



**AAU** Associazione  
Apicoltori  
Lombardi

presenta



UN **AMBIENTE**  
PER L'**APE**

# Il superorganismo alveare e la nutrizione delle caste

Abbazia di Mirasole – Opera (MI)  
Sabato 17 marzo 2019



**Bee|Sources**  
una nuova risorsa  
per la filiera apistica

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# superorganismo

Enciclopedie on line

Crea un ebook con questa voce | Scaricalo ora (0)

Condividi



**superorganismo** In ecologia, gruppo di organismi o di comunità che sembrano avere proprietà, come omeostasi e riproduzione, simili a quelle di un singolo organismo.



“un insieme di singoli individui che insieme posseggono l’organizzazione funzionale che è implicita nella definizione formale di organismo”

Wilson e Sober, 1989



# Il superorganismo



## Caratteristiche secondo Wilson e Sober (1989)

- ⬡ Elevato numero di individui
- ⬡ Sessilità
- ⬡ Cripticità e/o capacità di difesa
- ⬡ Compartimentalizzazione
- ⬡ Omeostasi intraorganismica
- ⬡ Riproduzione per gemmazione
- ⬡ Selezione naturale sull'intera colonia

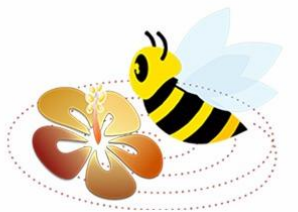
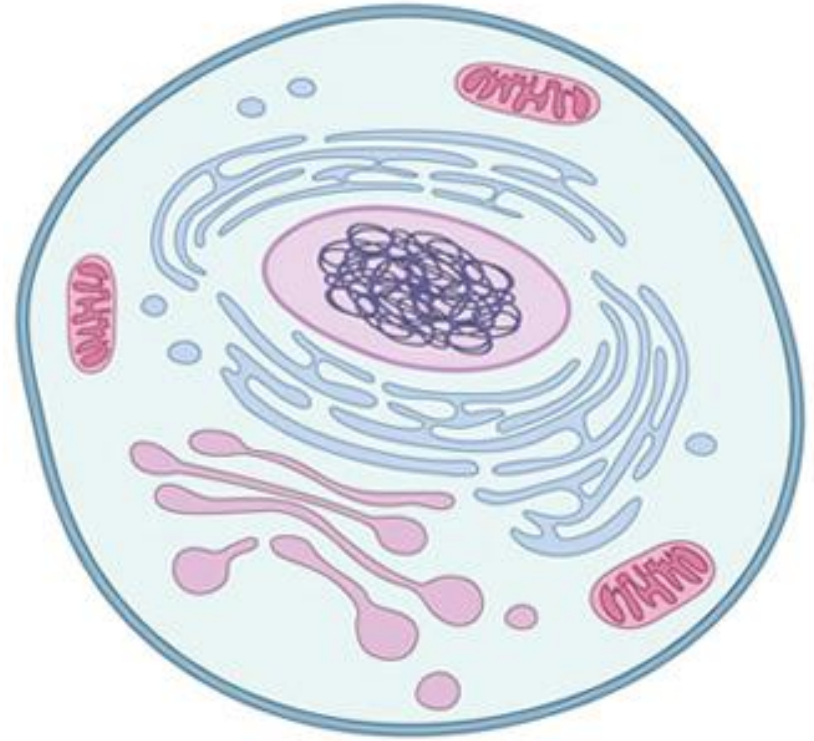


**Elevato numero di individui**



**Riproduzione per gemmazione**

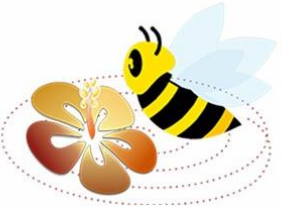
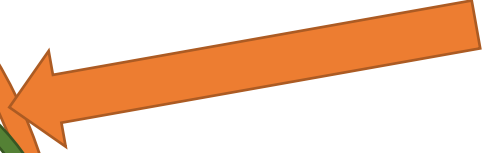
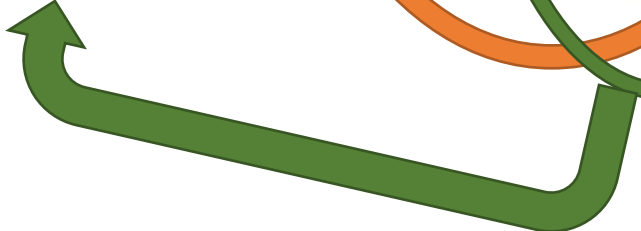
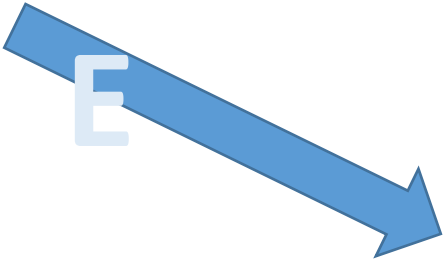




