



TIAGO GRILO

- **Universidade de Coimbra**
 - Licenciatura em Biologia, Ramo Investigação (2007)
 - Mestre em Ecologia (2008)
 - Doutor em Biologia, Especialidade de Ecologia Marinha e Ecotoxicologia (2013)
- **Universidade de Lisboa**
 - Investigador de pós-doutoramento (2014-2019)
 - Investigador Júnior (2019-presente)
 - Professor Auxiliar Convidado (2019-presente)
 - Ictiologia
 - Fisiologia Animal
 - Fisiologia
 - Biologia do Stress
 - Células, Tecidos e Órgãos

- **Áreas de Estudo:** Ecologia Marinha, Ecotoxicologia, Alterações Globais, Fisiologia Animal, Toxicologia Ambiental
- **40** artigos científicos
- **50** comunicações orais e em poster

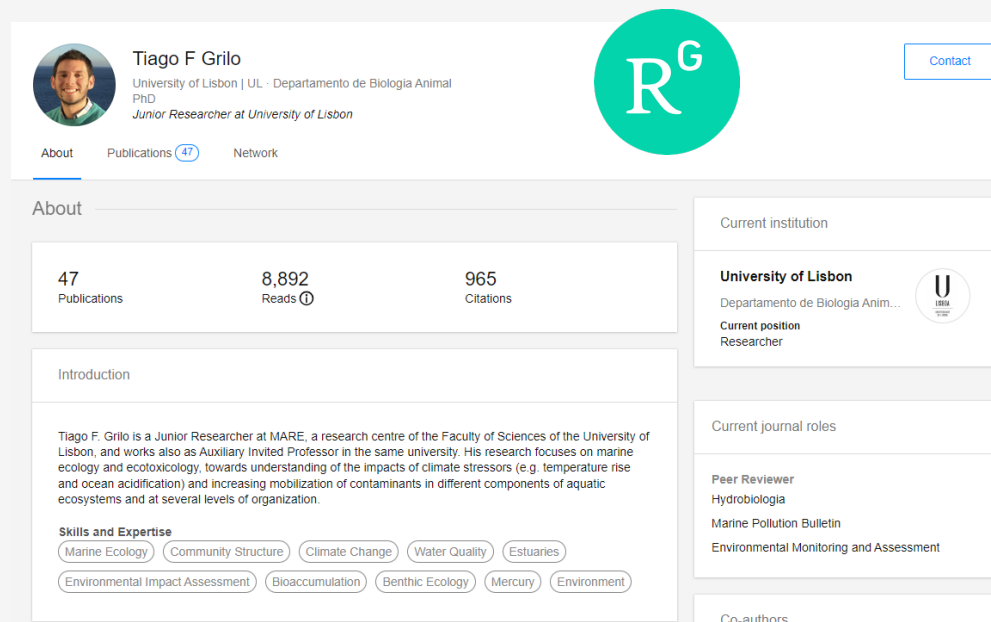


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Tiago F Grilo
University of Lisbon | UL - Departamento de Biologia Animal
PhD
Junior Researcher at University of Lisbon

47 Publications | 8,892 Reads | 965 Citations

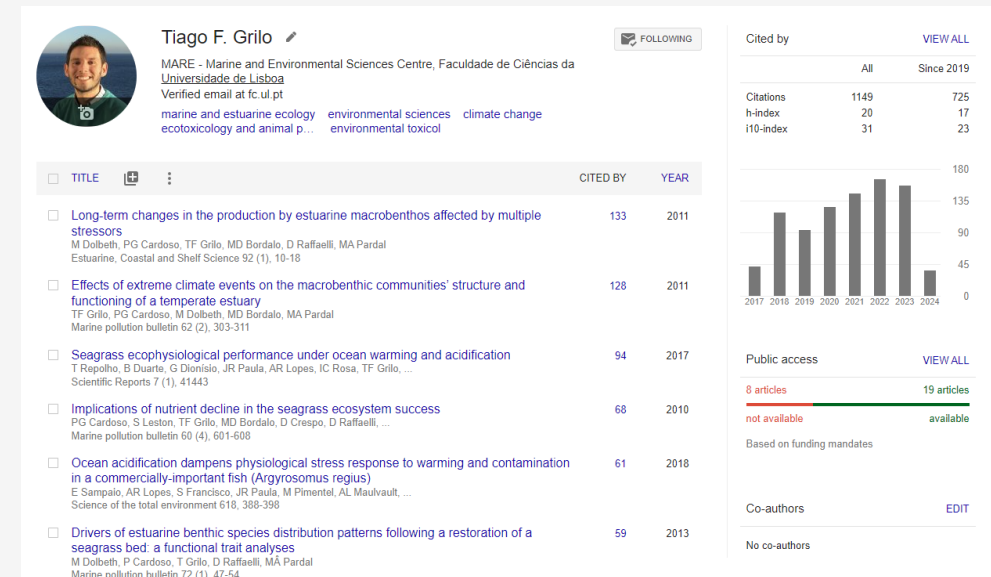
Introduction
Tiago F. Grilo is a Junior Researcher at MARE, a research centre of the Faculty of Sciences of the University of Lisbon, and works also as Auxiliary Invited Professor in the same university. His research focuses on marine ecology and ecotoxicology, towards understanding of the impacts of climate stressors (e.g. temperature rise and ocean acidification) and increasing mobilization of contaminants in different components of aquatic ecosystems and at several levels of organization.

Skills and Expertise
Marine Ecology, Community Structure, Climate Change, Water Quality, Estuaries, Environmental Impact Assessment, Bioaccumulation, Benthic Ecology, Mercury, Environment

Current institution
University of Lisbon
Departamento de Biologia Anim...
Current position
Researcher

Current journal roles
Peer Reviewer
Hydrobiologia
Marine Pollution Bulletin
Environmental Monitoring and Assessment

Co-authors



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marine and estuarine ecology environmental sciences climate change ecotoxicology and animal p... environmental toxicol

