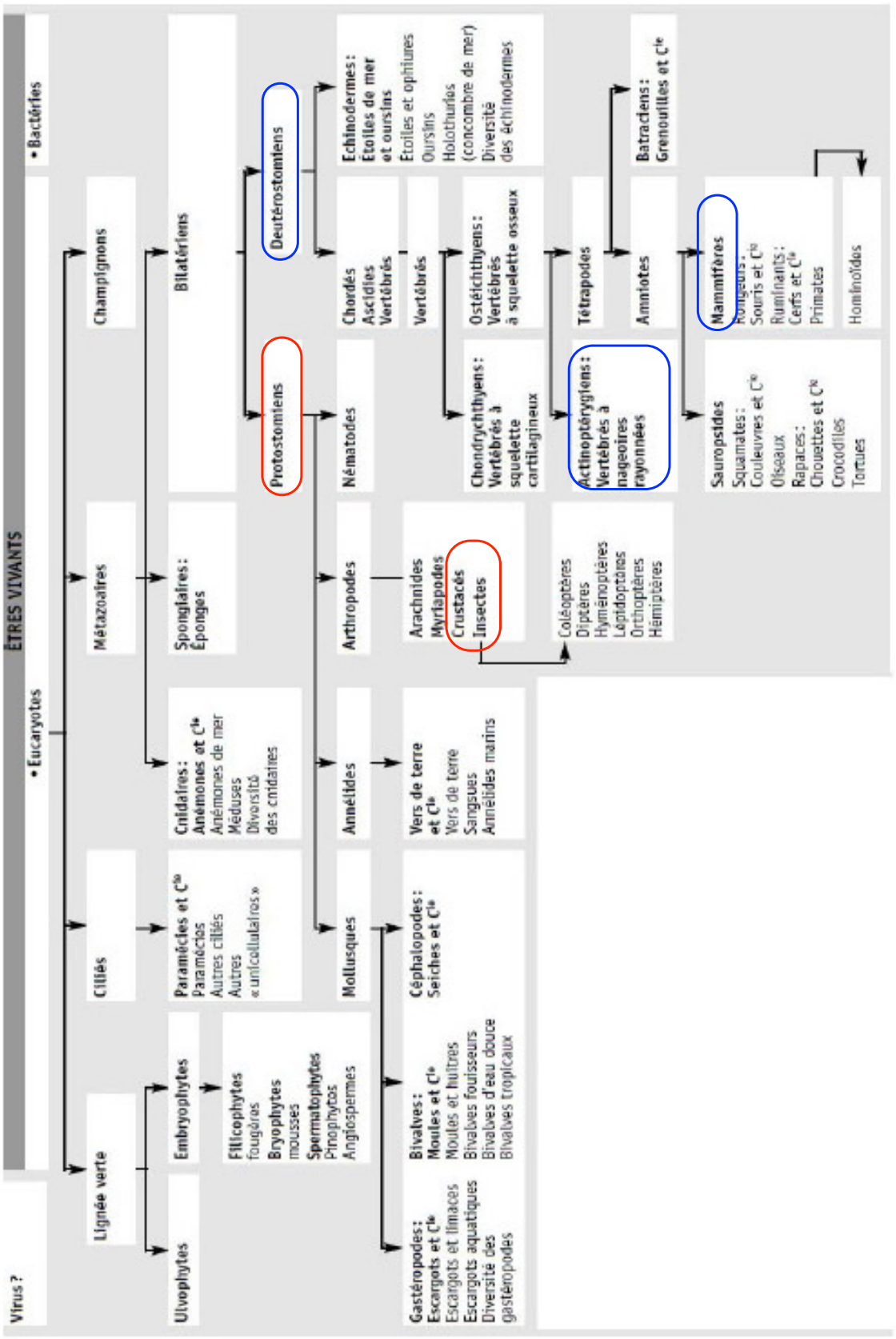
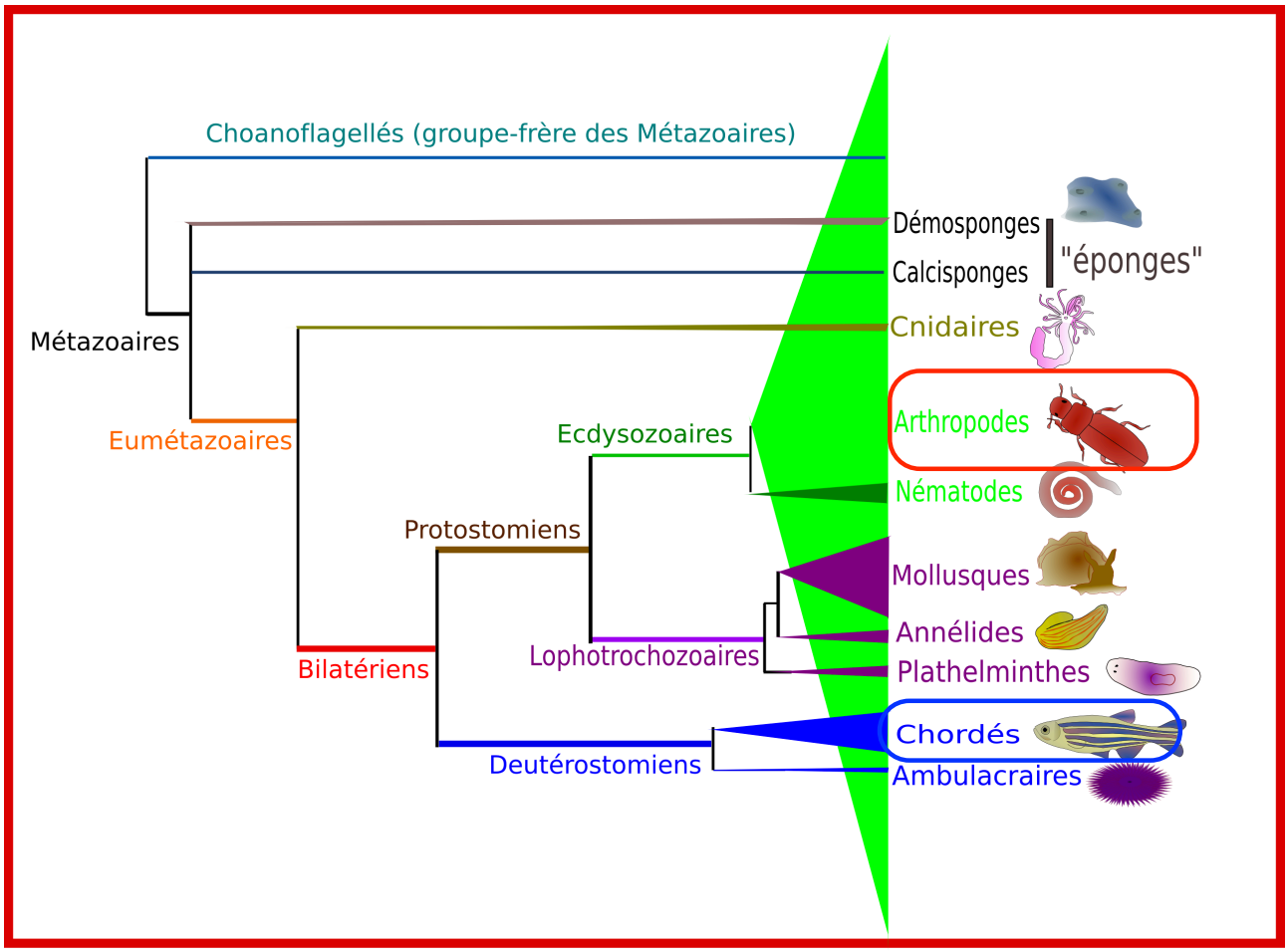
Figure 1 : position des arthropodes et vertébrés dans l'arbre phylogénétique