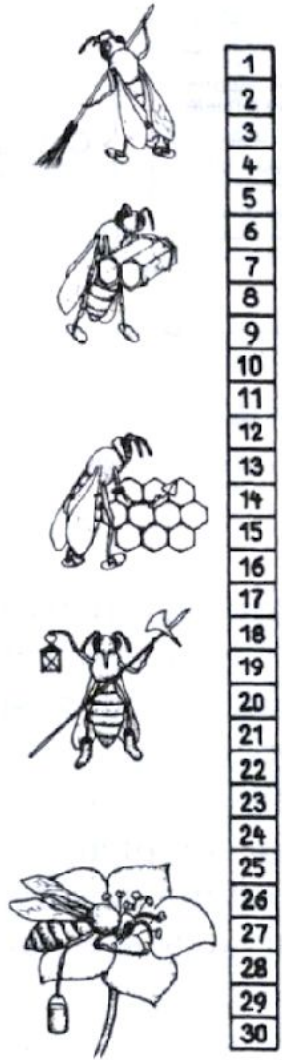
# Tre differenti caste

CELLULE  
SOMATICH

GONADI



# Polietismo







# Api Spazzine e Necrofore



APPARATO  
ESCRETTORE





# Api Nutrici



SECREZIONE  
(GHIANDOLE)





# Api Ceraiole

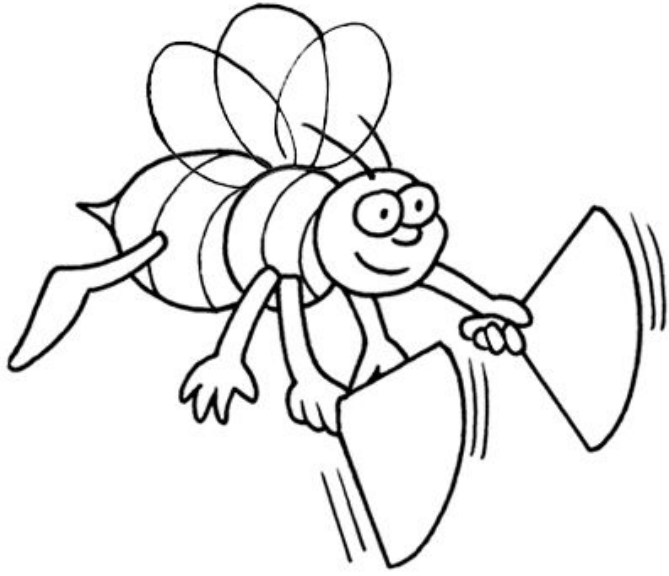


FUNZIONE  
SCHELETRICA

SESSILITA

,





# Api Ventilatrici e bottinatrici di acqua

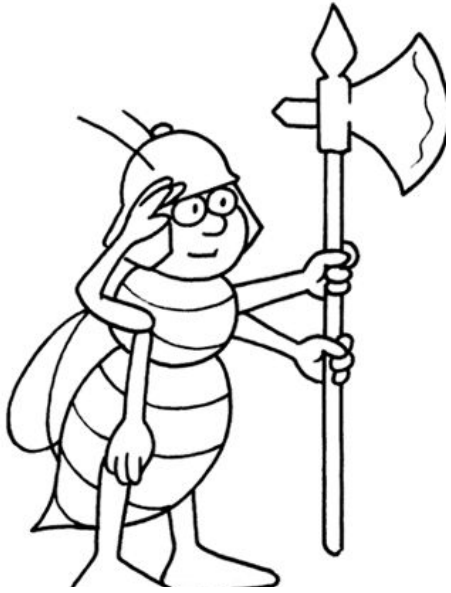


TERMOREGOLAZIONE

OMEOSTAS

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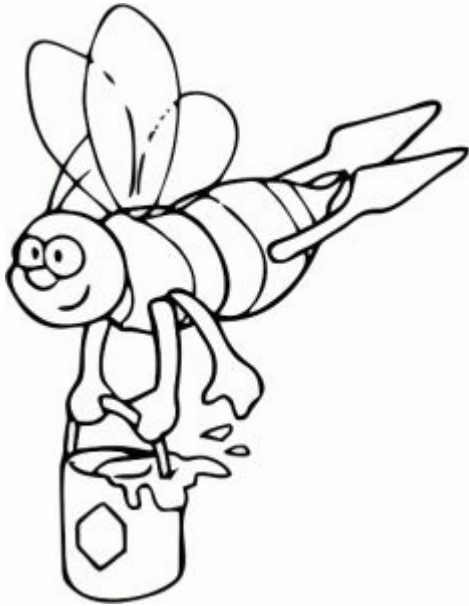