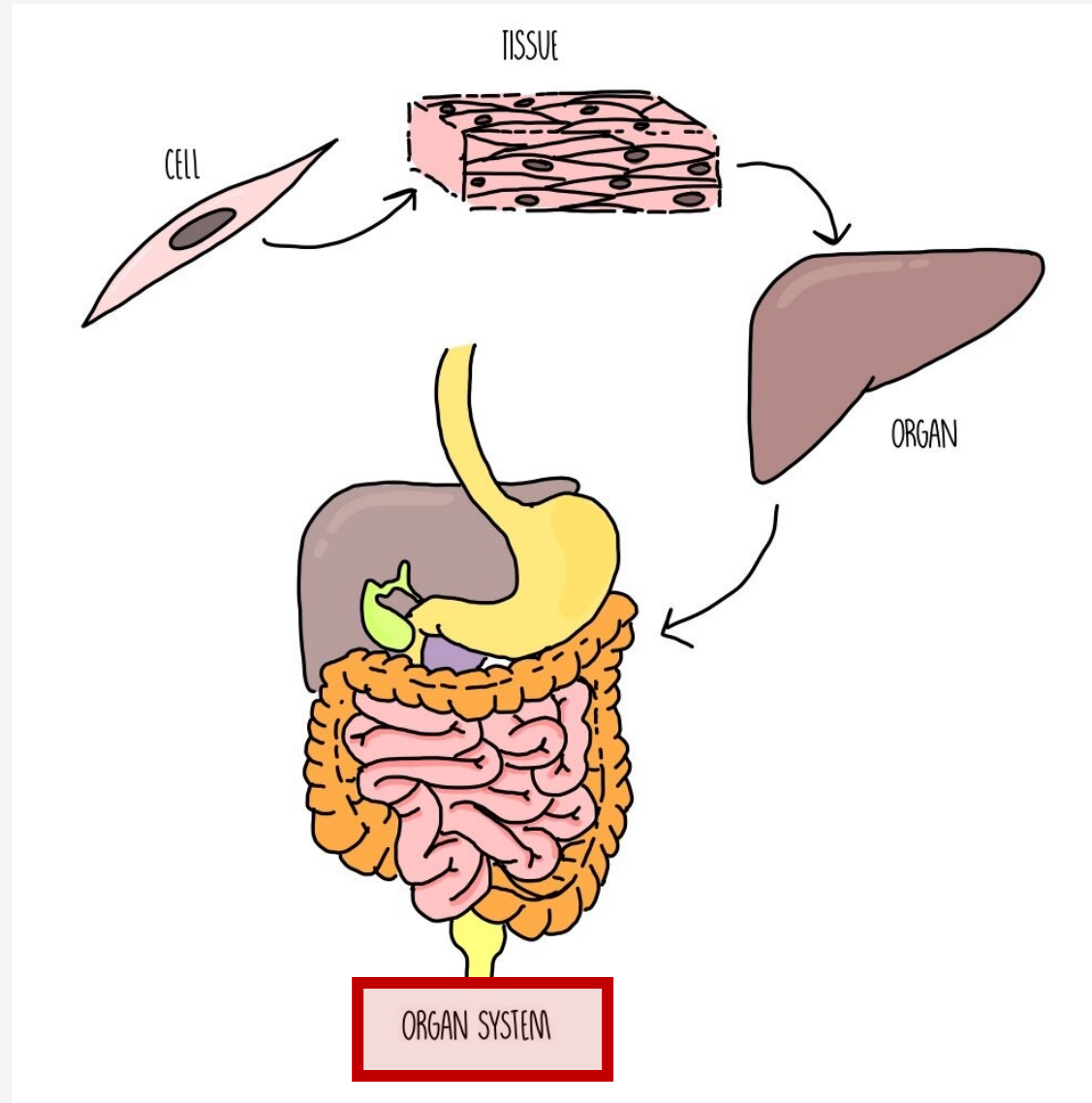
	All	Since 2019
Citations	1149	725
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TITLE	CITED BY	YEAR
Long-term changes in the production by estuarine macrobenthos affected by multiple stressors M Dolbeth, PG Cardoso, TF Grilo, MD Bordalo, D Raffaelli, MA Pardal Estuarine, Coastal and Shelf Science 92 (1), 10-18	133	2011
Effects of extreme climate events on the macrobenthic communities' structure and functioning of a temperate estuary TF Grilo, PG Cardoso, M Dolbeth, MD Bordalo, MA Pardal Marine pollution bulletin 62 (2), 303-311	128	2011
Seagrass ecophysiological performance under ocean warming and acidification T Repolho, B Duarte, G Dionísio, JR Paula, AR Lopes, IC Rosa, TF Grilo, ... Scientific Reports 7 (1), 41443	94	2017
Implications of nutrient decline in the seagrass ecosystem success PG Cardoso, S Leston, TF Grilo, MD Bordalo, D Crespo, D Raffaelli, ... Marine pollution bulletin 60 (4), 601-608	68	2010
Ocean acidification dampens physiological stress response to warming and contamination in a commercially-important fish (Argyrosomus regius) E Sampaio, AR Lopes, S Francisco, JR Paula, M Pimentel, AL Maulvault, ... Science of the total environment 618, 388-398	61	2018
Drivers of estuarine benthic species distribution patterns following a restoration of a seagrass bed: a functional trait analyses M Dolbeth, P Cardoso, T Grilo, D Raffaelli, MA Pardal Marine pollution bulletin 72 (1), 47-54	59	2013

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8 articles not available | 19 articles available
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Co-authors
No co-authors

CÉLULAS, TECIDOS & ÓRGÃOS

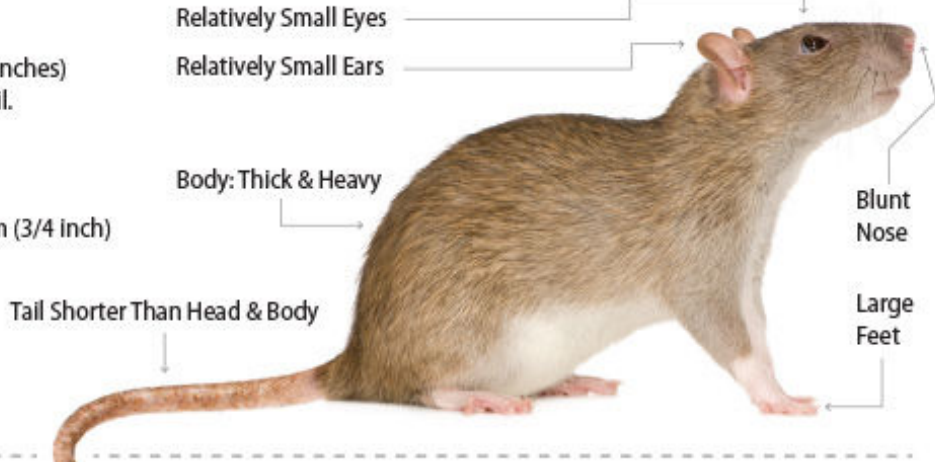


Rat and Mouse: Comparison

Norway Rat

Size: 30-45 cm (12-18 inches) from nose to end of tail.

