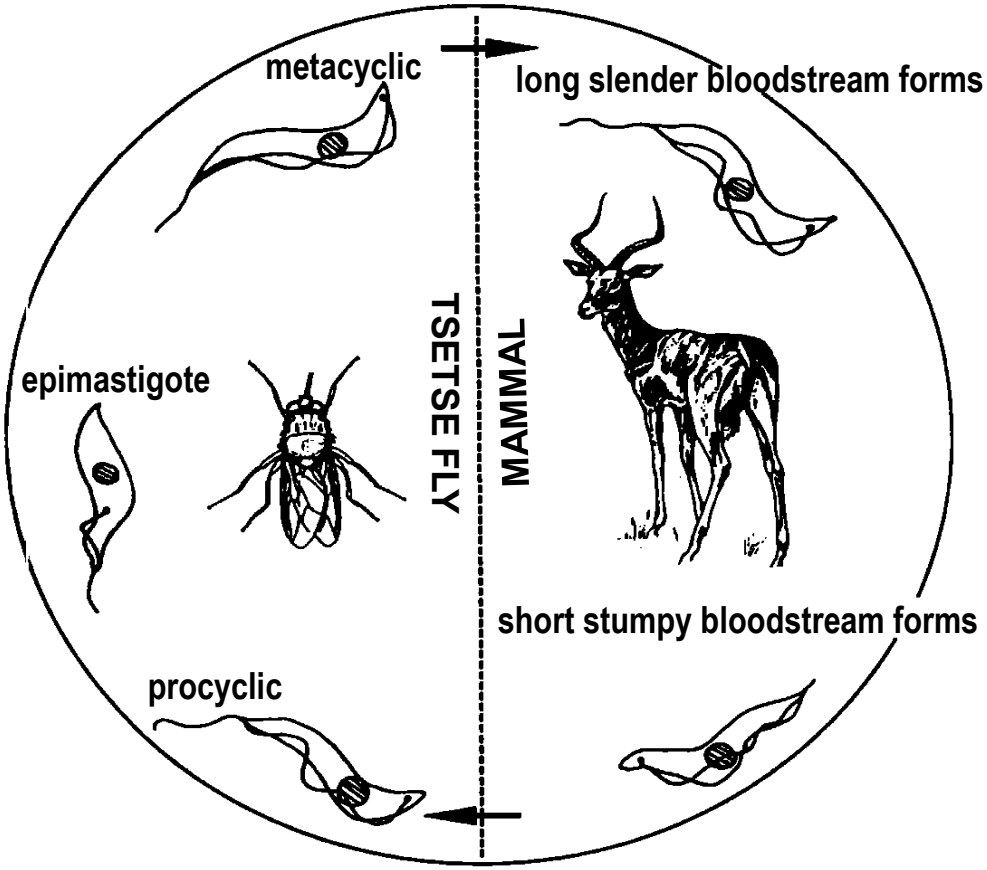
  subspecies:

  - ***T. brucei rhodesiense*** **(East-Africa)**
  - ***T. brucei gambiense*** **(West- & Central-Africa)**



- **Nagana -** ***T. brucei brucei*****,** ***T. congolense*****,** ***T. vivax***

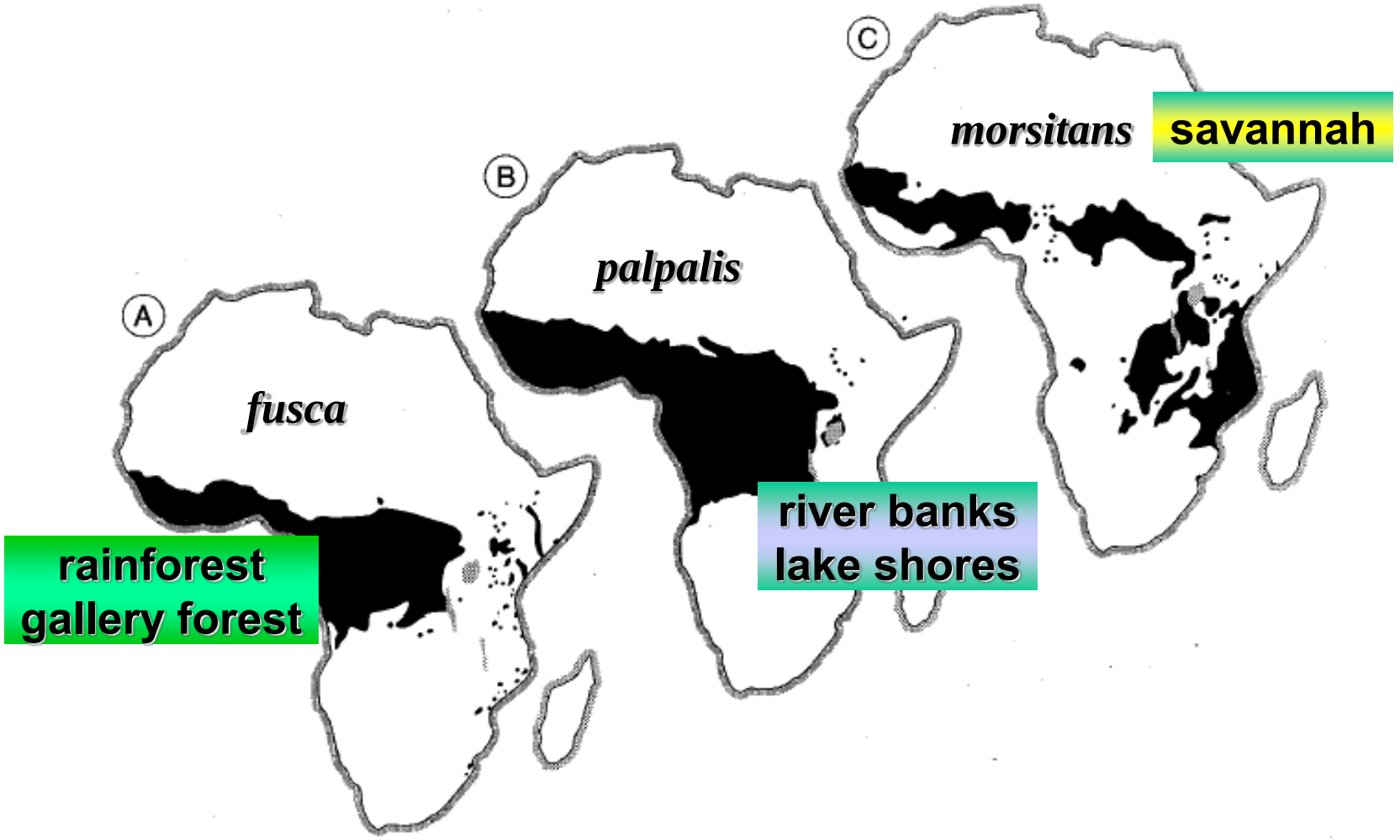
Life Cycle of Protozoan Parasite
Trypanosoma brucei



History of Tsetse Fly Control Methods

- **game elimination → 1950s**
- **vegetation destruction / selective bush clearing → 1950s**
- **residual insecticides,** *e.g.*, DDT, dieldrin**, 1950s → 1970s**
- **traps & barriers (→ 1970s →)** (with selective insecticide)
- **sterile insect** (male) **technique (*SIT*) 1980s →**

Distribution Maps of the Three *Glossina* Groups



Classification of Glossina Species Morphology and Habitat

***morsitans* group**	***palpalis* group**	***fusca* group**
longipalpalis	*palpalis*	*fusca*
morsitans	*palpalis*	*fusca*
morsitans	*gambiensis*	*congolensis*
submorsitans	*tachninoides*	*tabaniformis*
centralis	*pallicera*	*longipennis*
pallidipes	*pallicera*	*brevipalpis*
austeni	*newsteadi*	*nigrofusca*
swynnertoni	*fuscipes*	*nigrofusca*
	fuscipes	*hopkinsi*
	martinii	*fuscipleuris*
	quanzensis	*medicorum*
	caliginea	*severini*
		schwetzi
		haningtoni
		vanhoofi
		nashi

