PARA3002 TUTORIAL

BUG QUIZ

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1. Name 5 different modes of transmission for parasites.

- vector-borne
- faecal-oral
- predator-prey
- direct (venereal)

horizontal

- transplacental
- transmammary

vertical

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2. Name 6 different groups of vectors

- diptera
- fleas
- lice
- bugs

insects

- ticks
- mites

arachnids

- copepods

crustacea

- snails

gastropods

arthropods

molluscs

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Vector-borne diseases

VECTORS		PATHOGENS
diptera	yellow fever	viruses
fleas	anthrax	bacteria
lice	malaria	protozoa
bugs	filariasis	nematodes
ticks		cestodes
mites		trematodes
copepods		fungi
snails		

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Vector-borne diseases

VECTORS		PATHOGENS
diptera	myxomatosis	viruses
fleas	plague	bacteria
lice	trypanosomiasis	protozoa
bugs	Dipetalonema	nematodes
ticks	Dipylidium	cestodes
mites		trematodes
copepods		fungi
snails		

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Vector-borne diseases

VECTORS		PATHOGENS
diptera		viruses
fleas		bacteria
lice	typhus	protozoa
bugs		nematodes
ticks		cestodes
mites		trematodes
copepods		fungi
snails		

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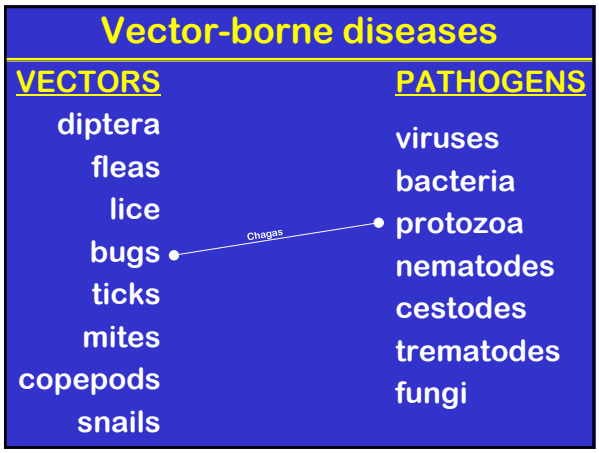
Vector-borne diseases
VECTORS
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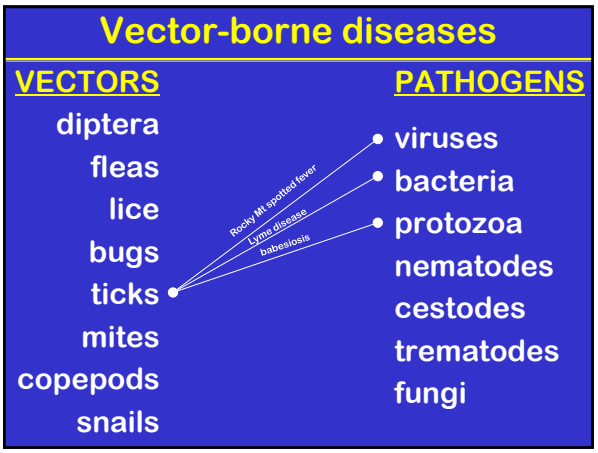
viruses
bacteria
protozoa
nematodes
cestodes
trematodes
fungi
Chagas

7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cestodes
trematodes
fungi
Rocky Mt spotted fever
Lyme disease
babesiosis

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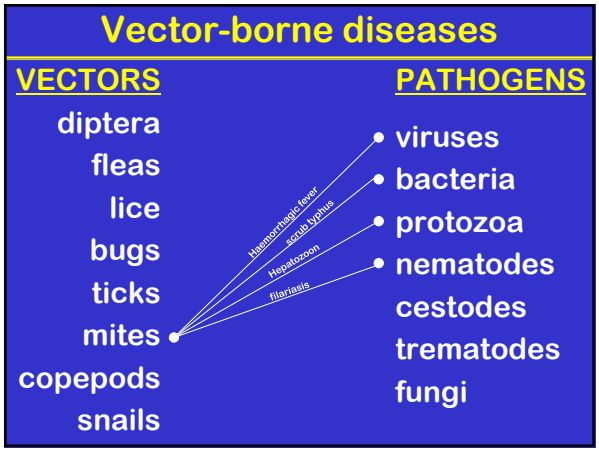
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trematodes
fungi
Haemorrhagic fever
scrub typhus
Hepatozoon
filariasis