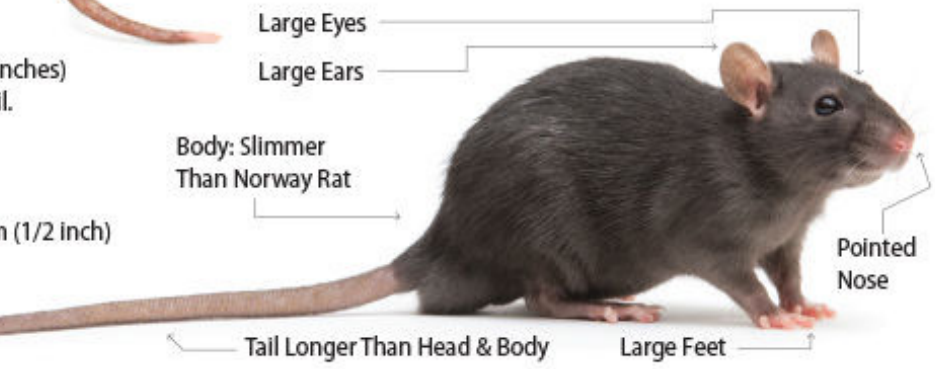
DROPPINGS:
Long, Rounded Ends
Avg. Length: 15-20 mm (3/4 inch)



Roof Rat

Size: 33-43 cm (13-17 inches) from nose to end of tail.

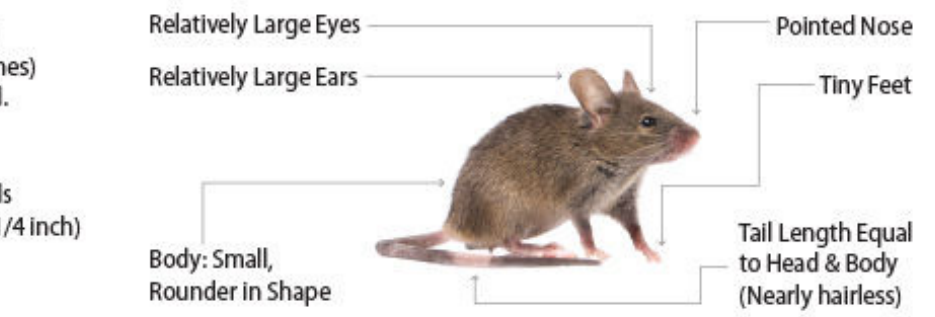
DROPPINGS:
Long, Pointed Ends
Avg. Length: 10-15 mm (1/2 inch)



House Mouse

Size: 15-17 cm (6-7 inches) from nose to end of tail.

DROPPINGS:
Small with Pointed Ends
Avg. Length: 4-7 mm (1/4 inch)



RATS



SIZE

Larger: between 15 and 25 cm



BODY SHAPE

Thicker and stockier



HEAD SHAPE

Bigger and wider



EARS

Smaller



TAILS

Thicker and shorter than their body



DROPPINGS

Size of a bean

VS



MICE



SIZE

Smaller: between 7 and 10 cm



BODY SHAPE

Thinner and slimmer



HEAD SHAPE

Smaller and sharper



EARS

Bigger and more prominent



TAILS

Thinner and longer than their body



DROPPINGS

Size of a grain of rice

Mouse

- Smaller (12-20 cms)
- Triangular snout with long whiskers
- Produce 40-100 droppings/day
- Long, thin, hairless tail



Rat

- Larger (about 40 cms)
- More blunt snout
- Produce 20-50 droppings/day
- Thick tail, usually hairless and scaly



https://www.youtube.com/watch?v=VUVcYZ_R6ng&t=2s

CARACTERÍSTICAS GERAIS

- 7-10 cm de comprimento, exceptuando a cauda;
- Pelagem castanho-acinzentada, mais clara no ventre do que no dorso, mas pode atingir tonalidades mais escuras
- Orelhas relativamente grandes e arredondadas;
- Cauda comprida relativamente ao tamanho do corpo e com pilosidade e anéis proeminentes

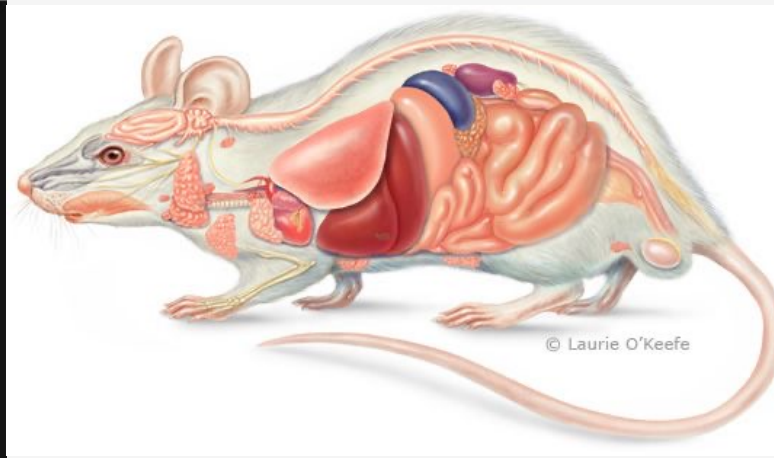
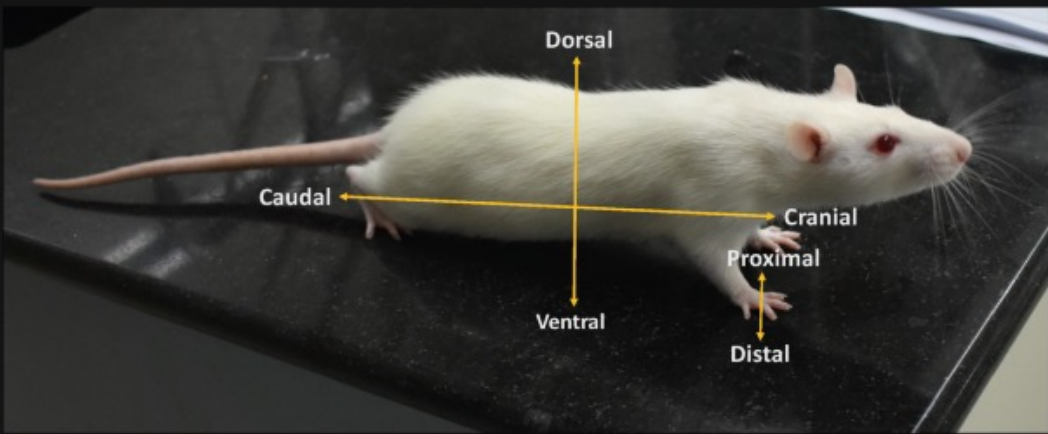
Espécie amplamente utilizada em laboratório para diversos fins científicos. A estirpe mais frequentemente utilizada corresponde aos indivíduos albinos, que se caracterizam pela pelagem de cor branca e olhos vermelhos.