Classification des métazoaires

(in http://acces.ens-lyon.fr/)



Les grandes fonctions assurées par les arthropodes et les vertébrés
LA NUTRITION

Figure 2 : les appareils digestifs

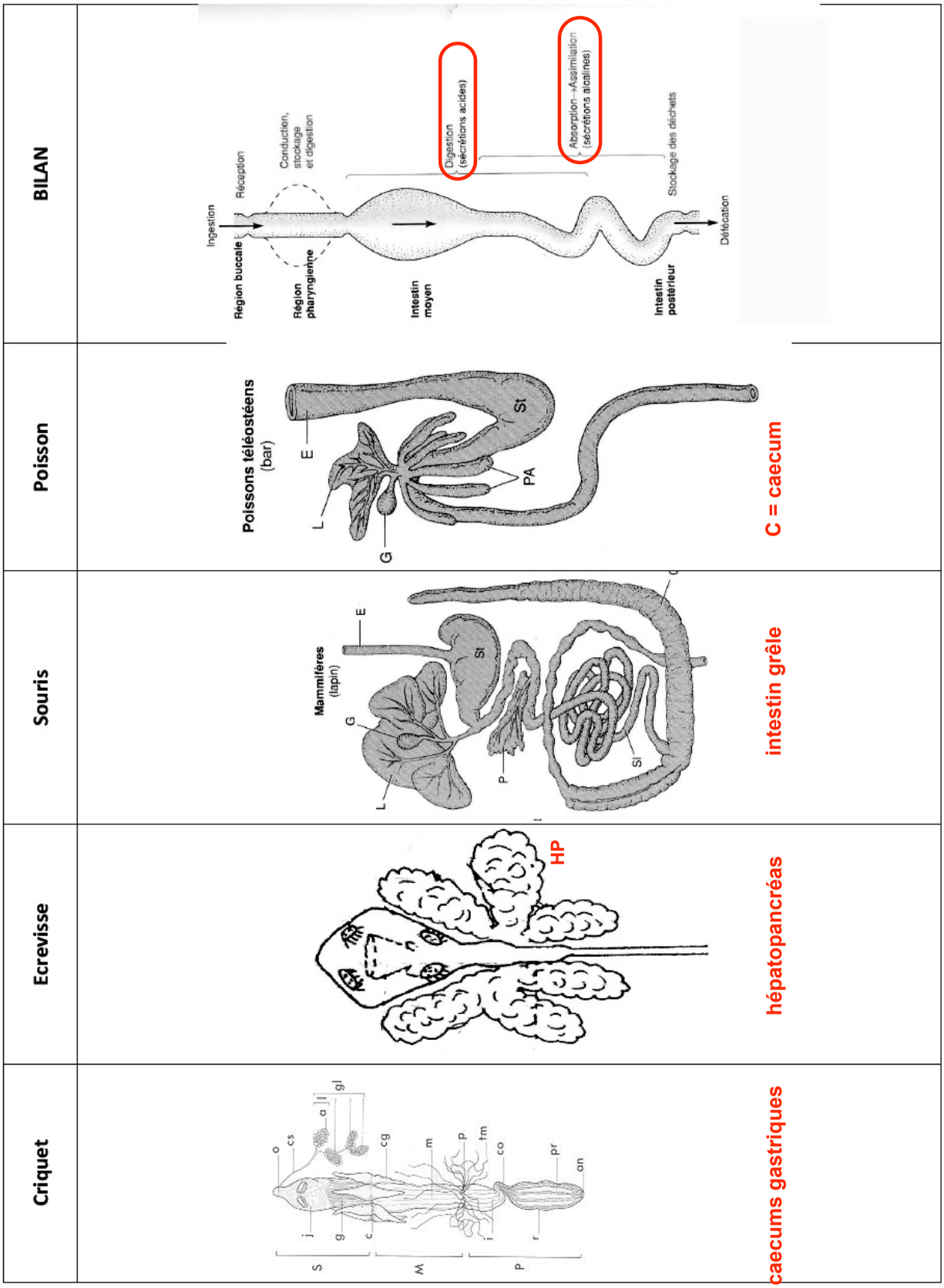


Figure 3 : les appareils respiratoires

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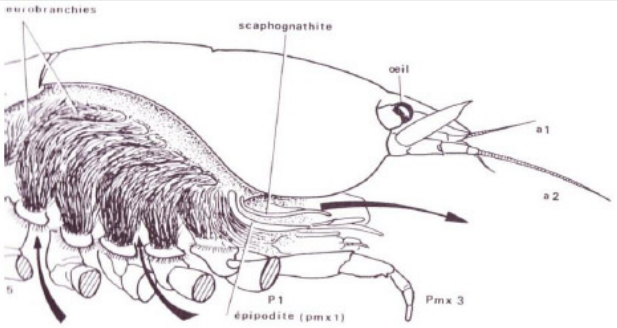
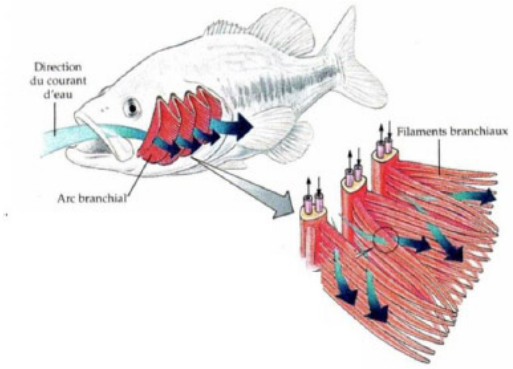
<tr><th>Ecrevisse</th><th>poisson</th></tr>
<tr><td> 
</td><td> 
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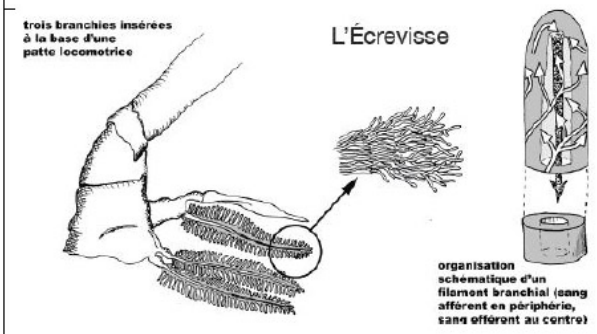
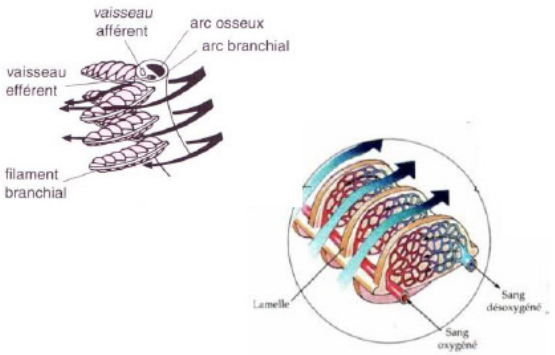
<tr><td> 
</td><td> 
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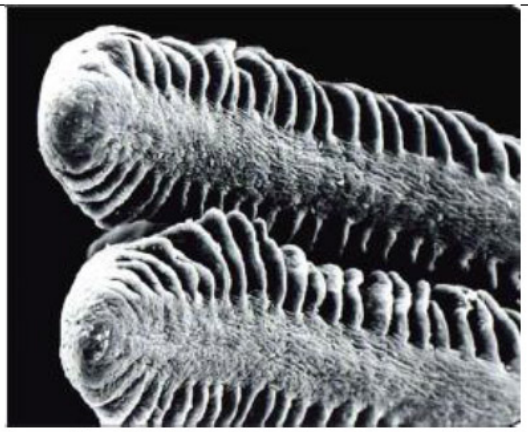
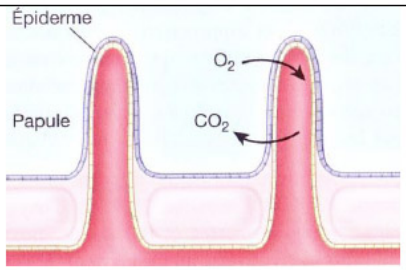
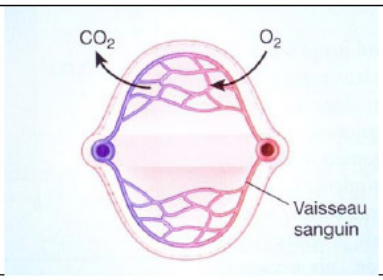
Filament branchial de Homard</td><td> 
Lame et lamelles branchiales d'un poisson téléostéen (MEB)</td></tr>
<tr><td> 
</td><td> 
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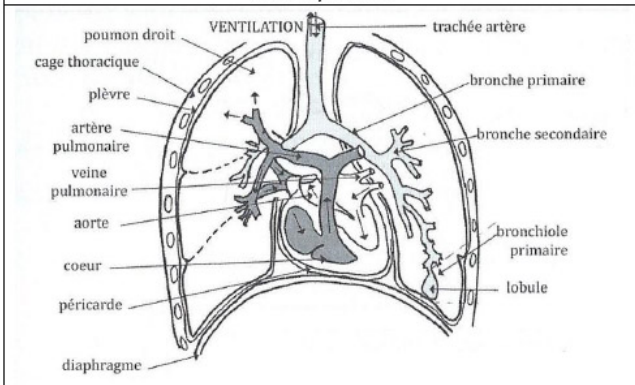
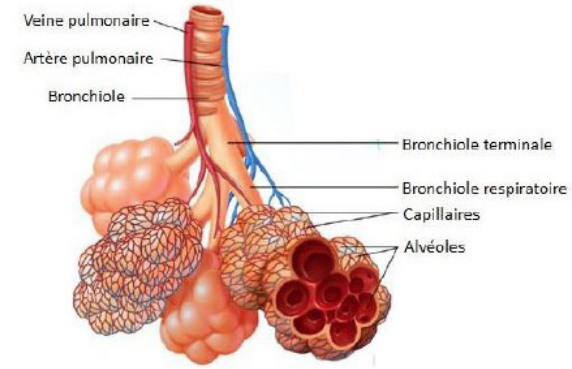
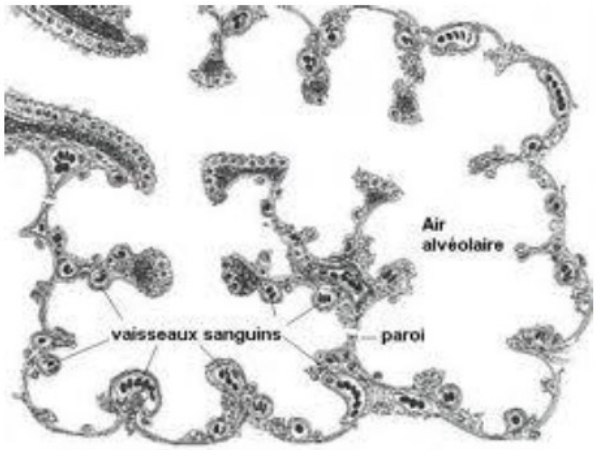
Milieu aérien