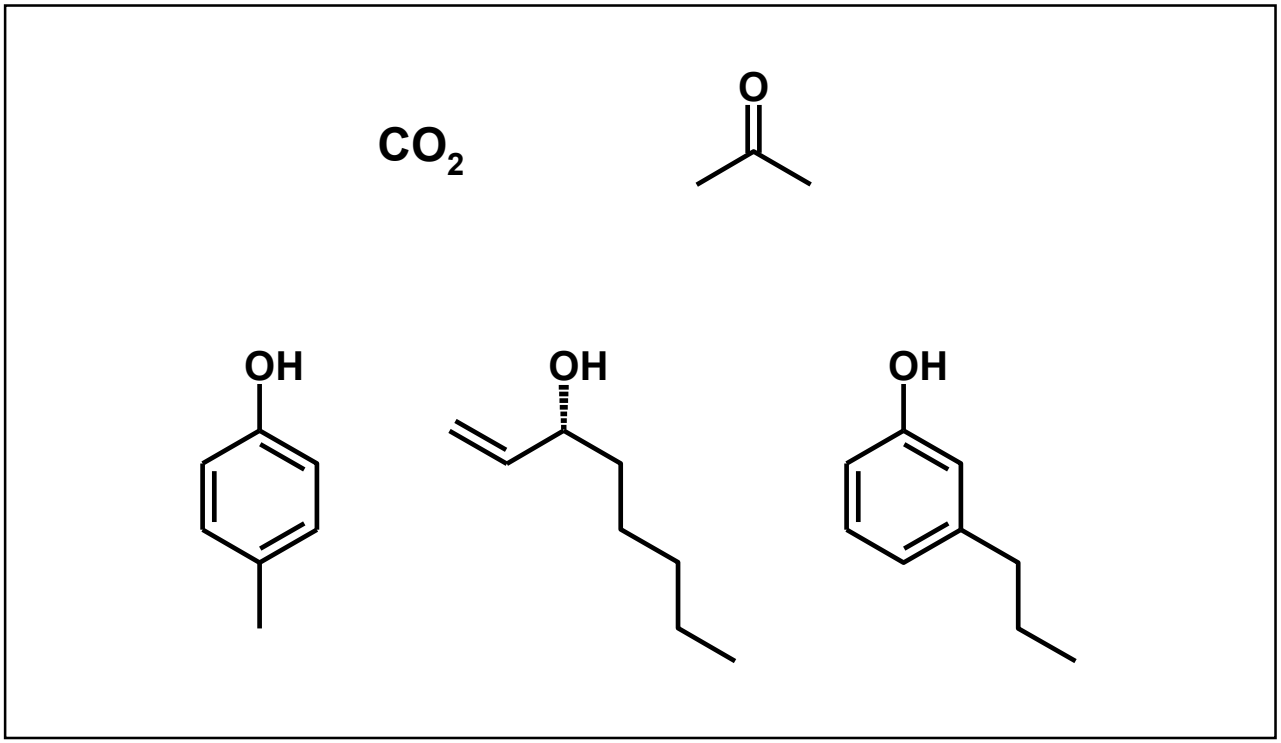
(Jordan, 1974)