Mais curiosidades em:

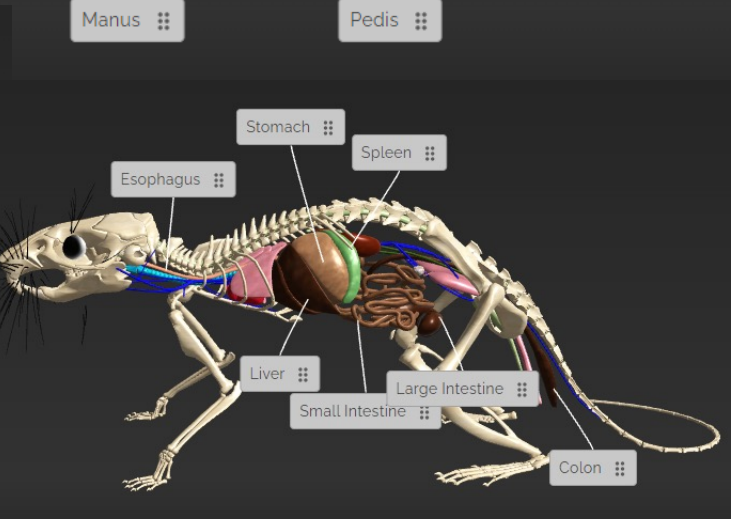
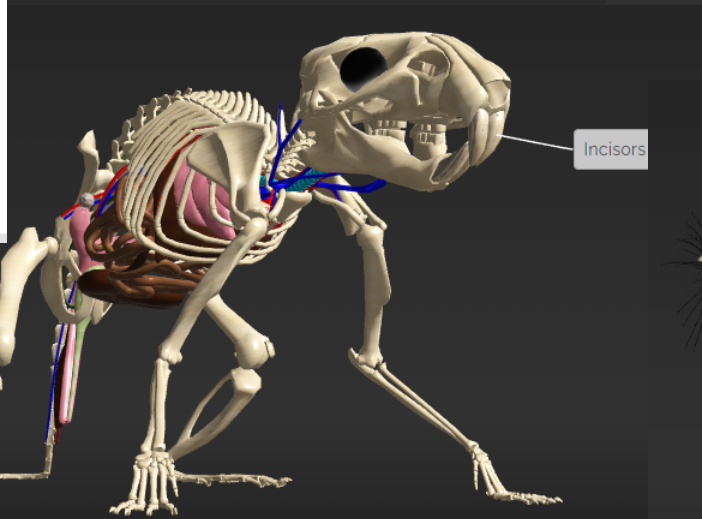
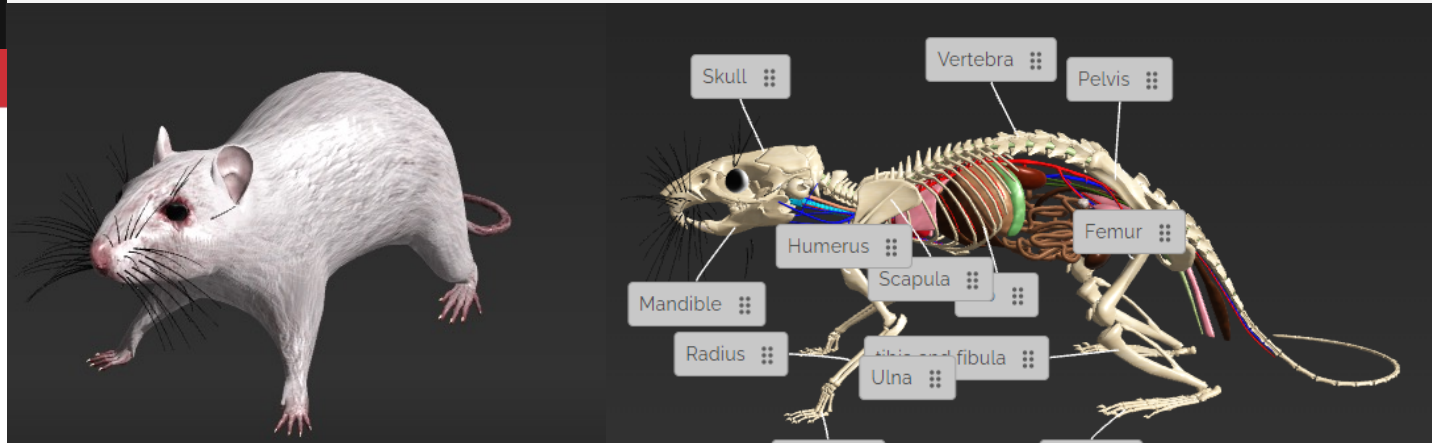
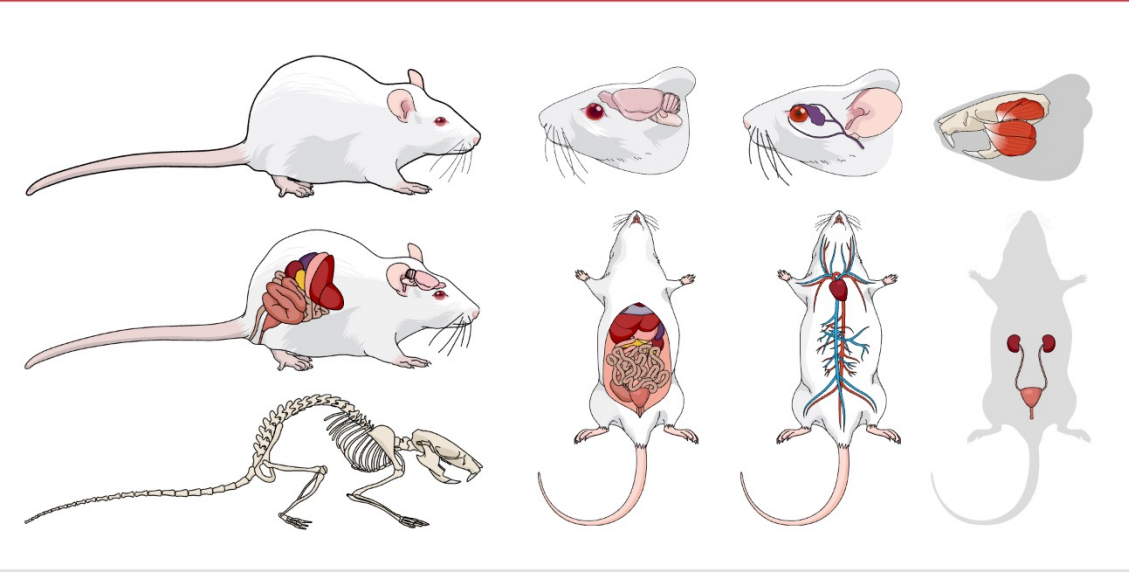
<https://www.criver.com/eureka/history-black-6-mouse>