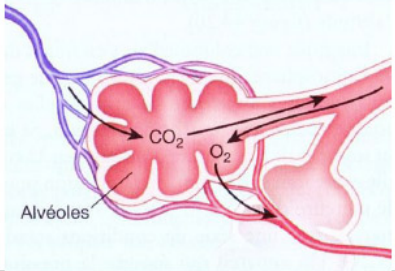
Souris / Vache



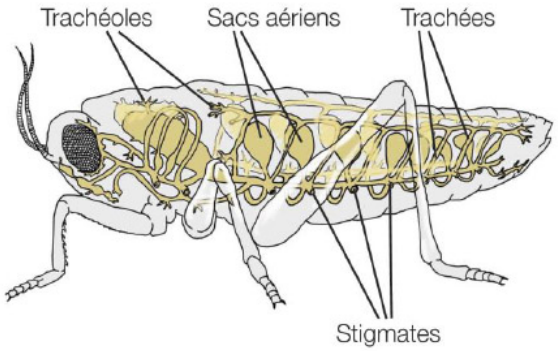


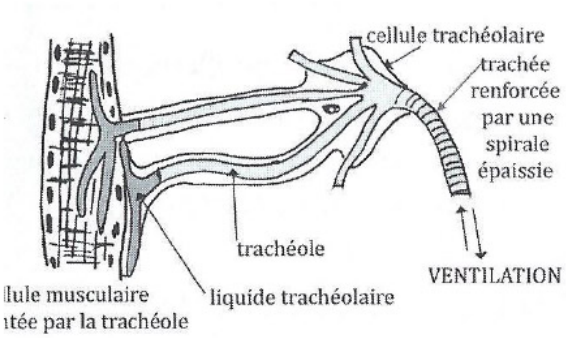


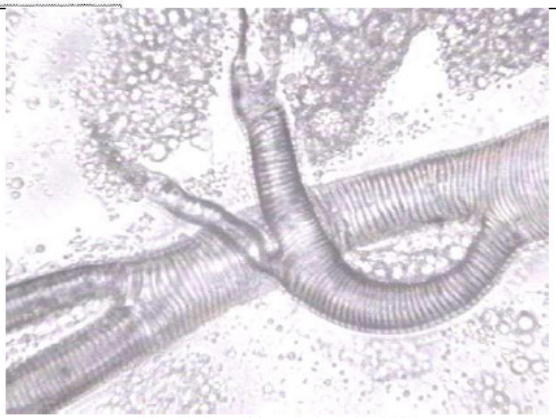
Alvéole pulmonaire (MET)



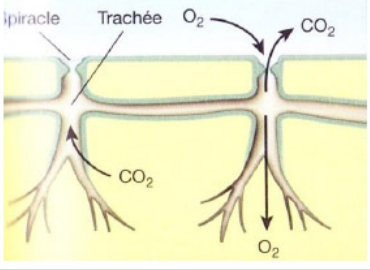
Criquet







Trachée et trachéole (MO)



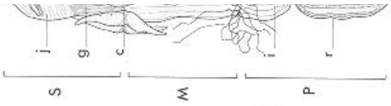


Figure 4 : bilan sur les modalités de la respiration

	EAU	AIR	Rapport EAU/AIR
Concentration O_2 (L par L)	0,007	0,209	~ 1 : 30
Densité ($kg.L^{-1}$)	1,000	0,0013	~ 800 : 1
Viscosité (cP)	1	0,02	50 : 1
Chaleur spécifique ($cal.L^{-1}.°C^{-1}$)	1 000	0,31	~ 3 000 : 1
Conductivité thermique ($cal.s^{-1}.°C^{-1}$)	0,0014	0,000 057	~ 25 : 1
Coefficient de diffusion D_{O_2} ($cm^2.s^{-1}$)	0,000 025 0,000 018	0,198 0,155	~ 1 : 8 000 ~ 1 : 9 000
Constante de diffusion ($cm^2.atm^{-1}.min^{-1}$)	34×10^{-6} 850×10^{-6}	11 9,4	~ 1 : 300 000 ~ 1 : 11 000
Litres de milieu par litre O_2	143	4,8	~ 30 : 1
Kilogramme de milieu par litre O_2	143	0,0062	~ 23 000 : 1