Ox Odours as Tsetse Fly Kairomones

phenol
p- & *m*-cresol
3-*n*-propylphenol

CO_2
acetone
1-octen-3-ol

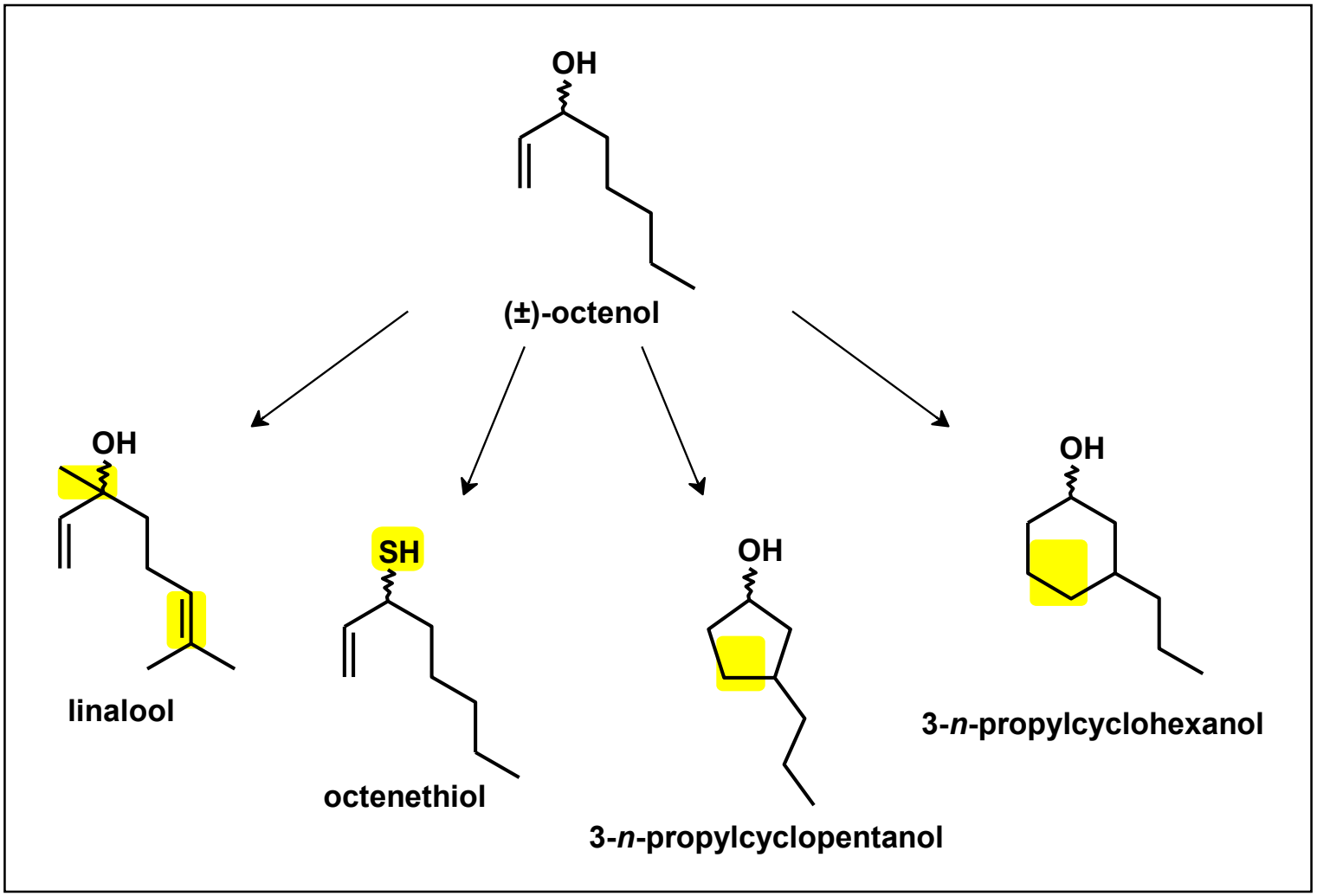
Major Tsetse Kairomones



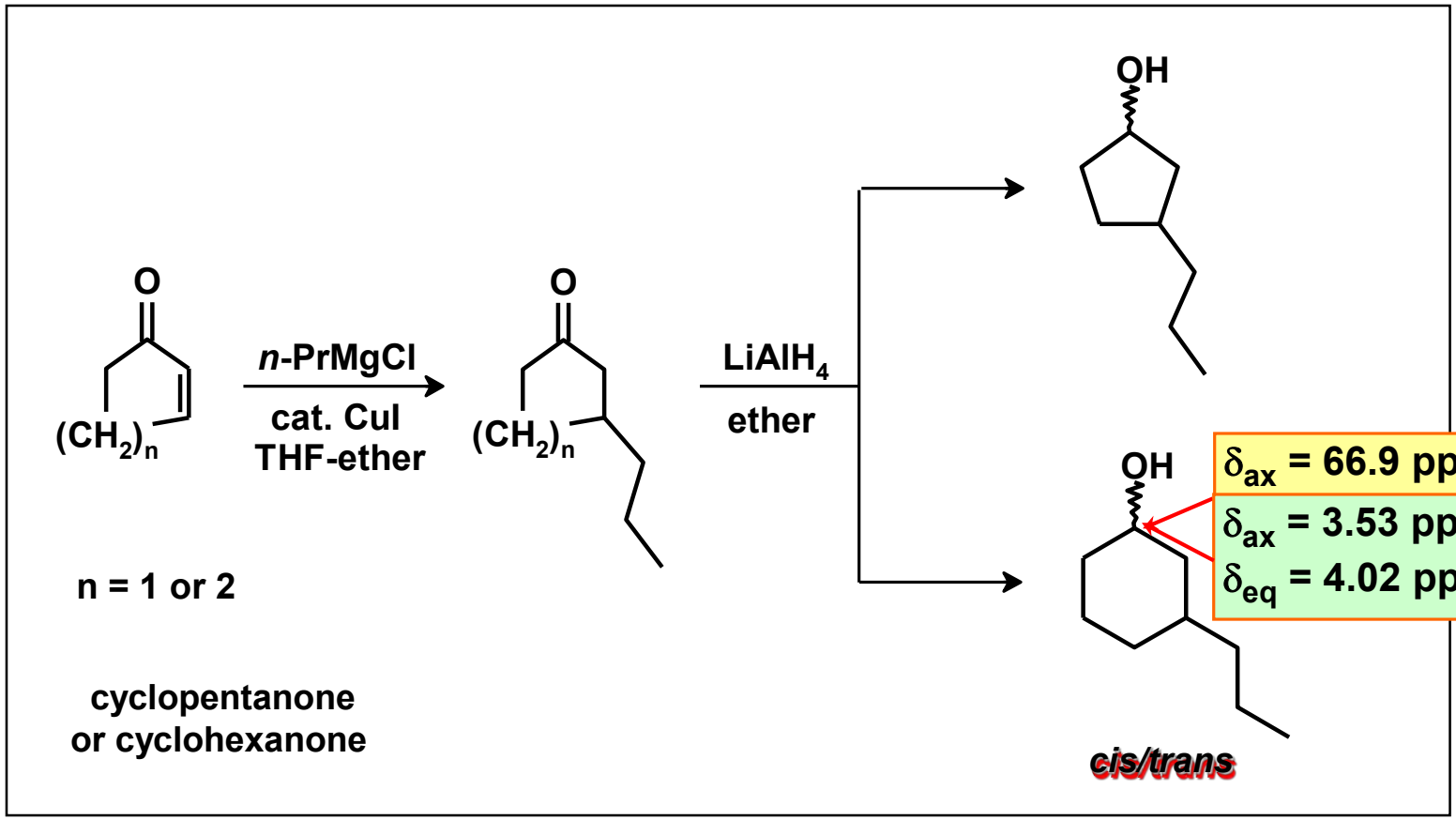
Tsetse Trap 1.