Ratinho de Laboratório, Black 6 strain
Mus musculus





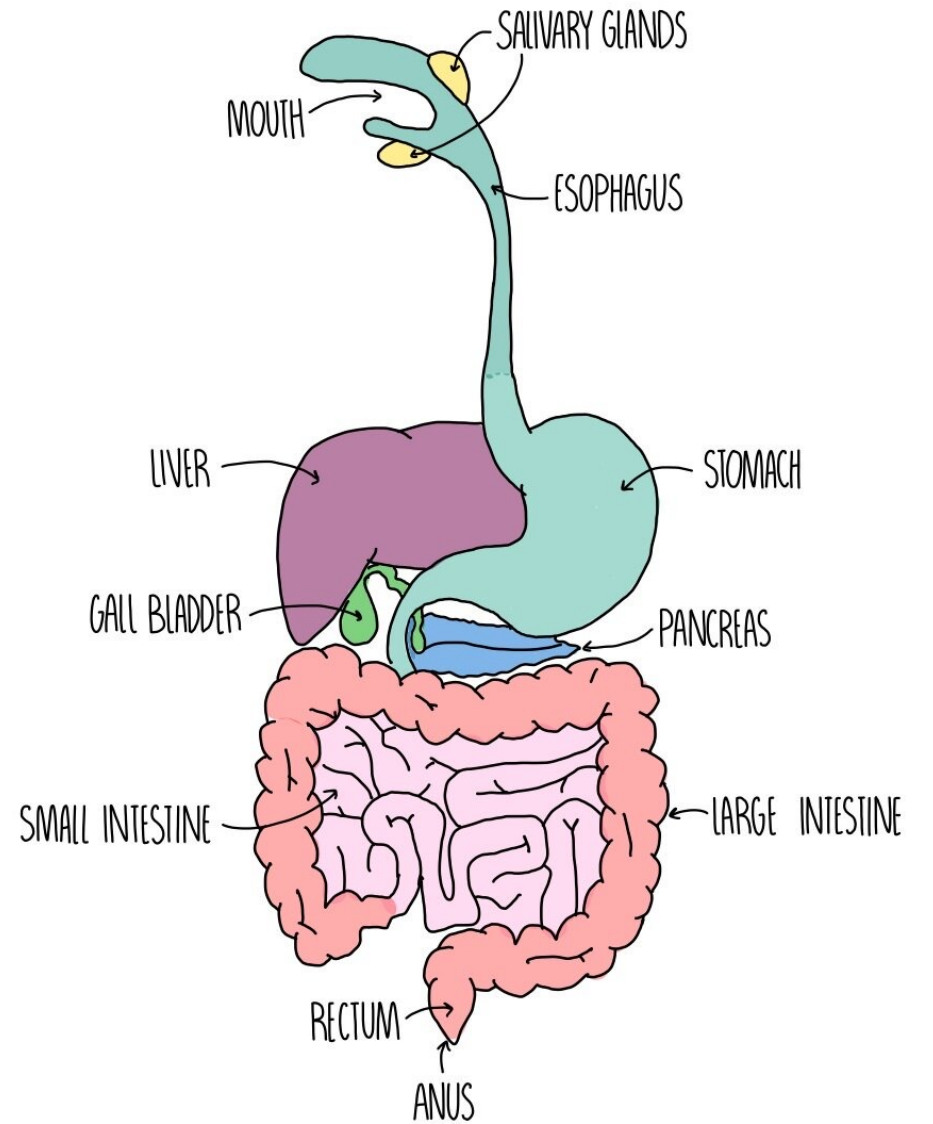
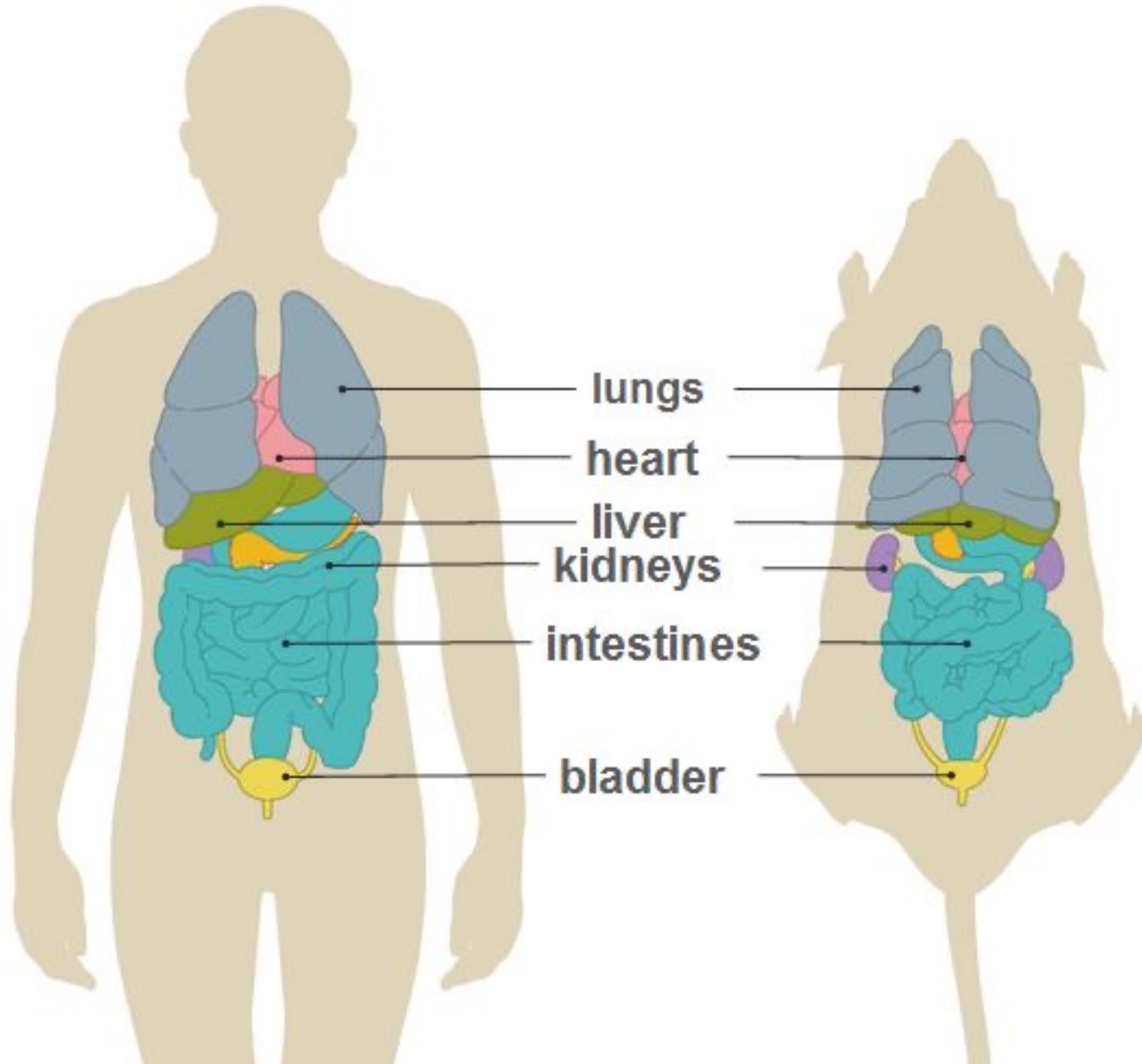
RAT ANATOMY



https://cyber.gale.com/cyber/ISSCI/activities/143?u=mlin_s_masscomm&p=ISSCI&gcid=81ec03b8f5d0d82c69c29e89af2e0a8c&id=patriot