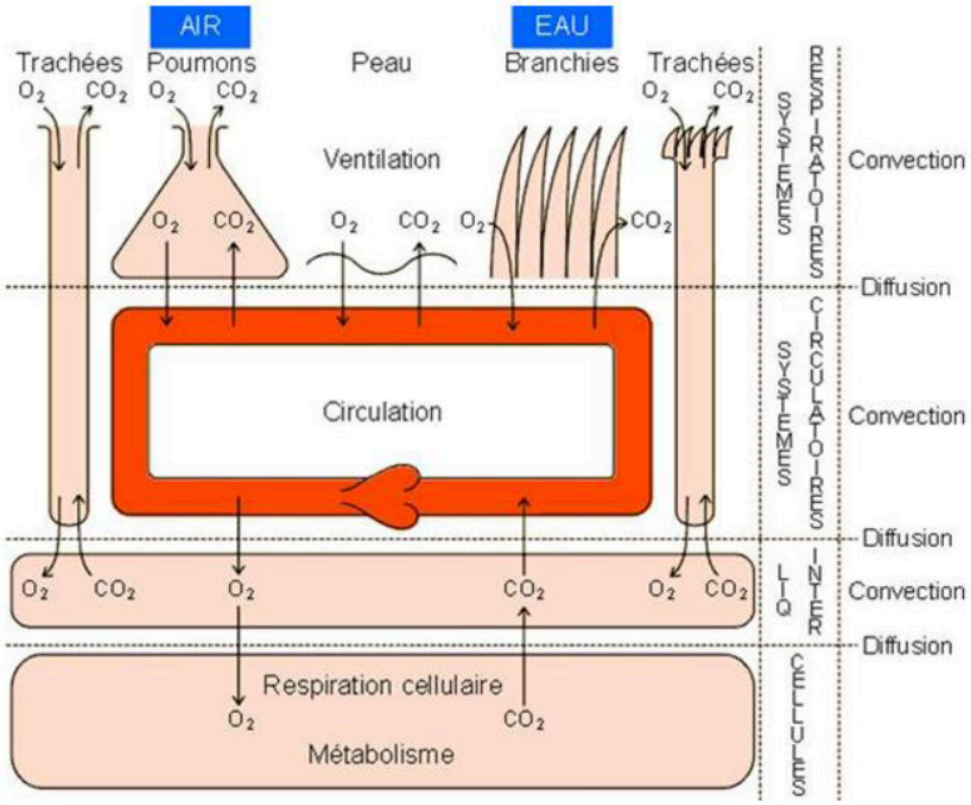


Figure 5 : les appareils circulatoires

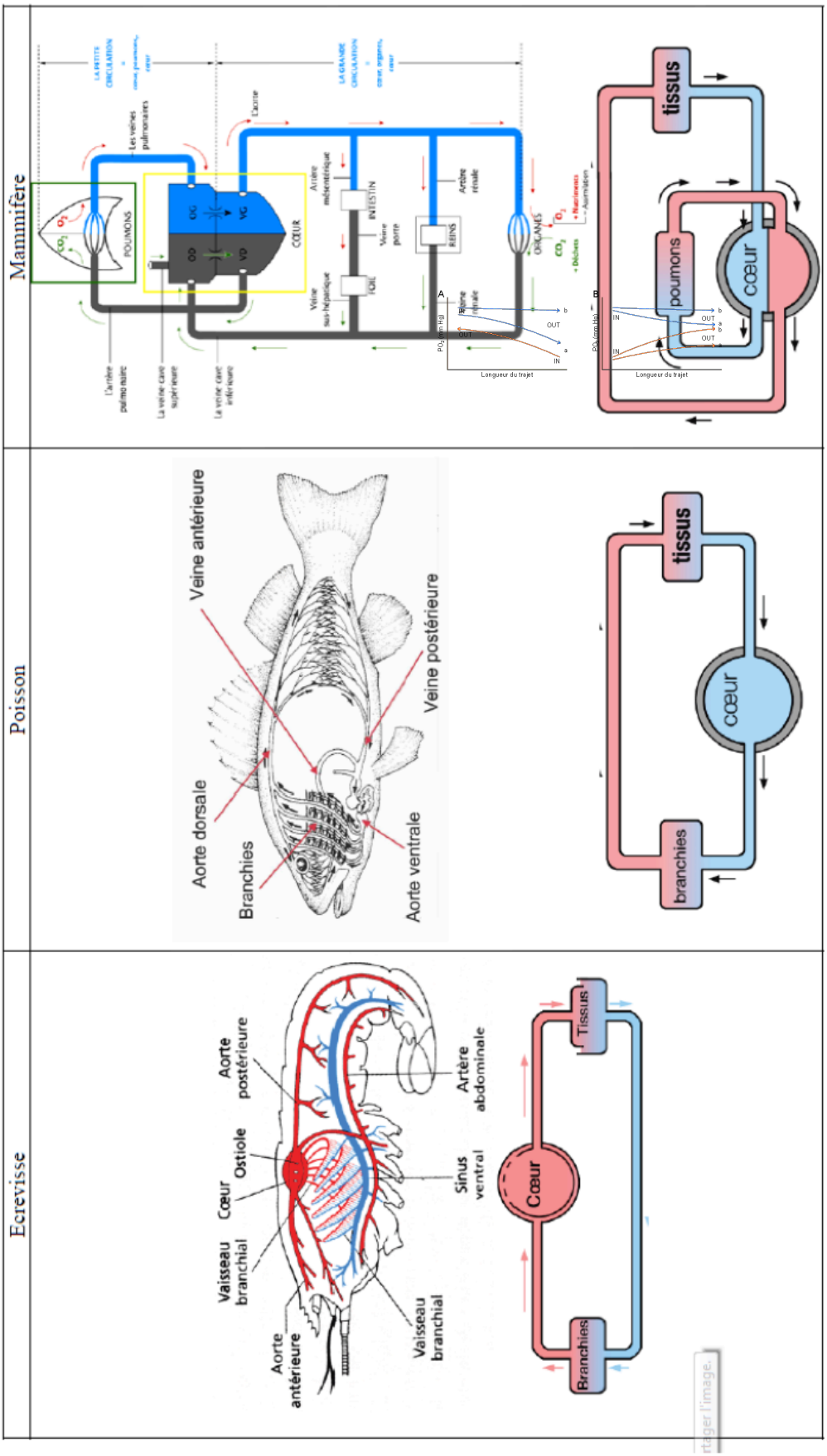
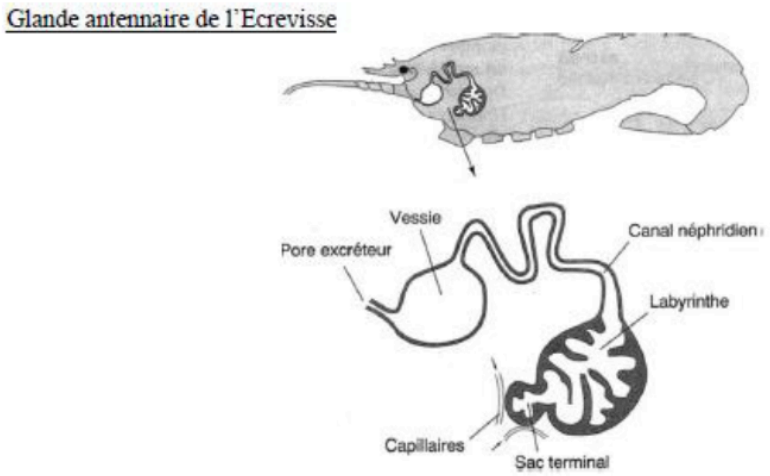
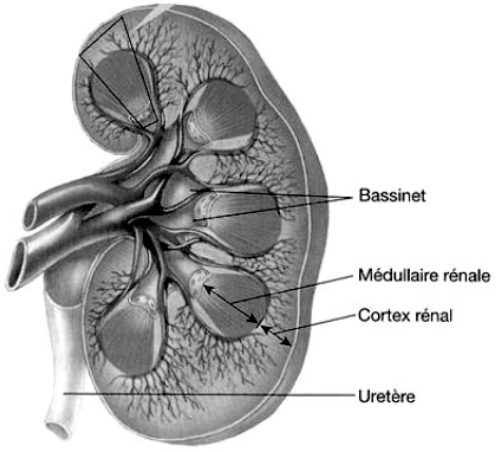
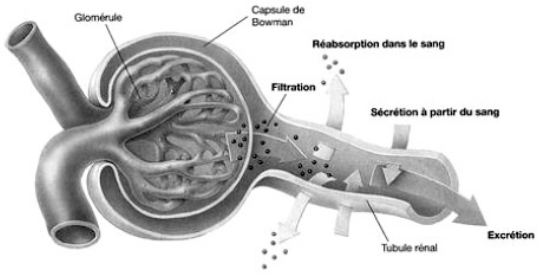