# Api Guardiane e bottinatrici di propoli



SISTEMA  
IMMUNITARIO  
CAPACITA' DI  
DIFESA





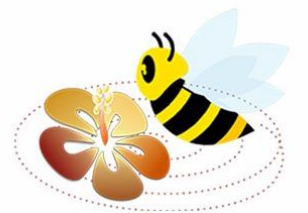
# Api Bottinatrici

NUTRIZIONE

APPARATO  
DIGERENTE



# TROFALLASSI



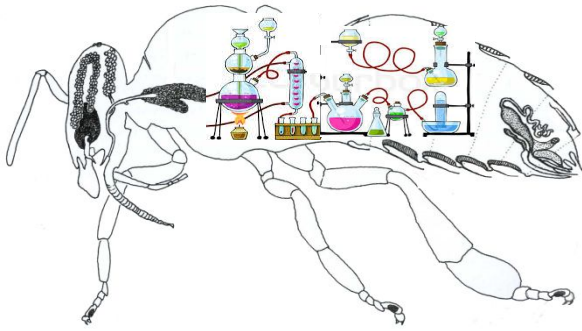


# Covata

MOLTIPLICAZIONE  
E RINNOVAMENTO  
CELLULARE



# I Feromoni



- Regina
- Operaie
- Covata

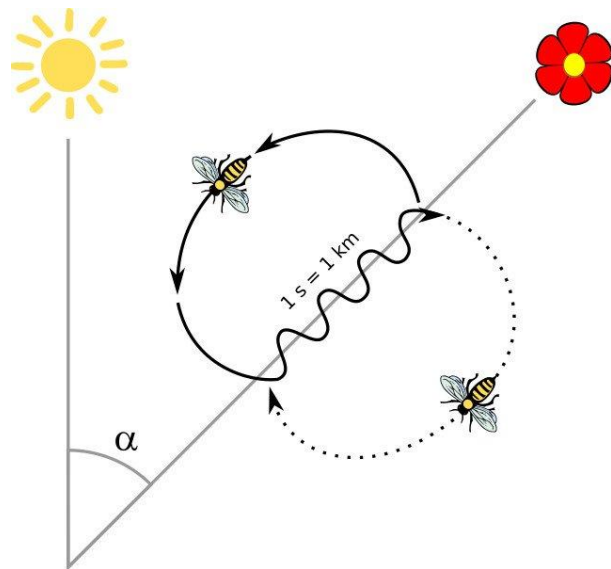
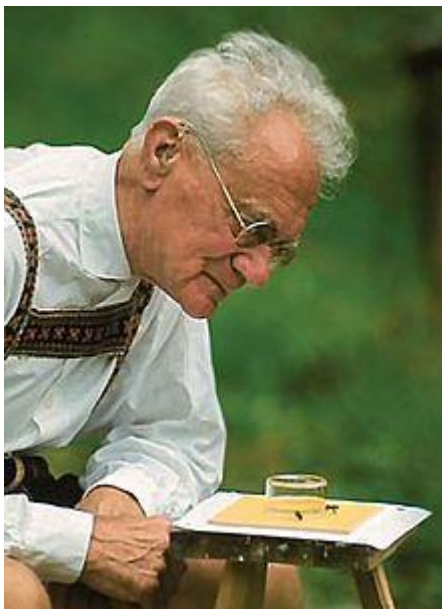
TESSUTO  
NERVOSO