ANÁLISE COMPARATIVA

HUMANOS VS RATOS



ANÁLISE COMPARATIVA HUMANOS VS RATOS

Comparative Anatomy and Histology

A Mouse, Rat, and Human Atlas

Book • Second Edition • 2017



Edited by:
Piper M. Treuting, Suzanne M. Dintzis and
Kathleen S. Montine

About the book

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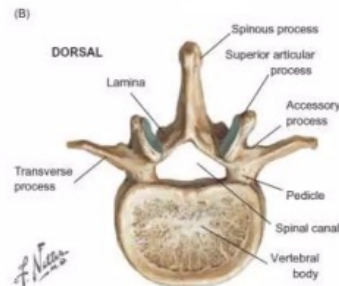
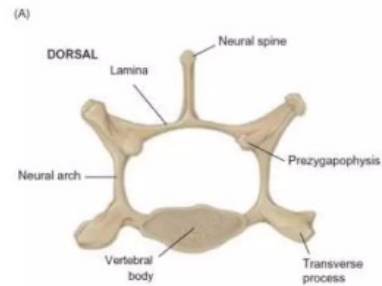
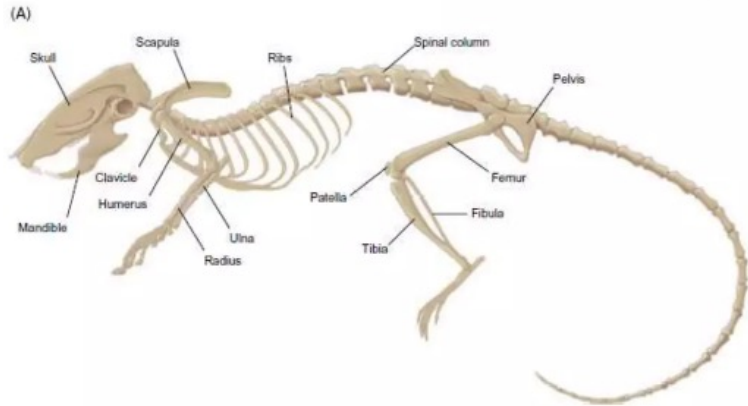
Book description

The second edition of Comparative Anatomy and Histology is aimed at the new rodent investigator as well as medical and veterinary pathologists who need to expand their knowledge base... [read full description](#)

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Skeletal System



Respiratory System

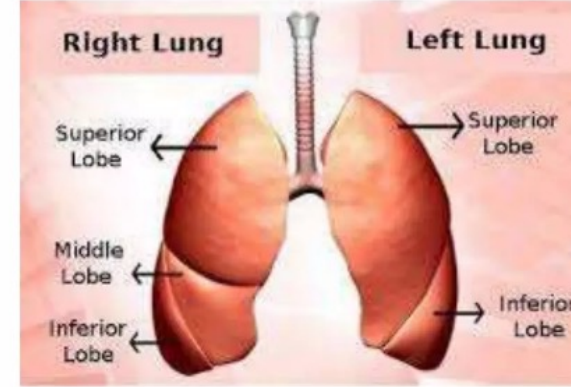
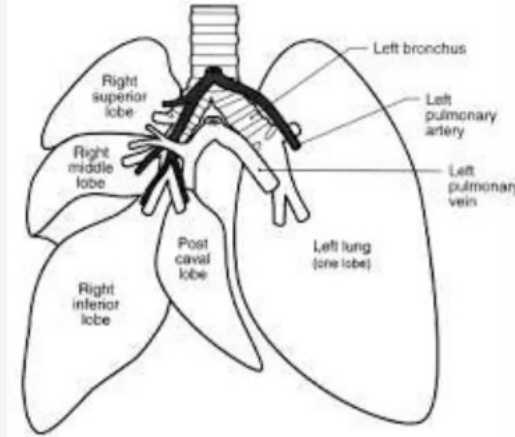
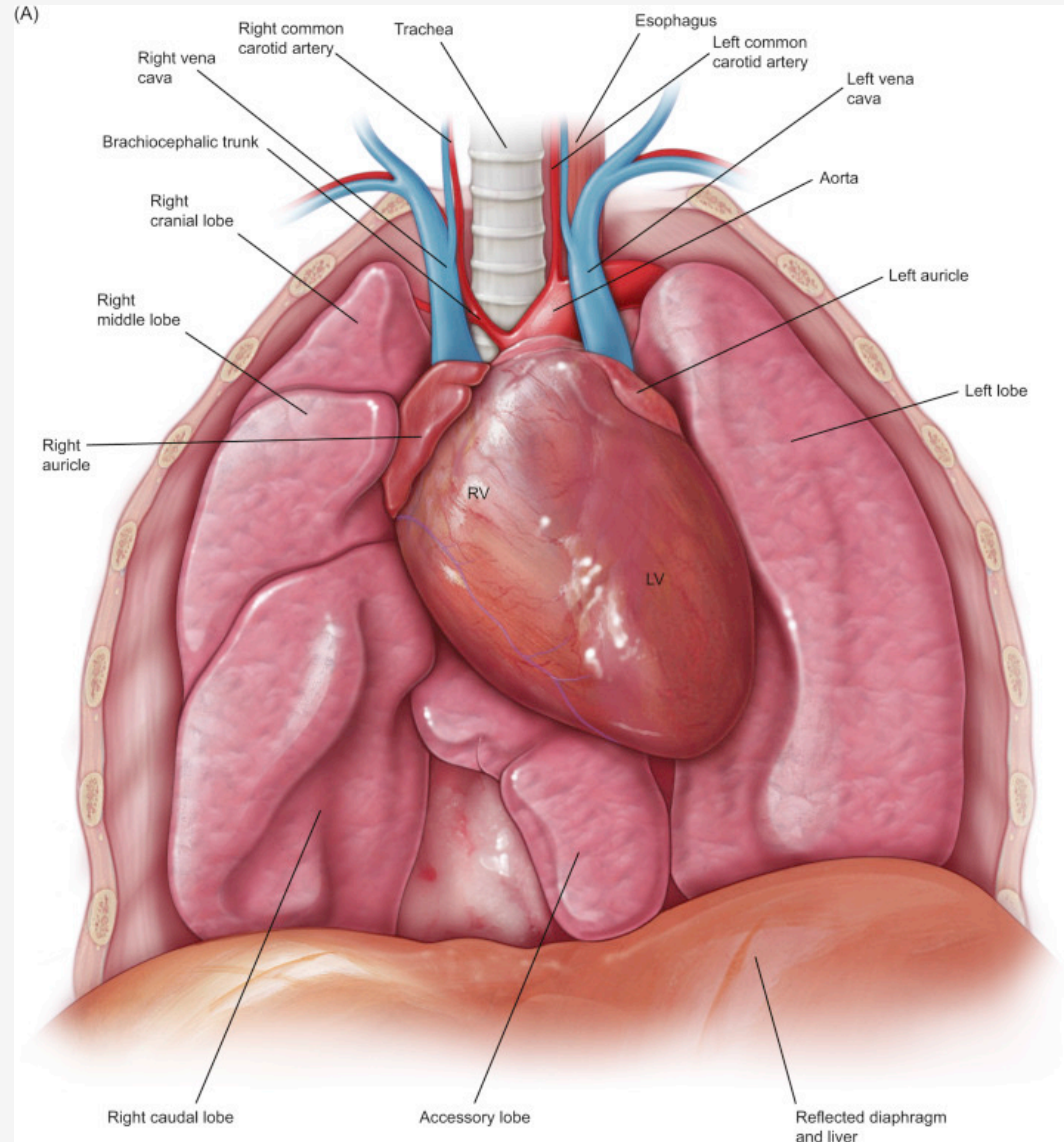