Tsetse Trap 2. - Biconical

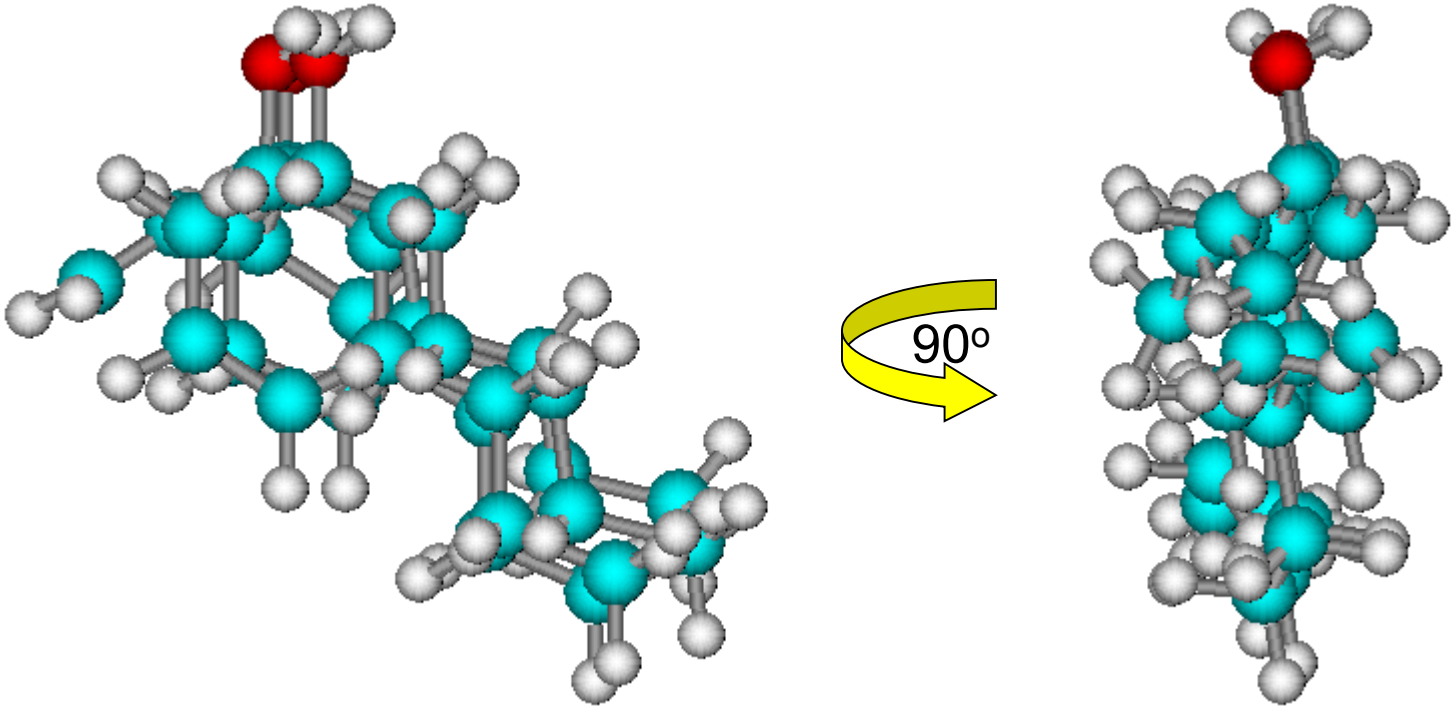
New Analogues of 1-Octen-3-ol



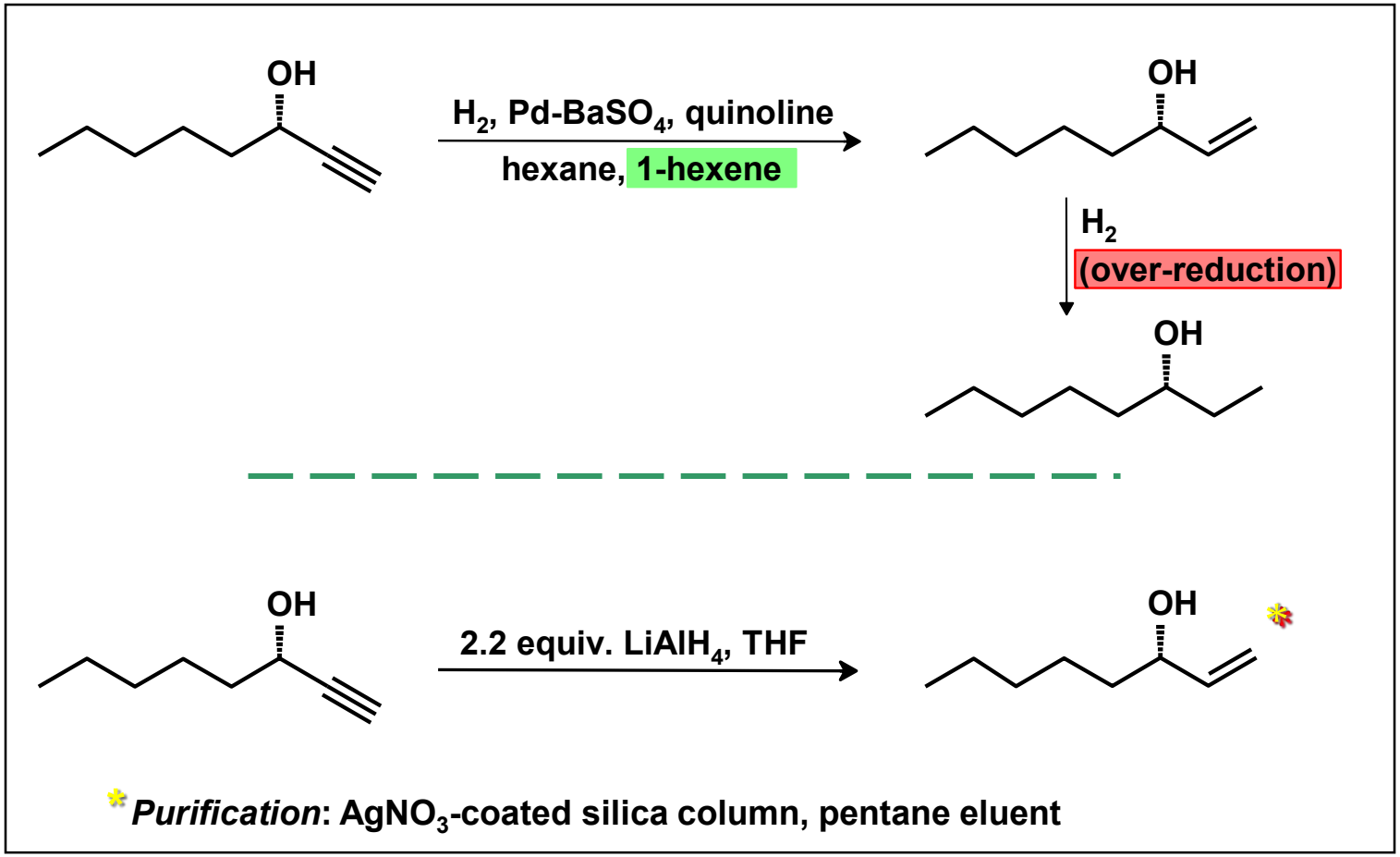
Synthesis of 3-*n*-Propylcycloalkanols



Overlay of Models of 3-Octen-1-ol and 3-*n*-Propylcycloalkanols

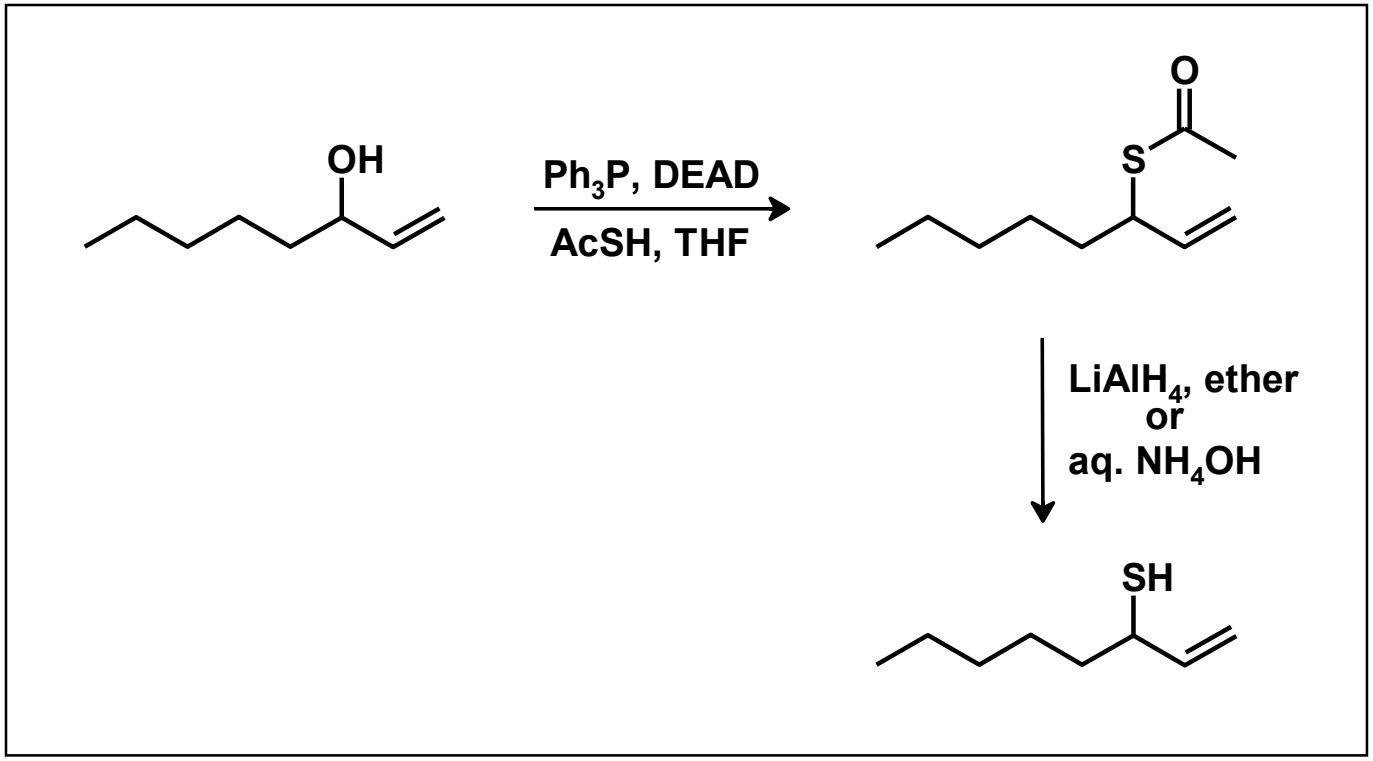


Synthesis of (*S*)-1-Octen-3-ol
(the unnatural *Matsutake*-alcohol)

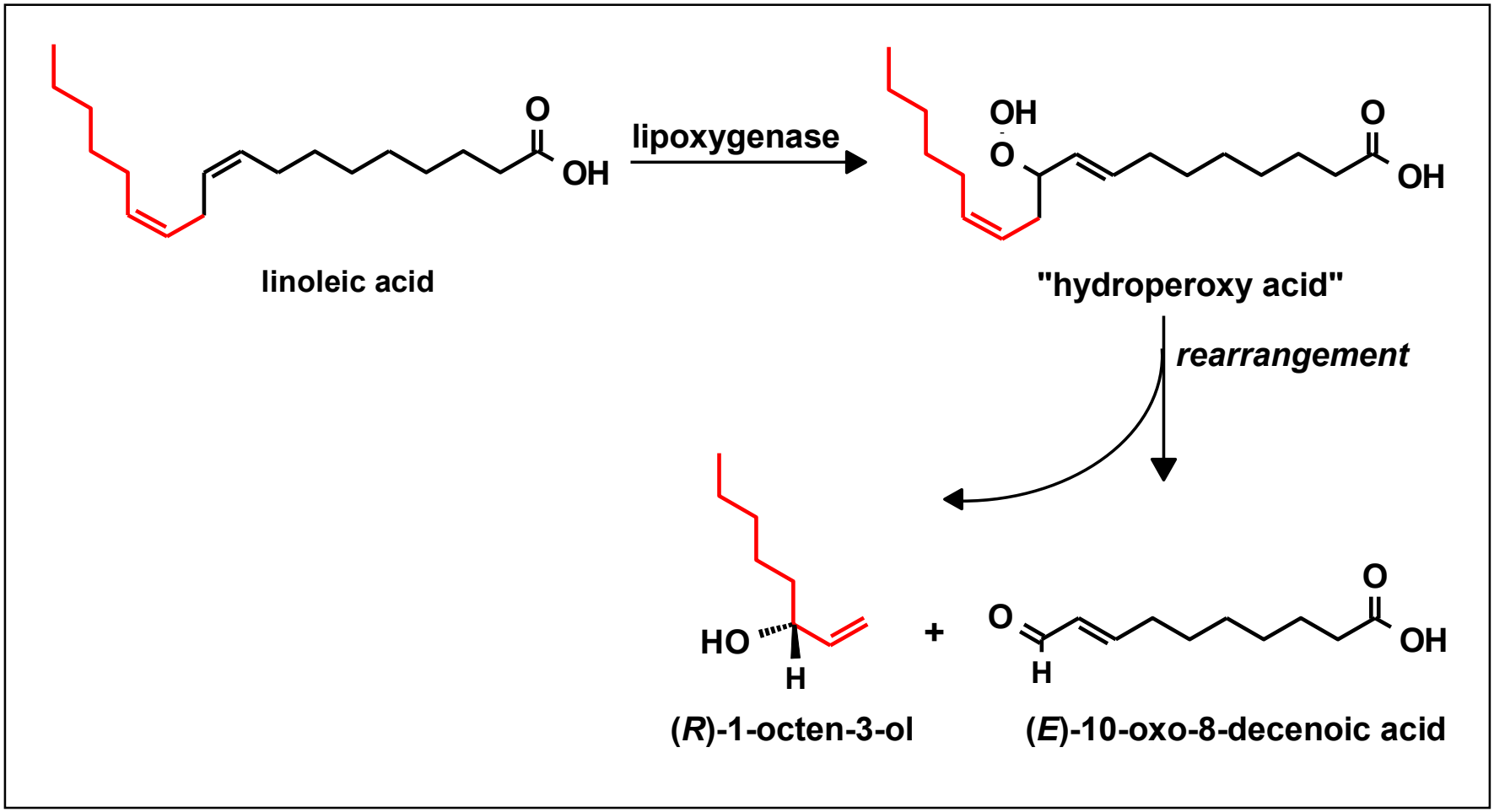


(*R*)-1-Octen-3-ol was prepared similarly from (*R*)-1-octyn-3-ol.