# Le danze delle api

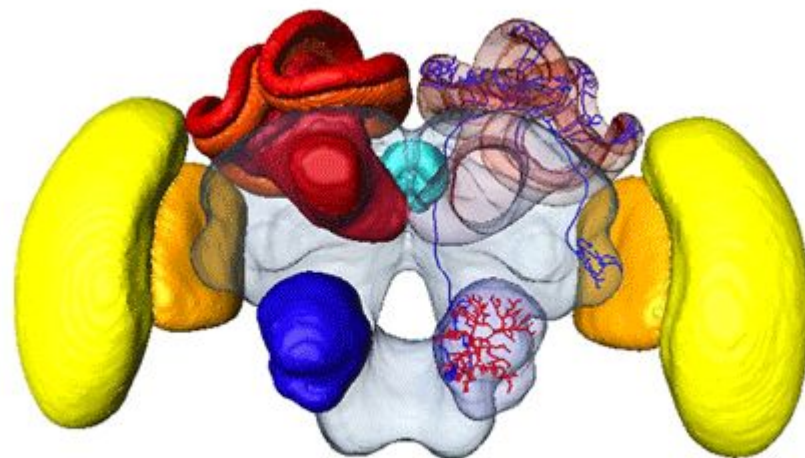
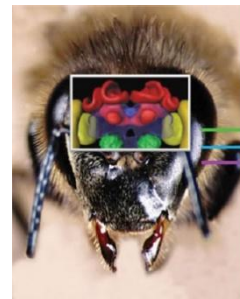
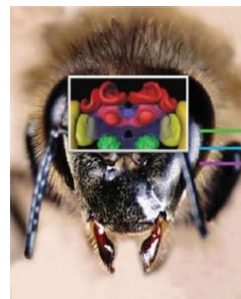
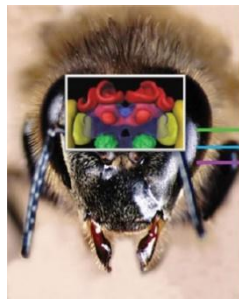
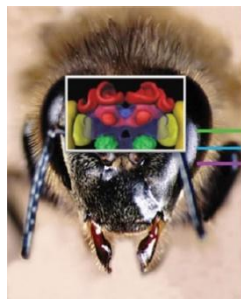
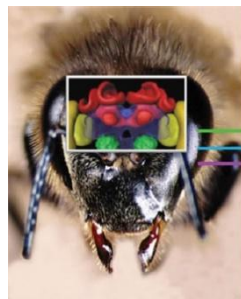
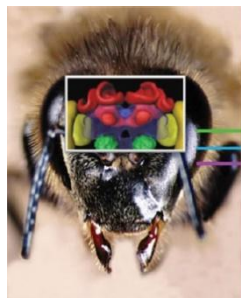
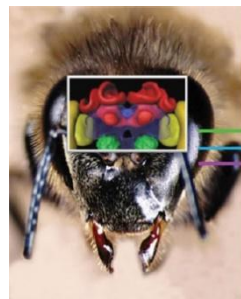
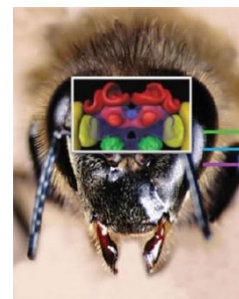
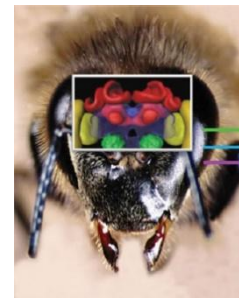
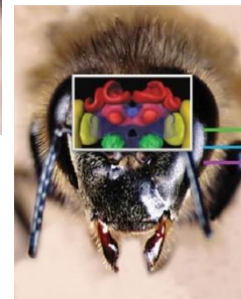
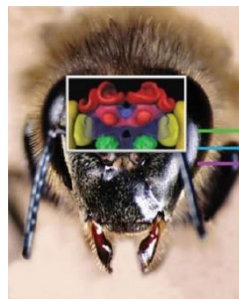
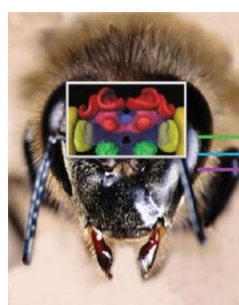
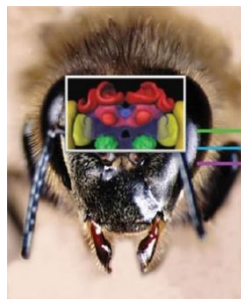
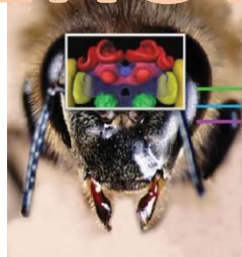


LINGUAGGIO



# FEROMONI

# LINGUAGGIO



# Regina



Pappa reale

# Fuchi



Come le larve (0-7)  
Nettare/Miele (8+)