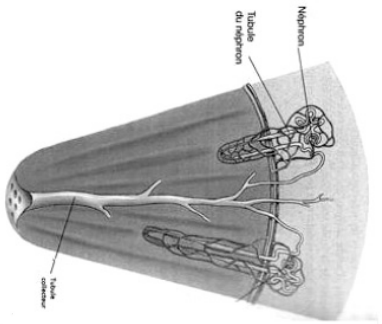
Figure 6a : les appareils excréteurs



Le rein des mammifères : voir cours sur la Vache







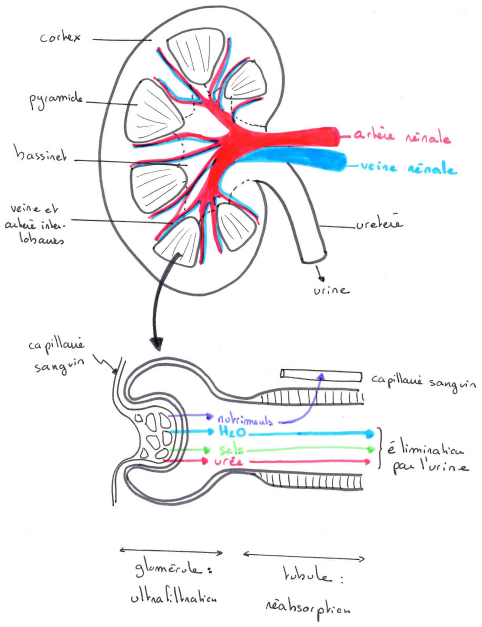
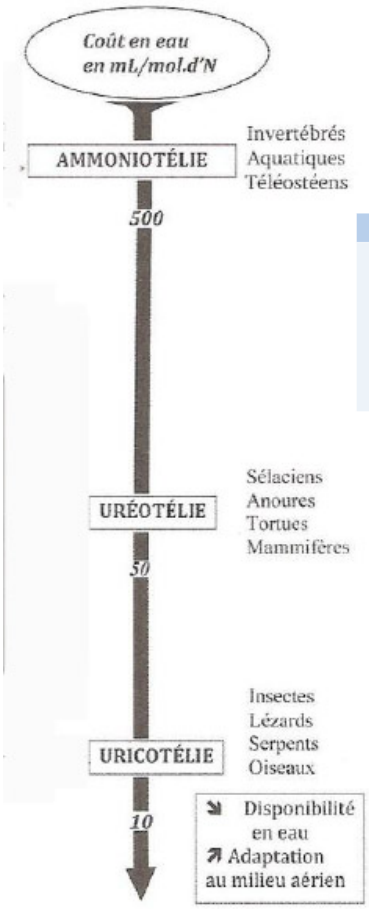


Figure 6b : les voies d'élimination des déchets azotés



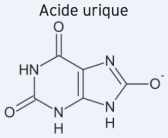
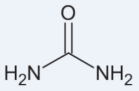
Écrevisse	Criquet	Téléostéens	Souris
Ammoniac NH_3 Solubilité : 52,4 mM	Acide urique  Solubilité : 0,0015 mM	Ammoniac NH_3 Solubilité : 52,4 mM	Urée  Solubilité : 39,8 mM

Figure 7: l'équilibre hydrominéral des organismes

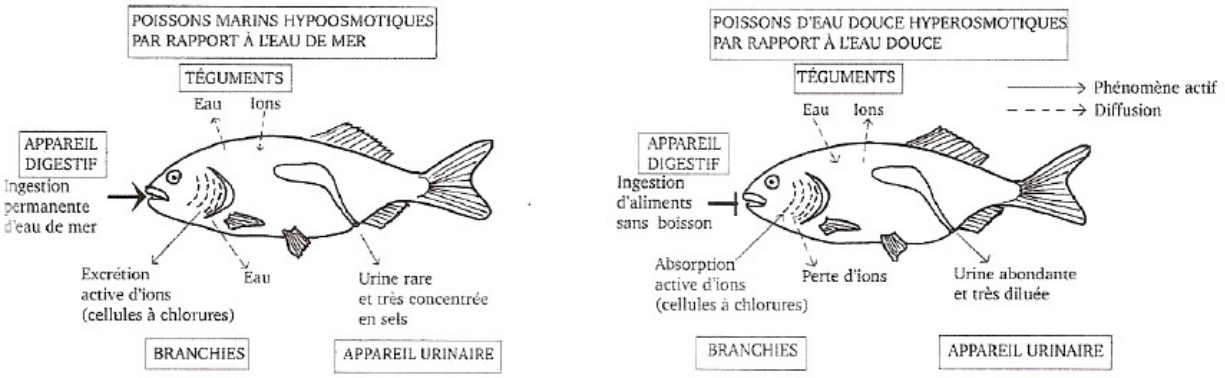
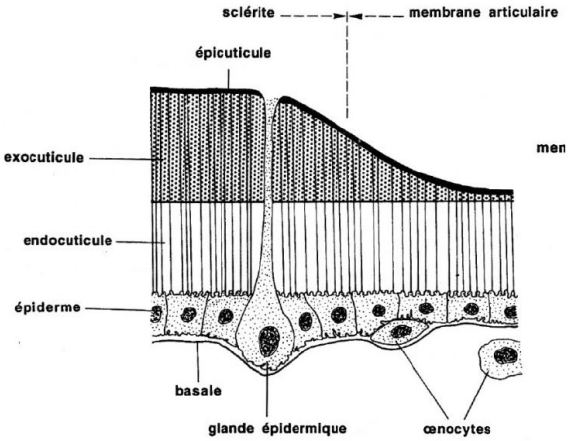
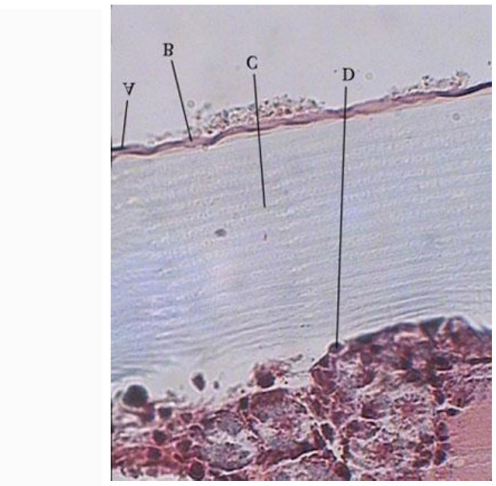