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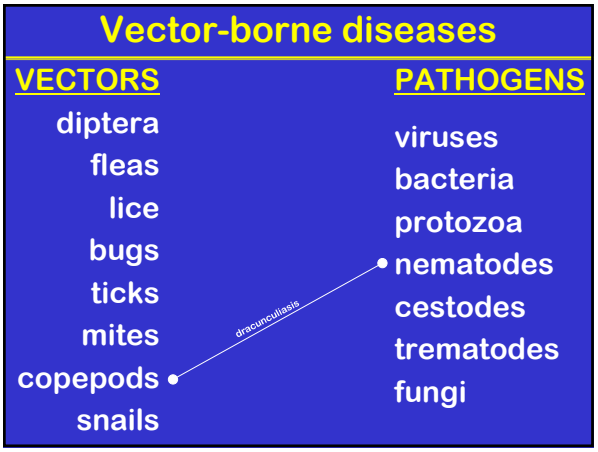
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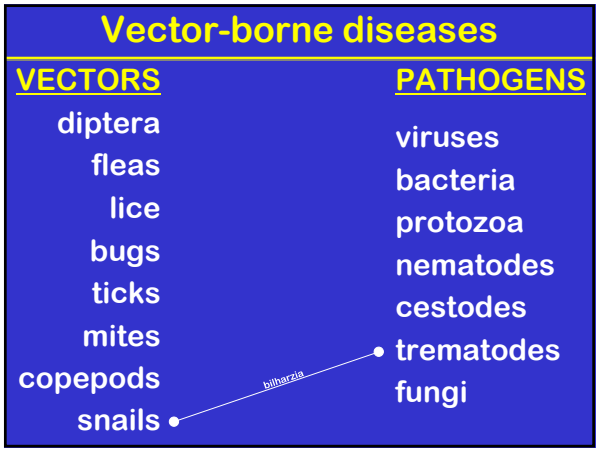
trematodes
fungi
dracunculiasis

10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fungi
bilharzia

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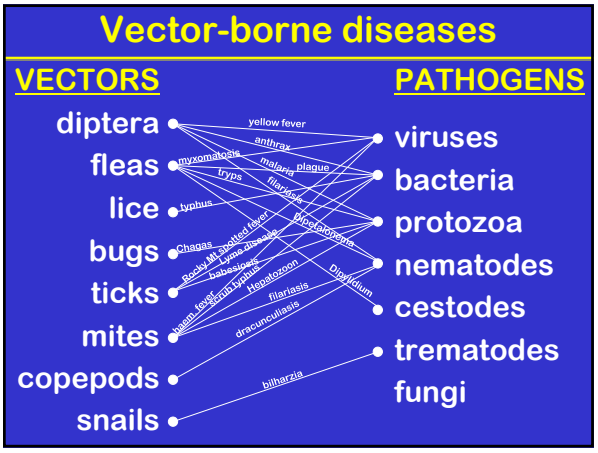
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tryps
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Chagas
Rocky Mt spotted fever
Lyme disease
babesiosis
Hepatozoon
filariasis
dracunculiasis
bilharzia

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3. What type of hosts are the vectors?

- **intermediate** host (asexual dev)
  e.g. snail supports asexual dev of *Schistosoma*
- **definitive** host (sexual dev)
  e.g. mosquito supports sexual dev of *Plasmosium*
- **paratenic** host (no dev, carrier)
  e.g. fish carry dev stages of *Clonorchis*

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4. Can vectors be parasites in their own right?

- **YES !**
  (they need to feed on host to vector disease)

Except for snails
(no vampire snails known)

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5. What effects do they have on hosts?

- **pain** (annoyance, irritation, itching)
- **trauma** (lesions, structural damage)
- **dermatosis** (inflammation, ulceration)
- **allergy** (hypersensitivity)

(focal)

- **anaemia** (blood loss)
- **toxicosis** (poisoning, paralysis)

(systemic)

- **transmit infections** (other pathogens)

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6. How can we reduce vector contact?

Physical/mechanical separation

- **barriers** (screens, nets, clothing)
- **avoidance** (diurnal cycles, education)
- **quarantine** (diagnosis, isolation)
- **habitat alteration** (standing water, burning..)
- **repellants** (plants, chemicals)

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7. Can we make hosts more resistant to vectors?

Yes ! Selective breeding programs

- **at least for animals**
  (e.g. tick resistant *Bos indicus* cattle)
- **determine heritability**
  (make sure resistance is positively correlated with good production parameters)

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8. Is vaccination an option?

Qualified yes !

? **Anti-toxin** immuno-therapy
(e.g. anti-holocyclotoxin in dogs)

☑ **Vaccination** immuno-prophylaxis
(e.g. tick gut antigens)

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9. How can we reduce vector populations?

Three basic strategies:

1. Kill them!
   - (chemical control) poisons
   - (physical control) traps, removal..
   - (bio-control) predators/parasitoids/pathogens
2. Reduce habitat available
   - (drain swamps, clear land...)
3. Reduce reproduction
   - (sterile male release)
   - (*Wohlbachia* sterilization, feminization, killing)

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10. What are the targets of chemicals?

insecticides/acaricides target:

- neurotransmitters (Na channels, Cl channels, AchE)
- cuticle (growth regulators)
- ecdysis (juvenile hormones)

molluscicides (snail baits):

- metal salts
- metaldehydes
- AchE inhibitors

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In general, drugs target:

- DNA synthesis
- protein synthesis
- energy metabolism
- membrane function
- microtubule function
- neurotransmission

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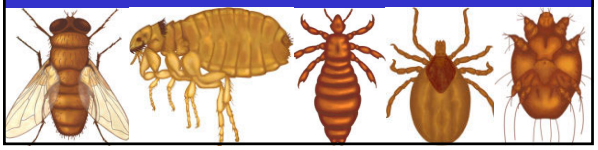
DO
NOT
GET
BITTEN!



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