# Larve



Pappa reale, Pane d'api  
Secrezioni ghiandolari

# Nutrici



Pane  
d'api  
E miele

Nettare/Miele



# Bottinatrici



# Pappa reale



Grassi/Proteine

# Come le larve (0-7)

Grassi/Proteine  
e Carboidrati



# Nettare/Miele (8+)

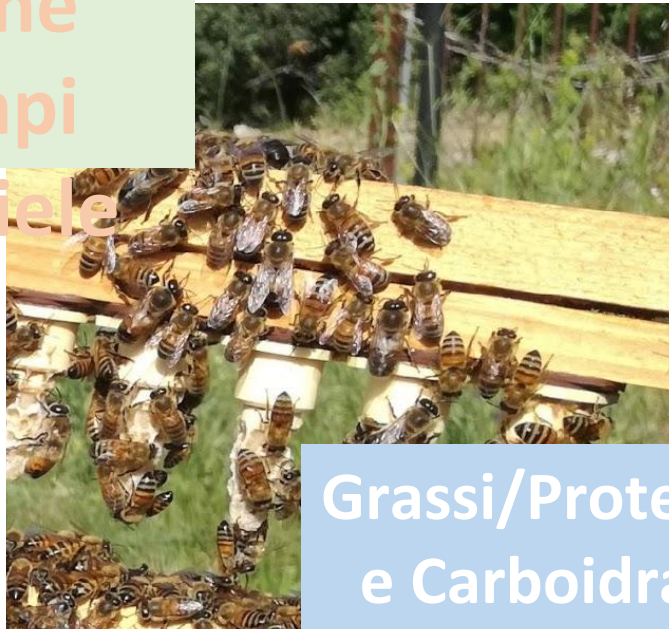
Carboidrati

# Pappa reale, Pane d'api Secrezioni ghiandolari



Grassi/Proteine  
e Carboidrati

# Pane d'api E miele

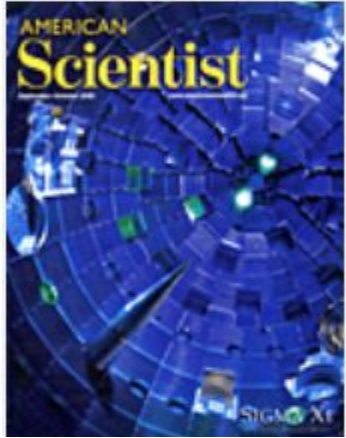


Grassi/Proteine  
e Carboidrati

# Nettare/Miele

Carboidrati (NEAA)

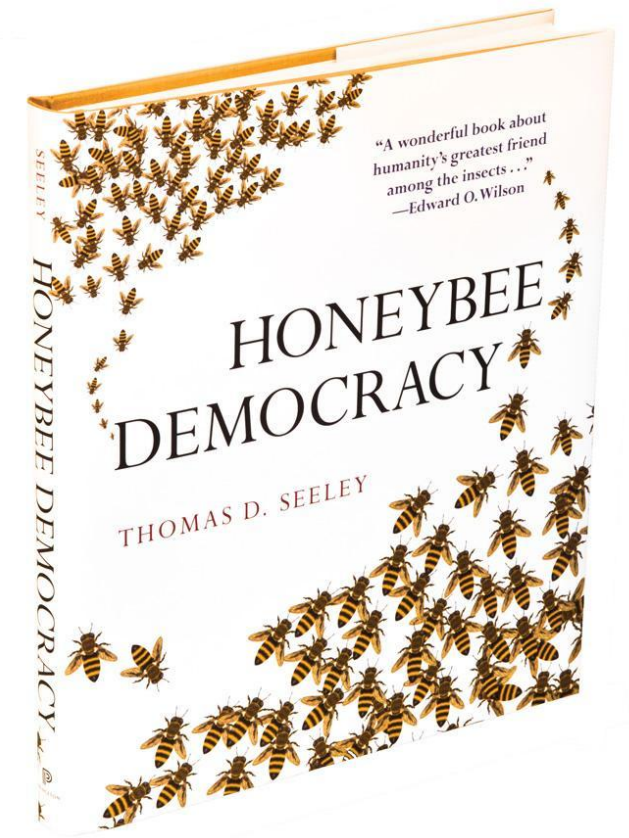




JOURNAL ARTICLE  
**The Honey Bee Colony as a  
Superorganism**

Thomas D. Seeley  
*American Scientist*

Vol. 77, No. 6 (November-December 1989), pp. 546-553





*Annual Review of Entomology*

# Nutritional Physiology and Ecology of Honey Bees

Geraldine A. Wright,<sup>1,\*</sup> Susan W. Nicolson,<sup>2</sup>  
and Sharoni Shafir<sup>3</sup>