Synthesis of (±)-1-Octen-3-thiol

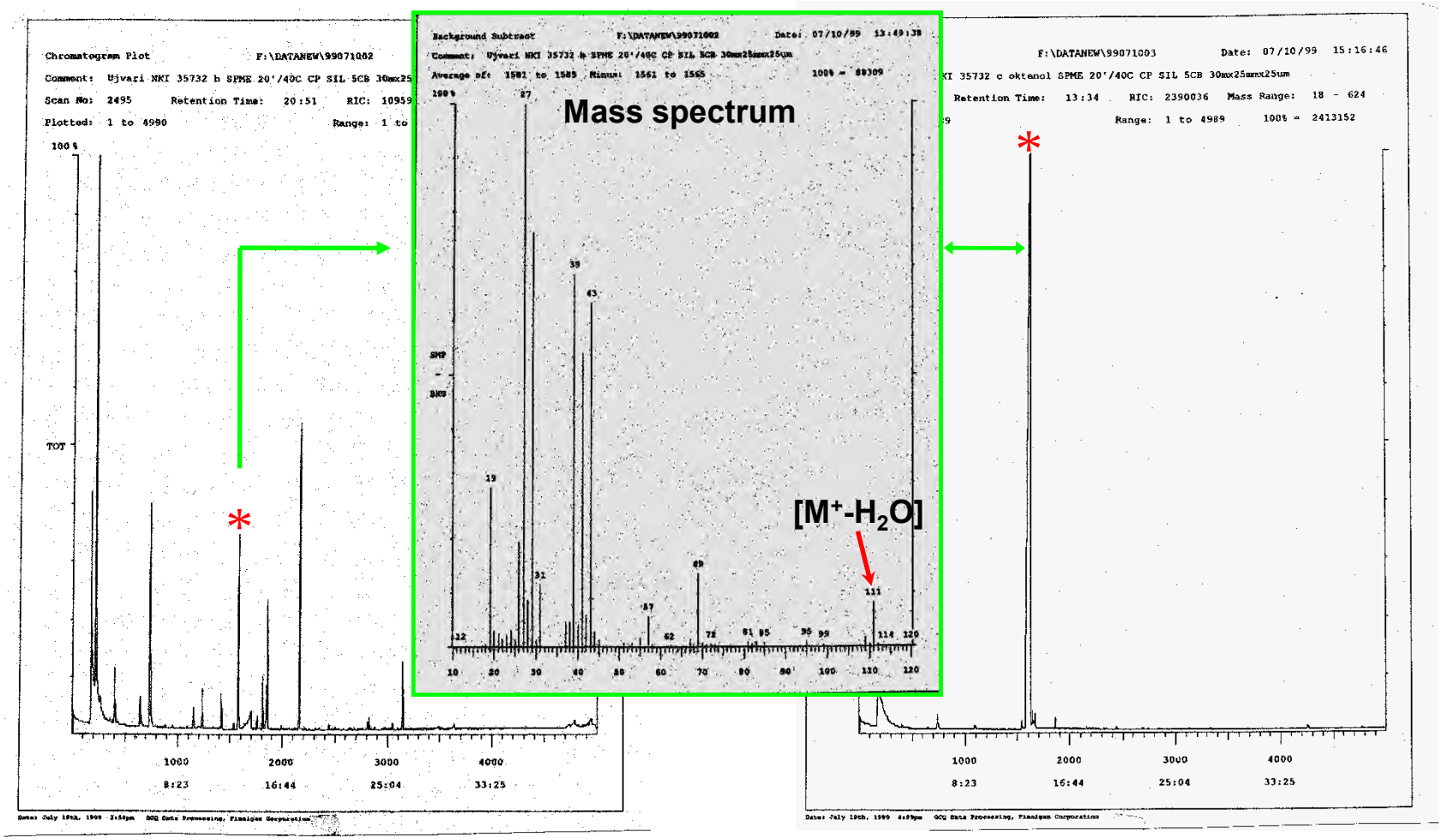


Biosynthesis of (*R*)-1-Octen-3-ol

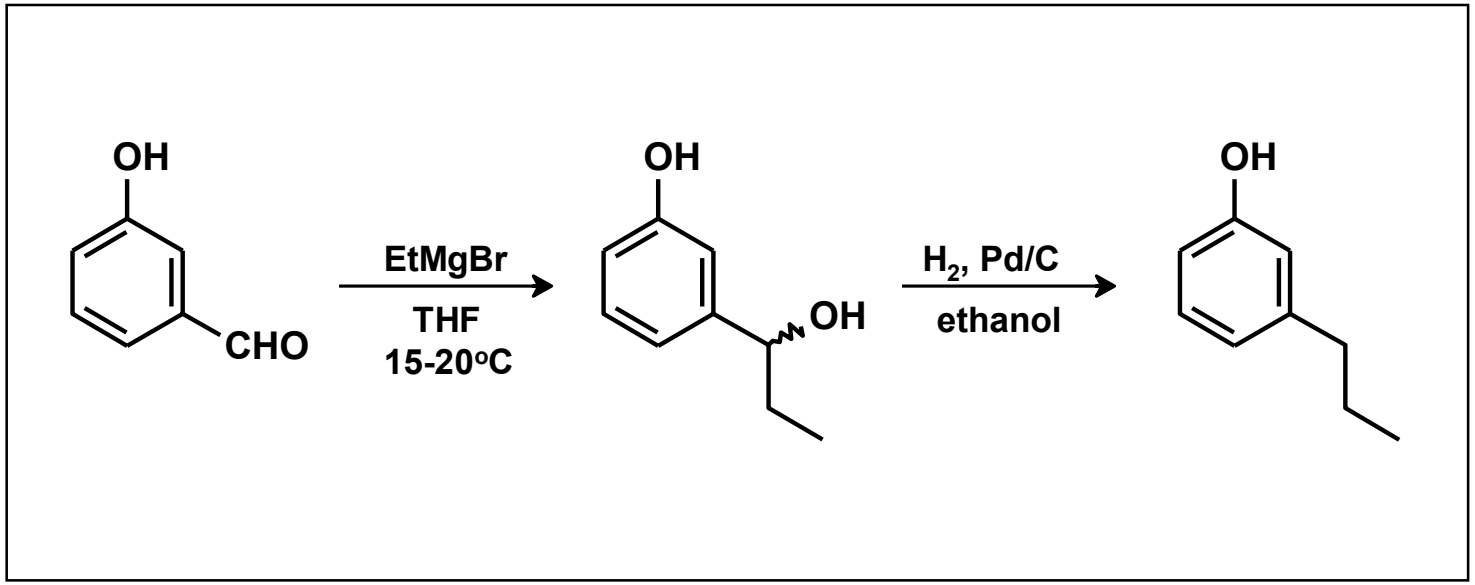


Auto-oxidation of Methyl Linoleate

A Cheap Source of Octenol – Head-Space Analysis

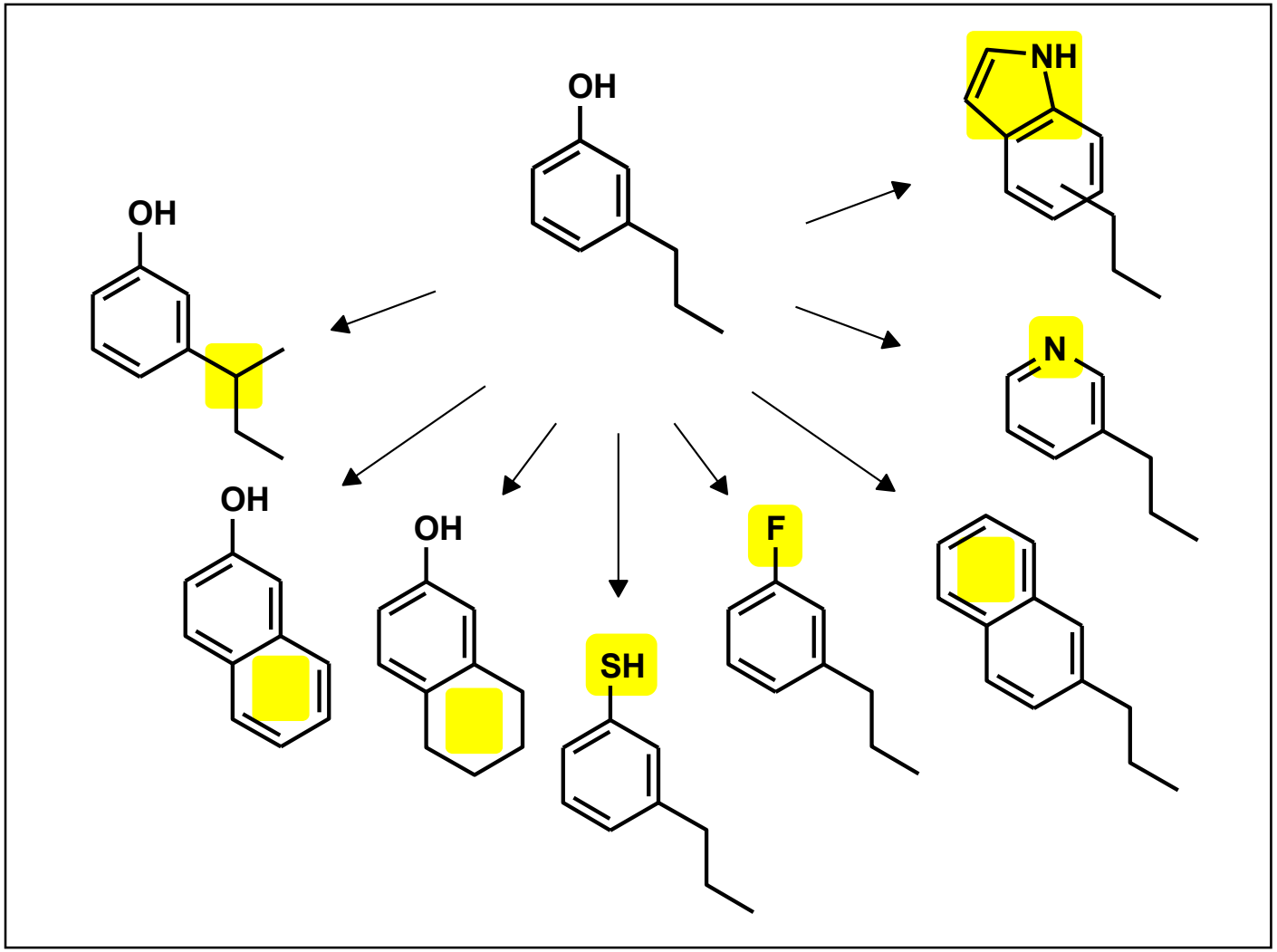


Synthesis of 3-*n*-Propylphenol

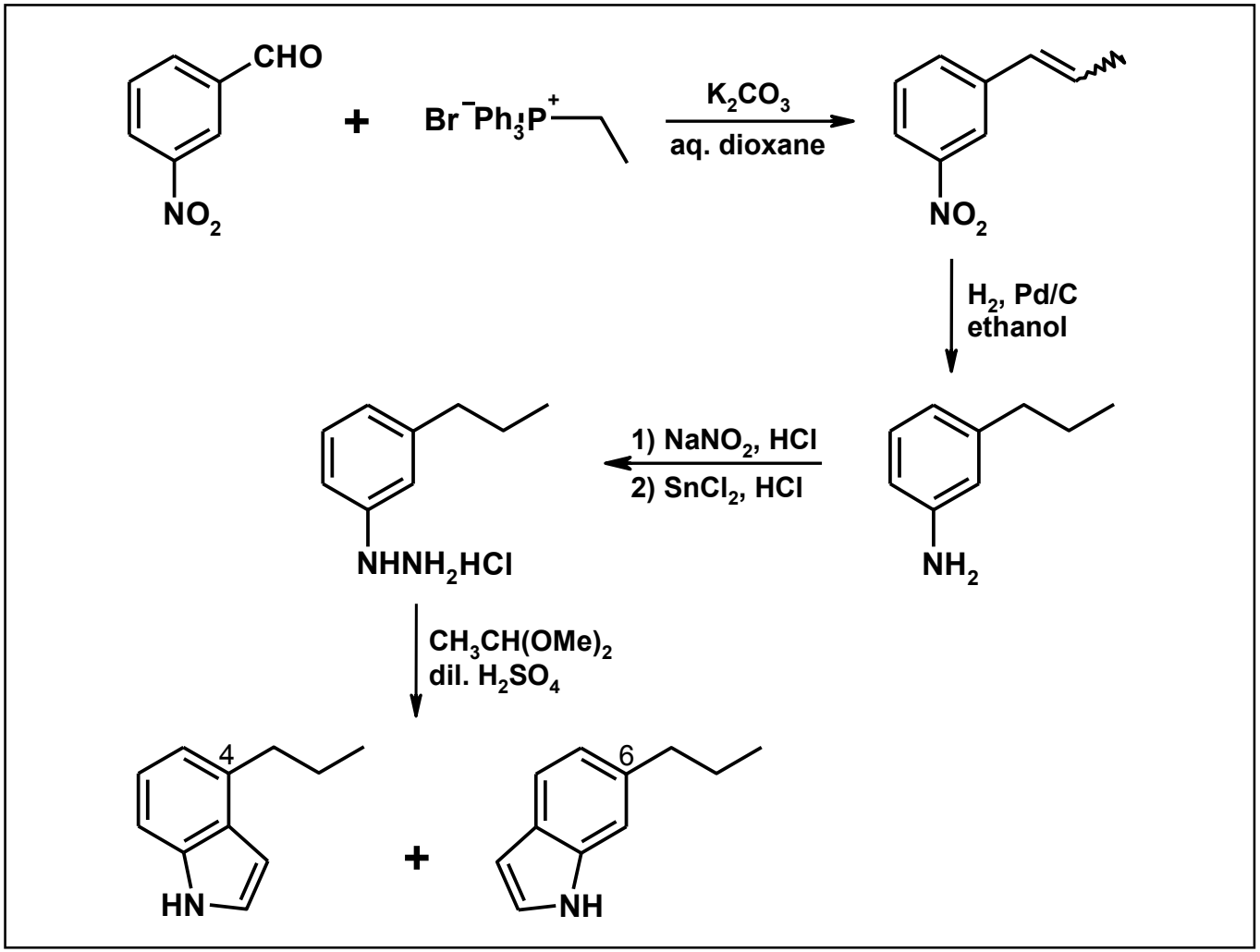


1 kg prepared

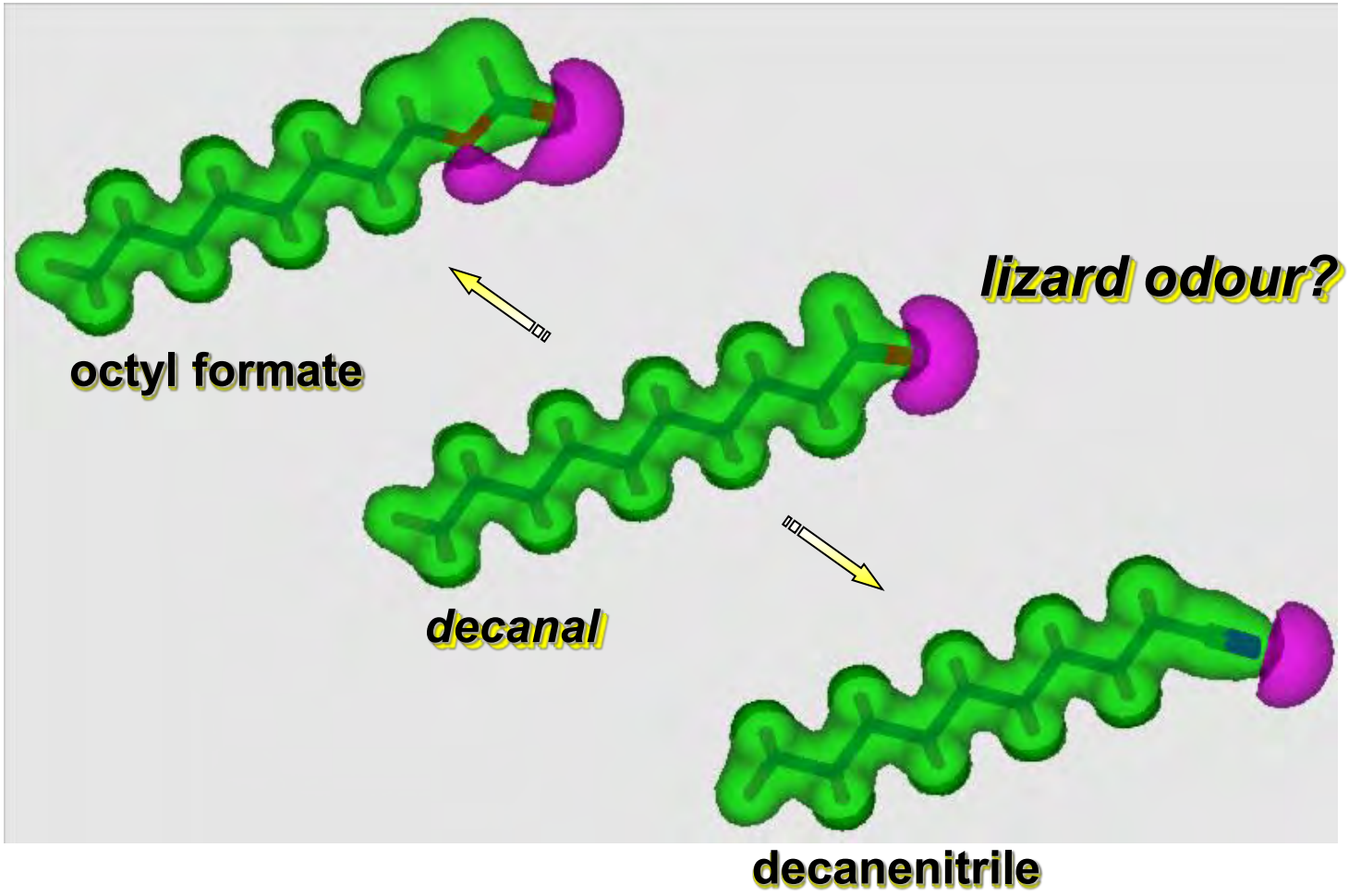
New Analogues of 3-*n*-Propylphenol



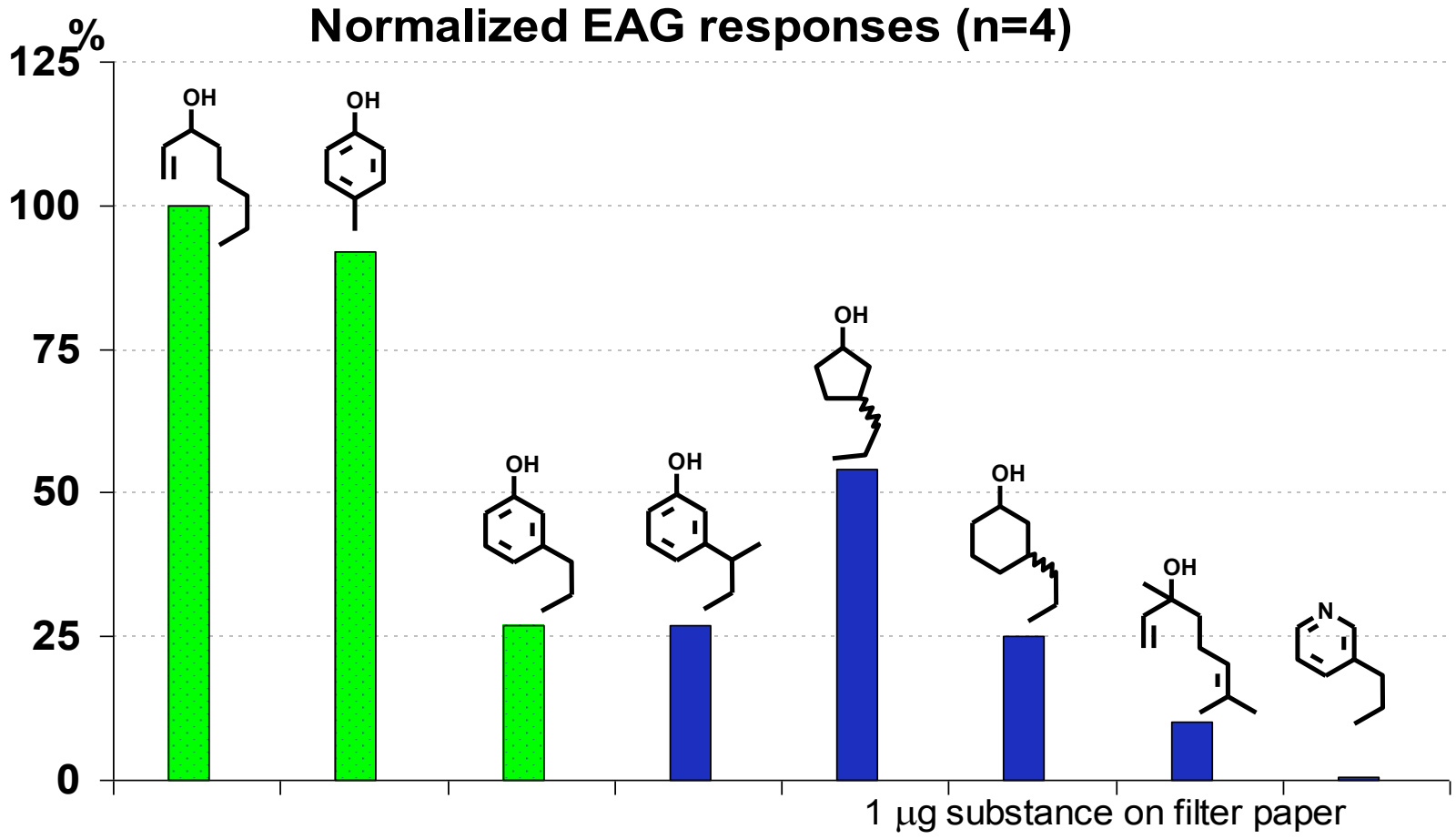
Synthesis of 4- and 6-Propylindole



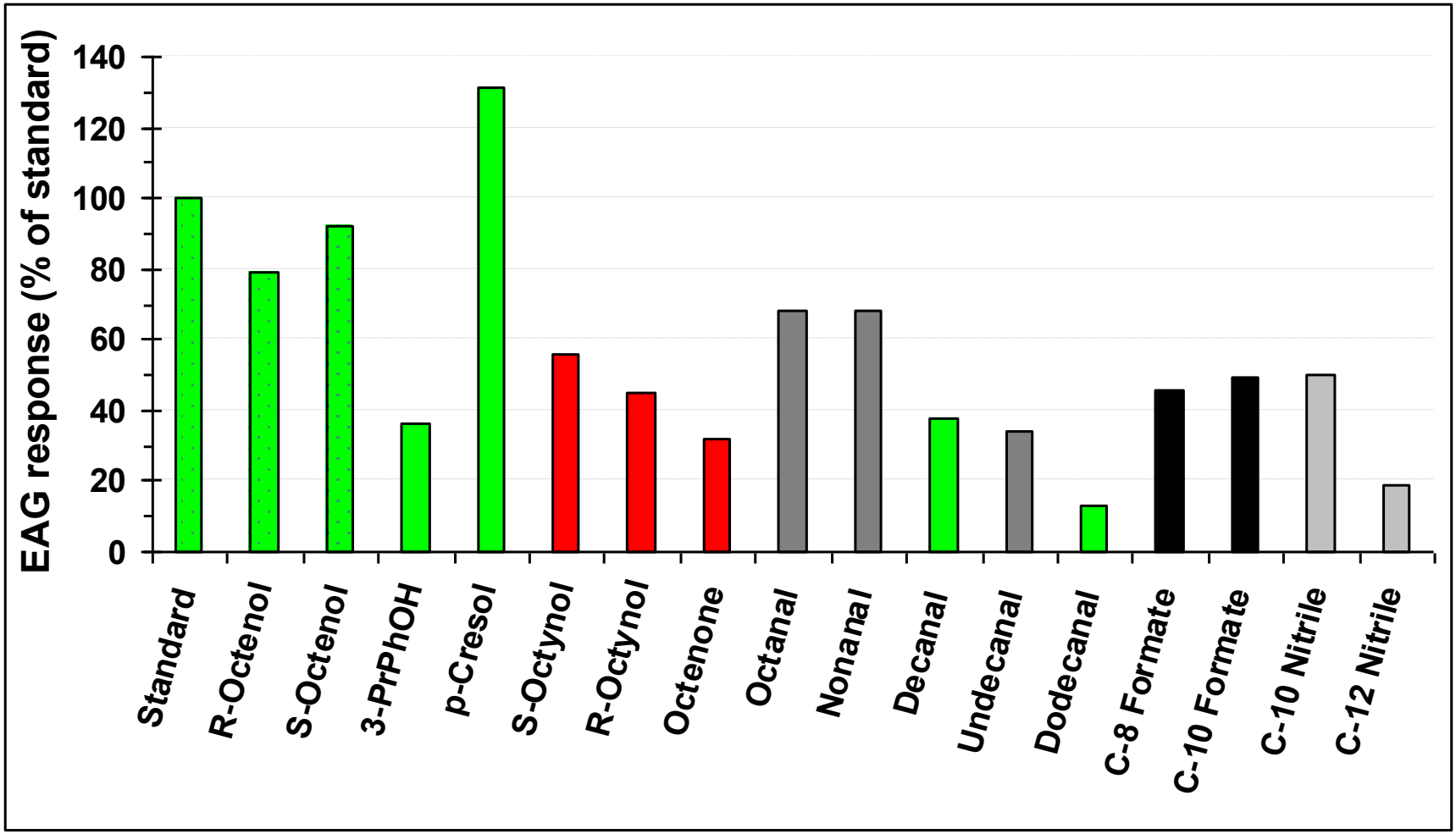