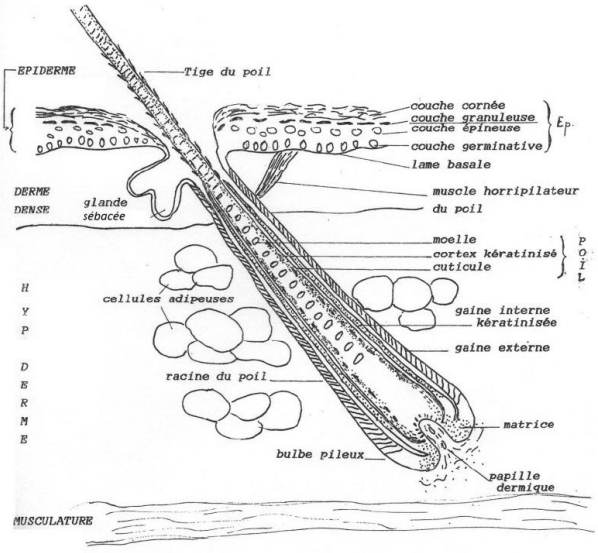
Figure 11 : les téguments

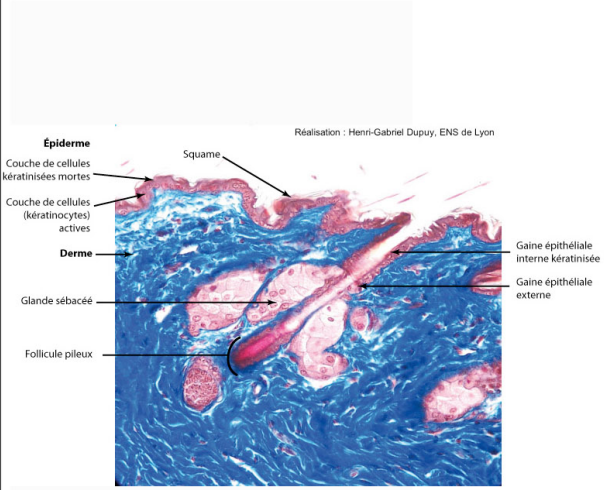
Arthropodes



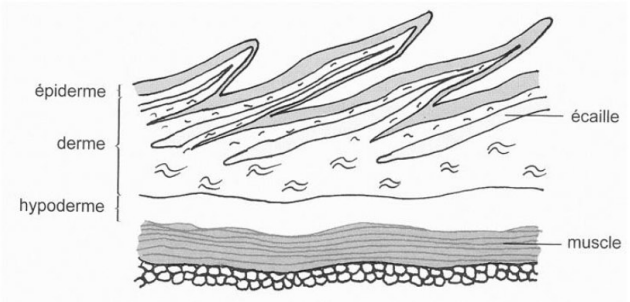


Mammifères





Poissons téléostéens



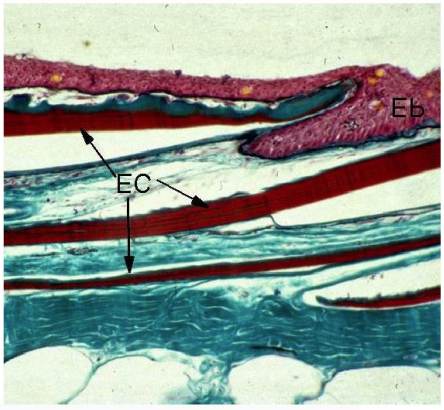


Figure 12 : les récepteurs sensoriels de la peau des mammifères

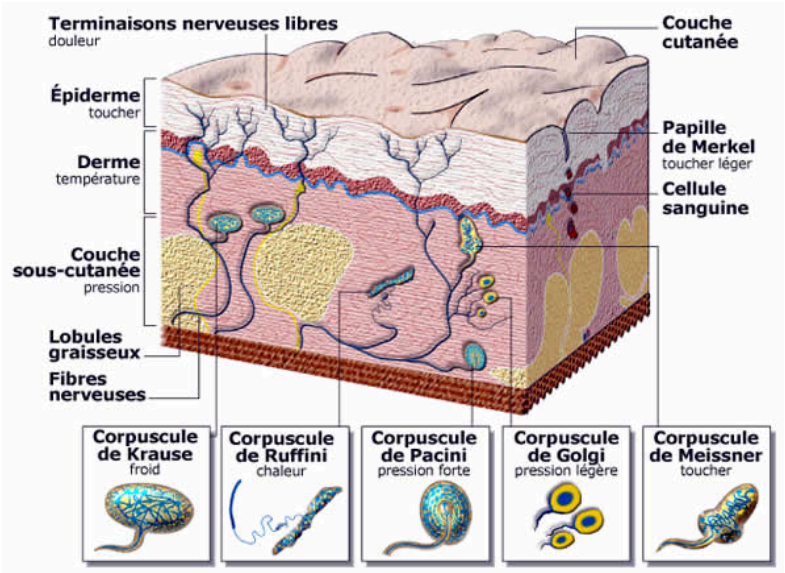


Figure 13 : les récepteurs visuels

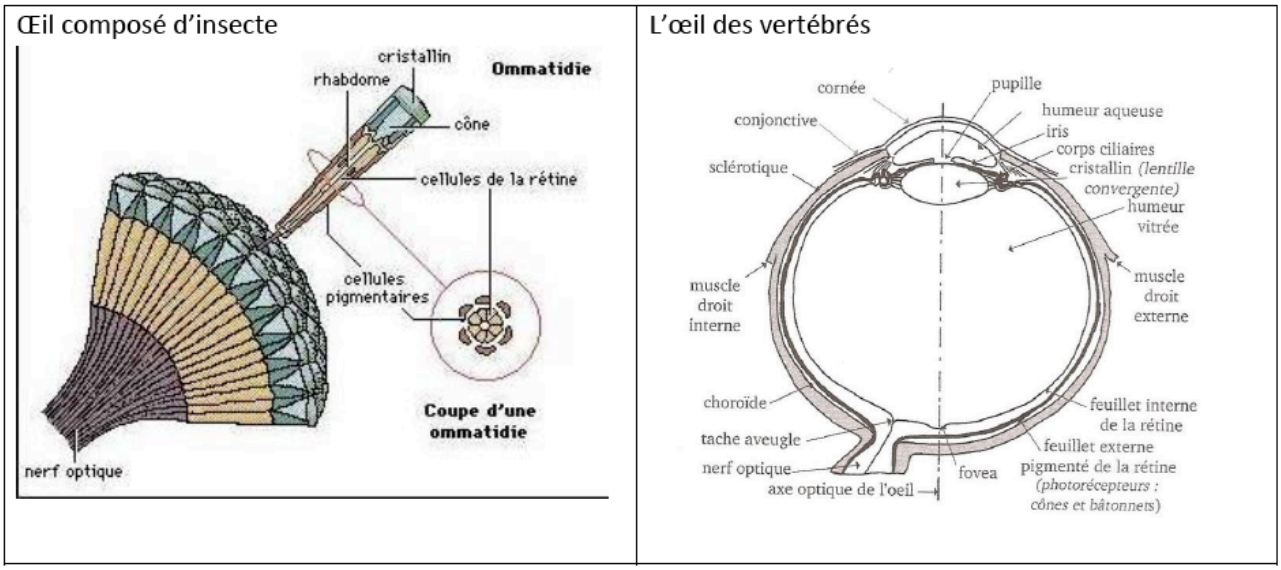
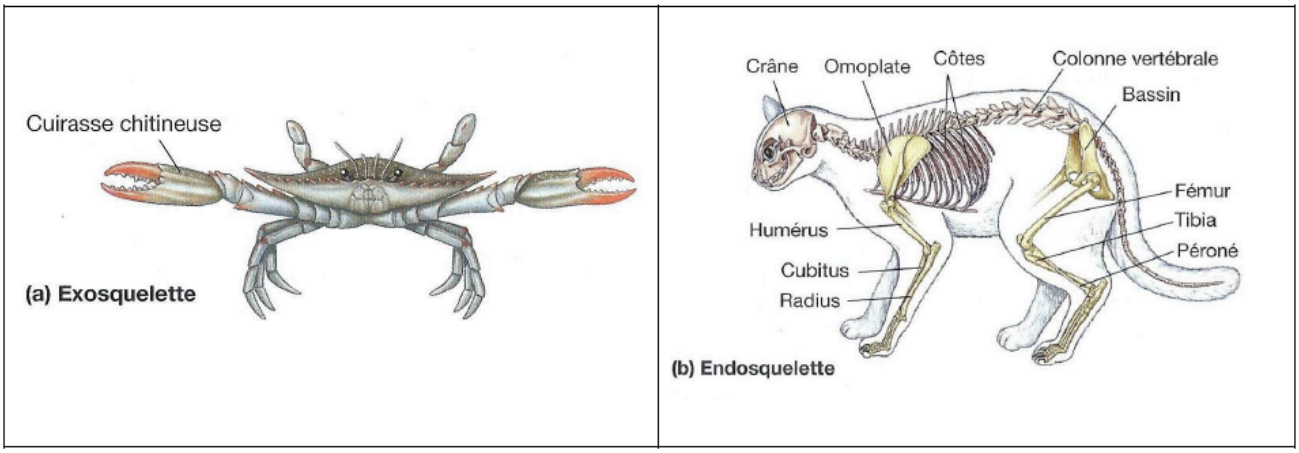