FIGURE 9.1 Regional anatomy of the lungs. (A) In rodents (mouse), the right lung consists of four lobes: cranial, middle, caudal, and accessory. The left lung has only one lobe. (B) In humans, the right lung consists of three lobes: upper, middle, and lower. The left lung consists of two lobes: upper and lower. Source of A and B: © Elsevier, Inc., www.netterimages.com.

	Rat	Human
Class	Mammalia	Mammalia
Order	Rodentia	Primata
Family	Muridae	Hominidae
Genus and Species	<i>Rattus norvegicus</i>	<i>Homo sapiens</i>
Chromosome number (2n)	42	46
Sexual maturity	4-7 weeks	10-15 years
Life span	2.5 – 3.0 years	~ 70 years
Gestation period	21-24 days	~ 40 weeks
Mammary glands	12 (6 pairs)	2 discrete, pectoral
Male nipples	Absent	Present

SISTEMA RESPIRATÓRIO

Pulmões



RATINHOS

Respiratory System

HUMANOS

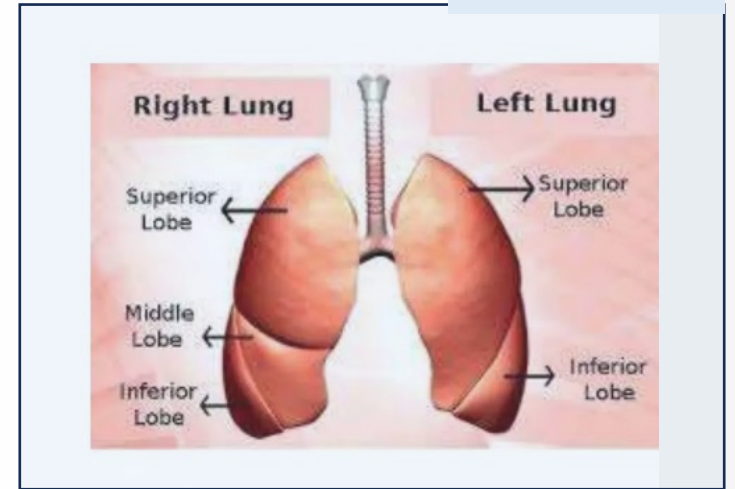
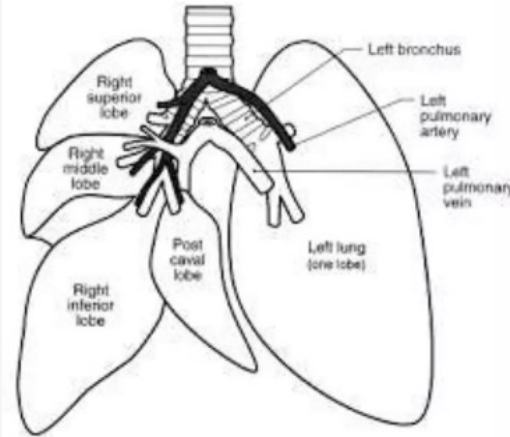
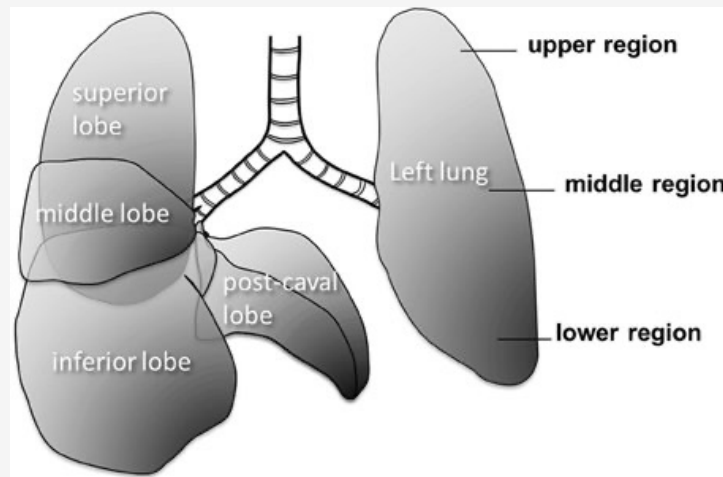


FIGURE 9.1 Regional anatomy of the lungs. (A) In rodents (mouse), the right lung consists of four lobes: cranial, middle, caudal, and accessory. The left lung has only one lobe. (B) In humans, the right lung consists of three lobes: upper, middle, and lower. The left lung consists of two lobes: upper and lower. Source of A and B: © Elsevier, Inc., www.netterimages.com.