Electrostatic Potential Surfaces of Decanal and Its Analogues



EAG Responses of *Glossina brevipalpis* Analogues of 3-*n*-Propylphenol



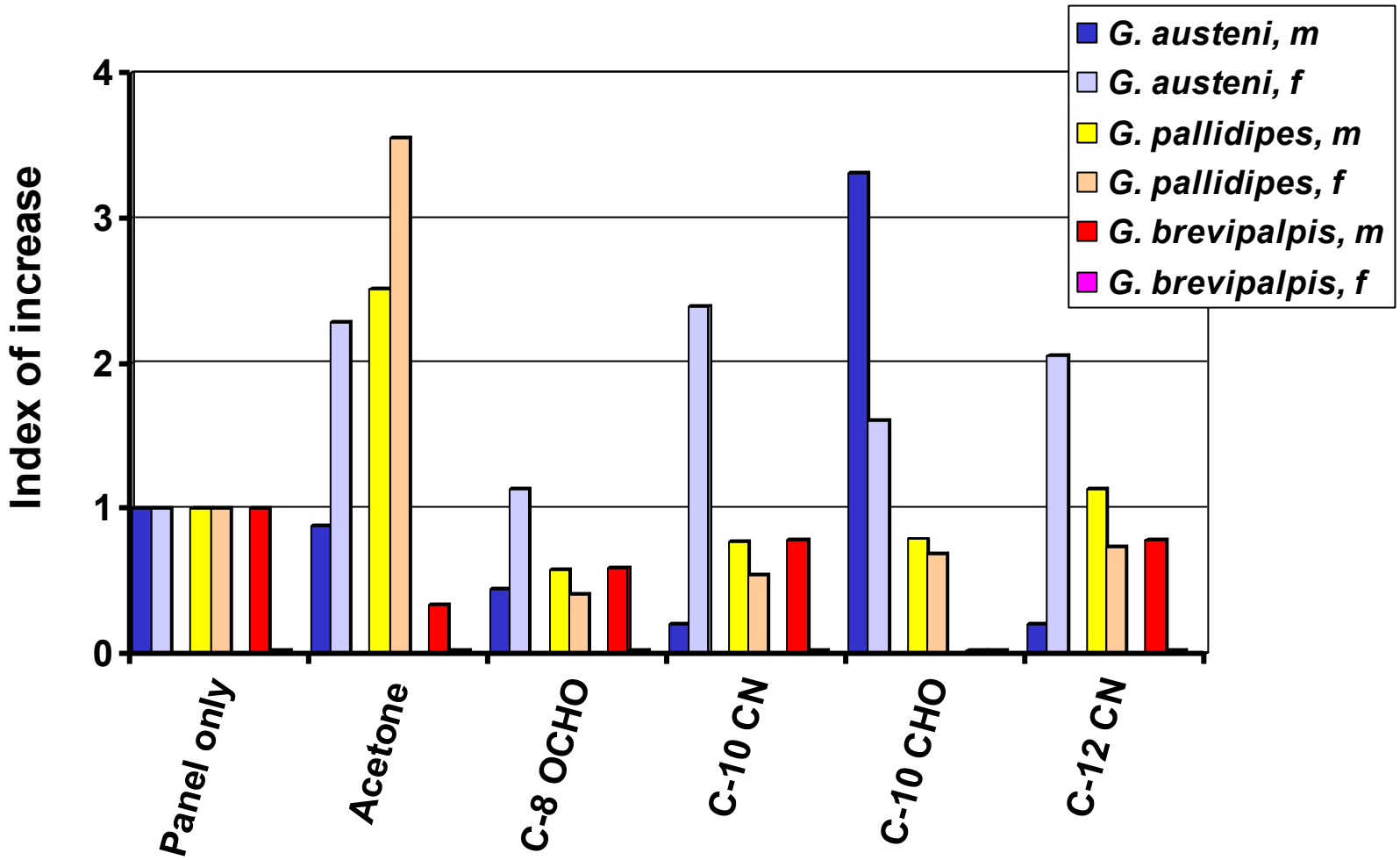
EAG Responses of *Glossina brevipalpis* to Various Compounds



Responses of *G. f. fuscipes* to Odours in Pyramidal Traps, Uganda, 1999

Treatment	Relative catches		
	Males	Females	Total
Control	1.00	1.00	1.00
Decanal	1.20	0.97	1.05
Dodecanal	1.29	1.15	1.20
Octyl formate	1.40	1.55	1.47

Responses to Various Odours with Sticky Panels
Kenya, May 1998