Figure 14 : les squelettes



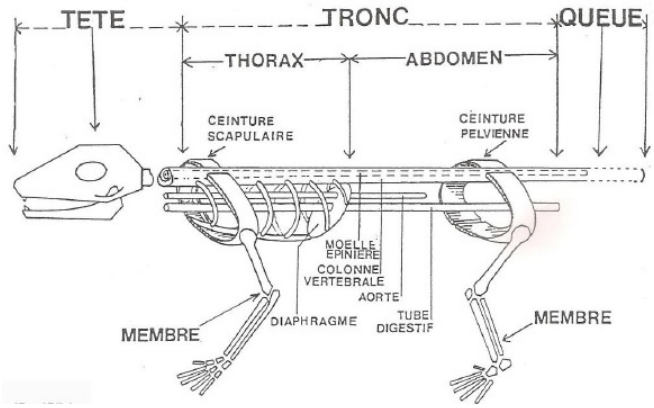


Figure 15 : fixation des muscles sur le squelette

Apodème des Arthropodes

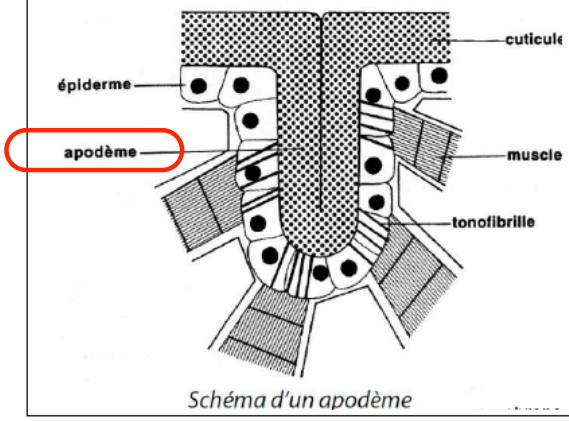


Schéma d'un apodème

Insertion musculaire des os sur le squelette des vertébrés

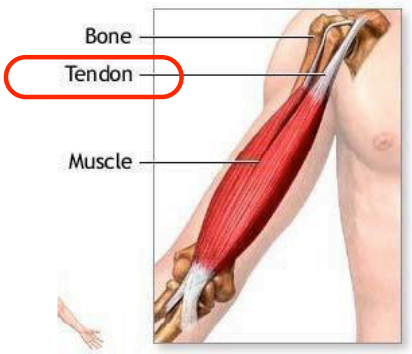
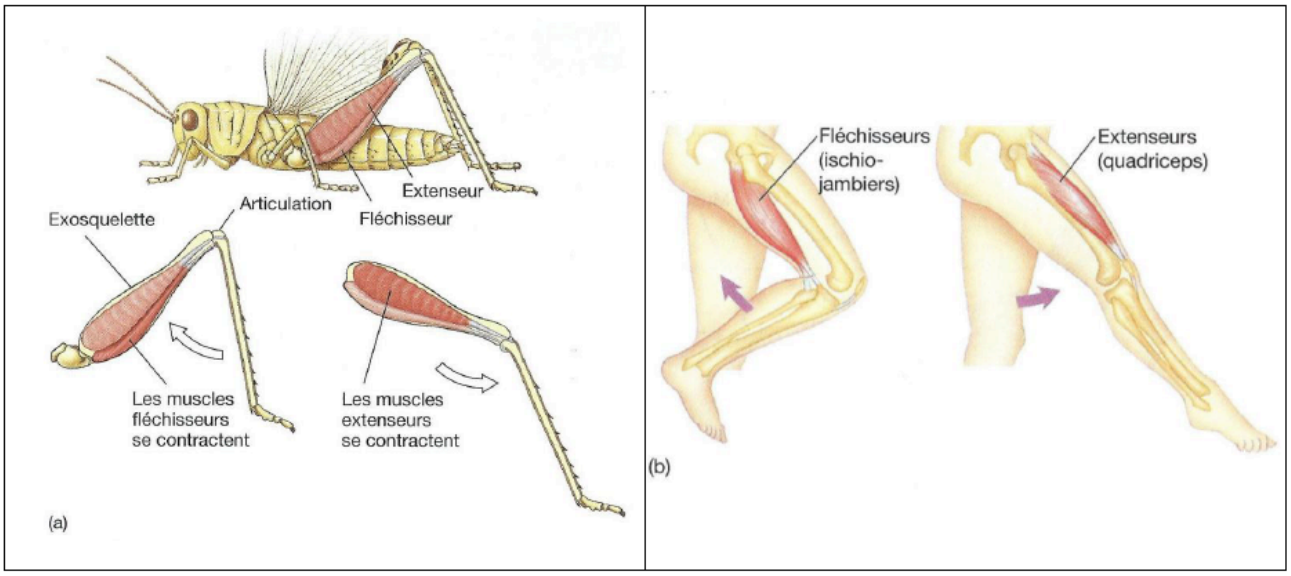


Figure 16 : le mouvement repose sur la présence de muscles agonistes et antagonistes



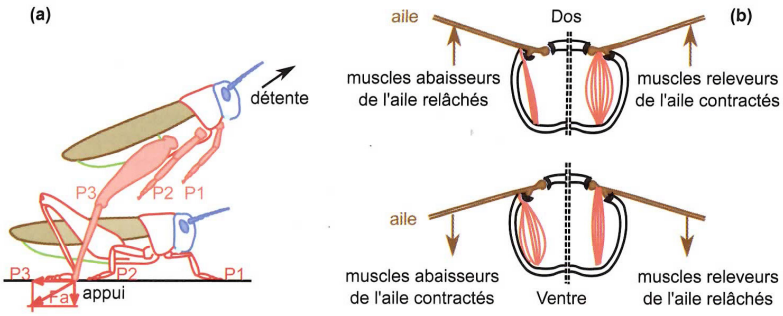
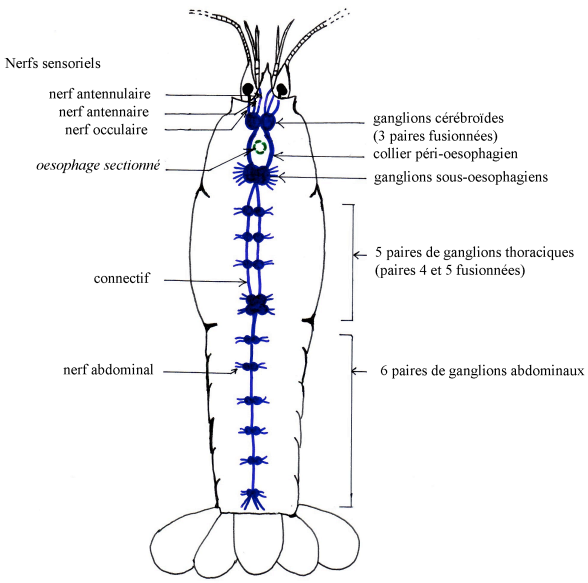


FIGURE 12.6 Le saut **(a)** et le vol **(b)** chez le criquet.
(a) Lors de la phase d'appui qui précède le saut, le criquet exerce sur le substrat une force Fa dont la direction correspond à celle du saut. **(b)** Les muscles directs du vol sont seuls représentés sur ces coupes transversales schématiques du thorax.

Figure 17 : les systèmes nerveux



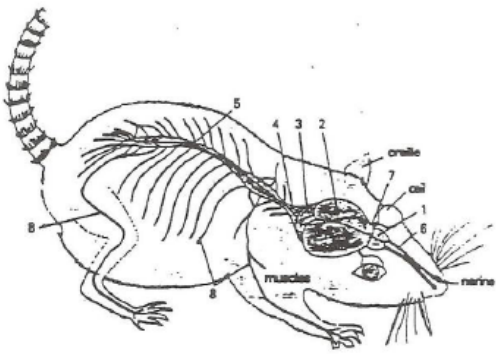


Figure 18 : les appareils reproducteurs

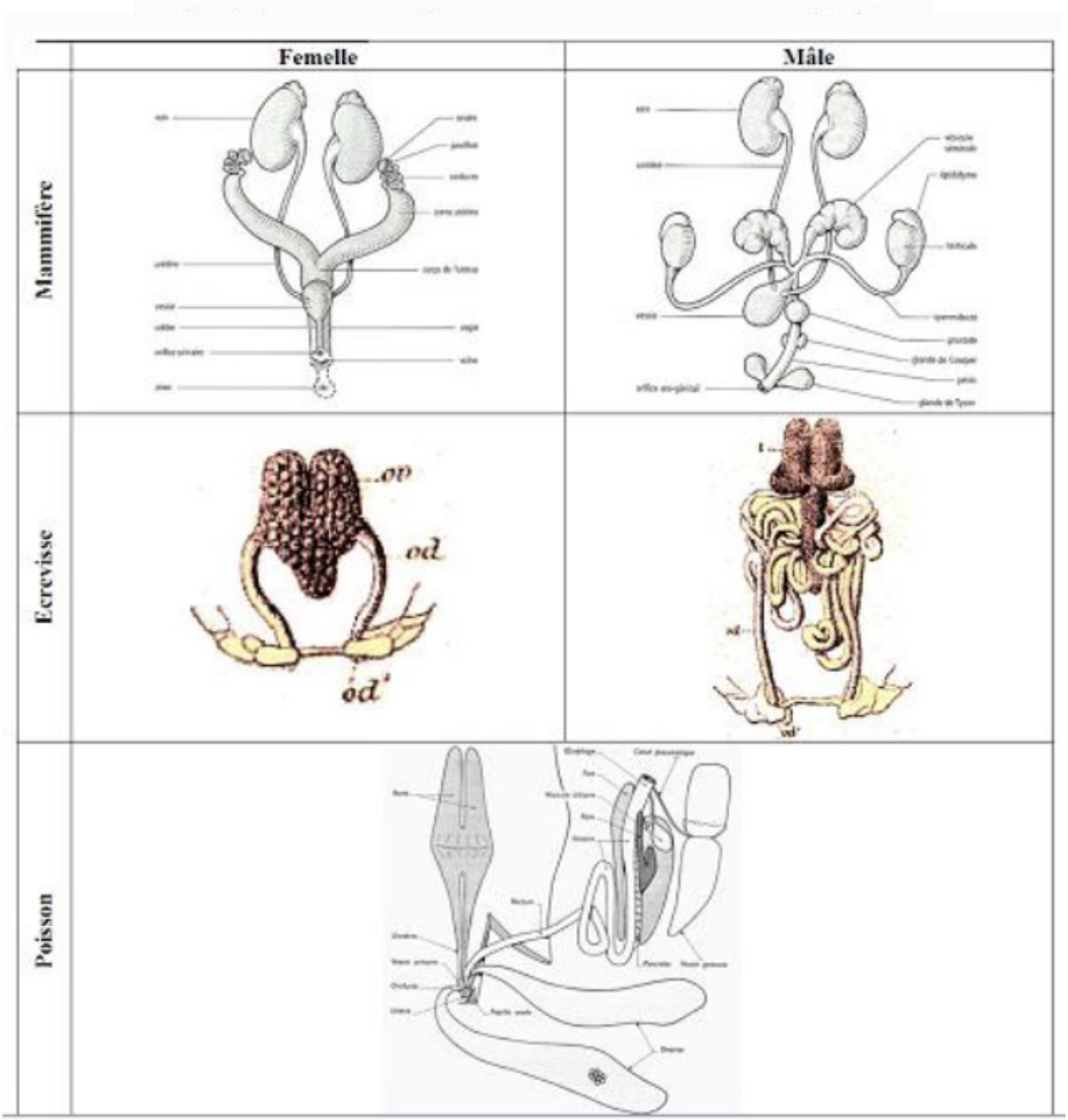


Figure 19 : les différentes stratégies de reproduction

Milieu	Animal	Fécondation	Nombre d'œufs	Caractéristiques d'un œuf	Développement	Protection et soins aux jeunes
aquatique	Oursin	Externe	60 000 000	Gangue gélatineuse	Indirect (larve)	Non
aquatique	Moule	Externe	10 000 000		Indirect (larve)	Non
aquatique	Truite	Externe	4 000	Gangue gélatineuse	Direct (alevin)	Non
aquatique	Grenouille	Externe	4 000	Gangue gélatineuse	Indirect (têtard)	Non
terrestre	Couleuvre à collier	Interne	8 à 53	Enveloppe dure	Direct	Terrier
terrestre	Coq et poule	Interne	Variable	Coquille dure	Direct	Oui
terrestre	Mésange	Interne	15 à 16	Enveloppe dure	Direct	Nid
terrestre	Chat	Interne			Direct (4 à 5 petits)	Oui (allaitement)

Reproduction d'un poisson, le loup de mer	
Nombre d'ovocytes émis par la femelle	**1000 à 2000**
Nombre de cellules-œuf formées	**500 à 1000**
Nombre d'alevins	**200 à 300**
Nombre de jeunes adultes	**5 à 10**

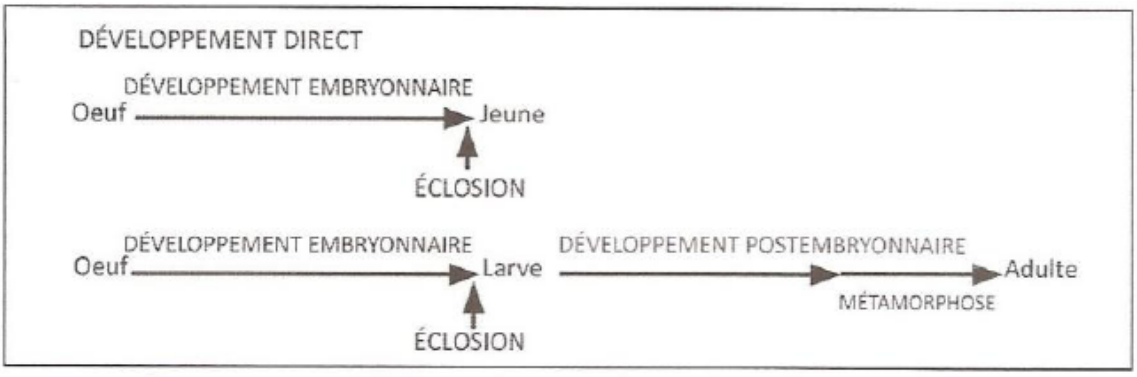



Figure 20 : les modalités du développement