Responses of *G. tachinoides* to Odours in Biconical Traps, Mali, December 1999

Treatment[a]	Relative catch (m+f)[b]
Acetone/octenol	1.00
+ *m*-Cresol	7.00
+ Decanal	3.45
+ Dodecanal	2.54

[a]Acetone/octenol alone or in combination with the odour indicated
[b] Combined numbers of males and females captured.

Responses of *G. swynnertoni* to Odours in S-3 Traps, Tanzania, October 2000

Treatment[a]	Relative catch (m+f)[b]
Control	1.00
8:4:1 + acetone	1.52*
8:4:1 + acetone + C-8 formate	1.66*
8:4:1 + acetone + C-10 formate	1.24
8:4:1 + acetone + decanal	1.80*

[a] *8:4:1* = *p*-cresol : 1-octen-3-ol : 3-*n*-propylphenol = 8:4:1 by weight.
[b] Total number of males and females trapped.

Summary

- **New tsetse kairomones & analogues were**
  - **designed**
  - **synthesised (pilot plant scale)**
  - **bioassayed in the laboratory**
- **Several known & new kairomones were tested alone and in combination in the field**
- **New odour combinations have been found to increase attractivity of traps, *esp.* for**
  - ***G. tachinoides***
  - ***G. swynnertoni***
  - ***G. austeni***

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