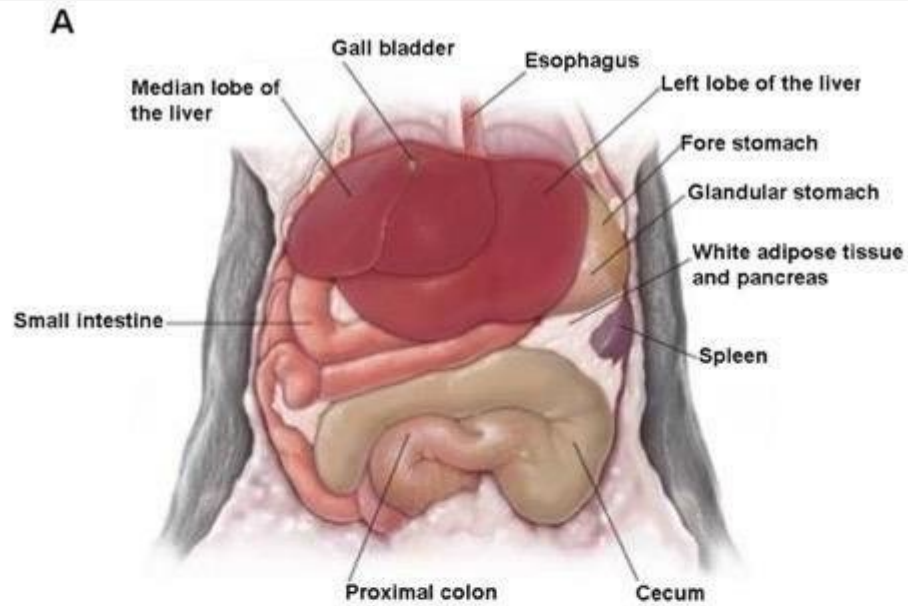
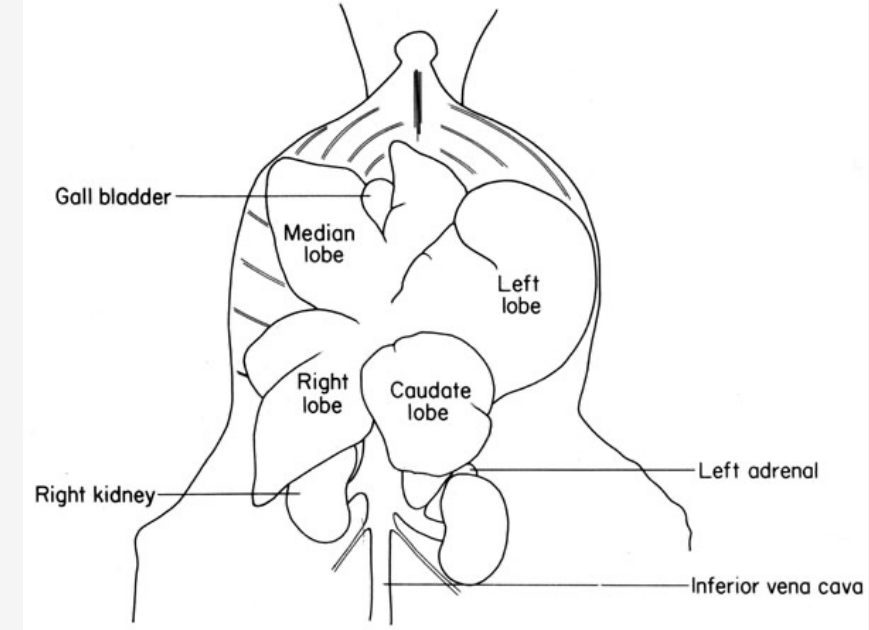
Nos ratinhos de laboratório, o pulmão direito é composto por **4 lobos**: **superior (ou cranial), médio, inferior (ou caudal) e acessório**. O pulmão esquerdo tem apenas **1 lobo** dividido em 3 regiões

Nos humanos o pulmão direito é constituído por **3 lobos**: superior, médio e inferior. O pulmão esquerdo consiste em **2 lobos**, superior e inferior

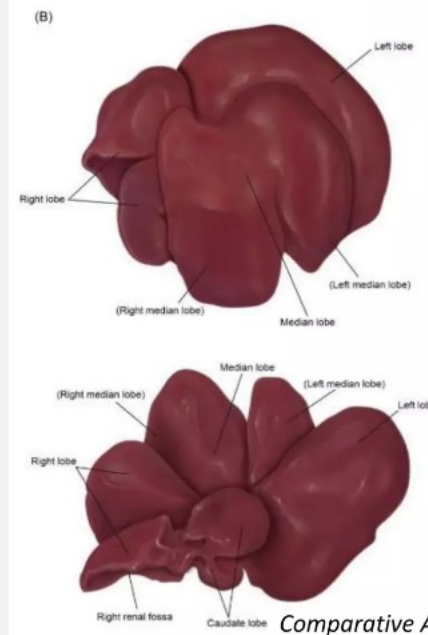
SISTEMA DIGESTIVO

Fígado

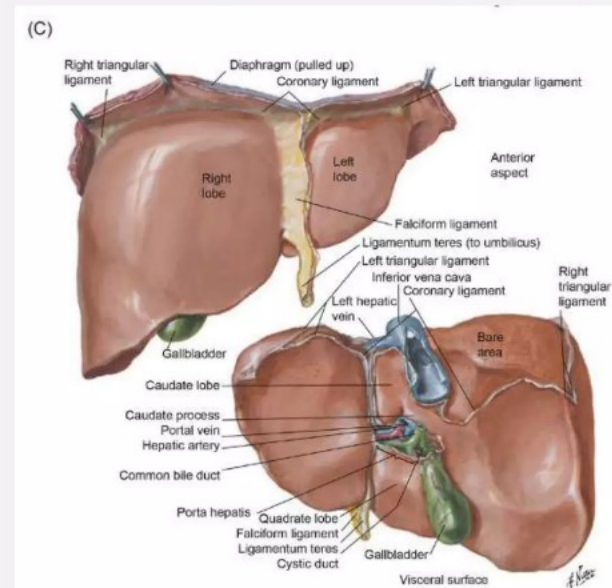
- RATINHOS: 4 (+1) lobos principais: esquerdo, direito, **mediano (direito e esquerdo)** e caudal
- HUMANOS: 2 lobos principais (esquerdo e direito)



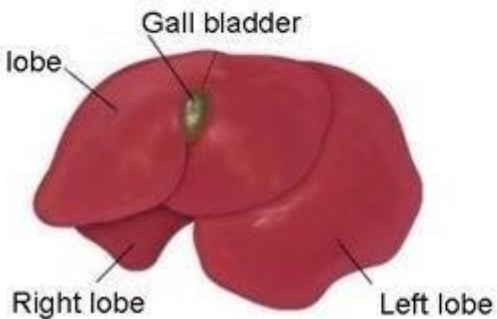
Rat Liver



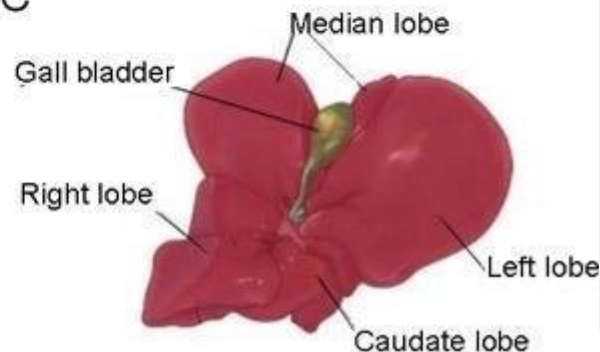
Vs Human Liver



B



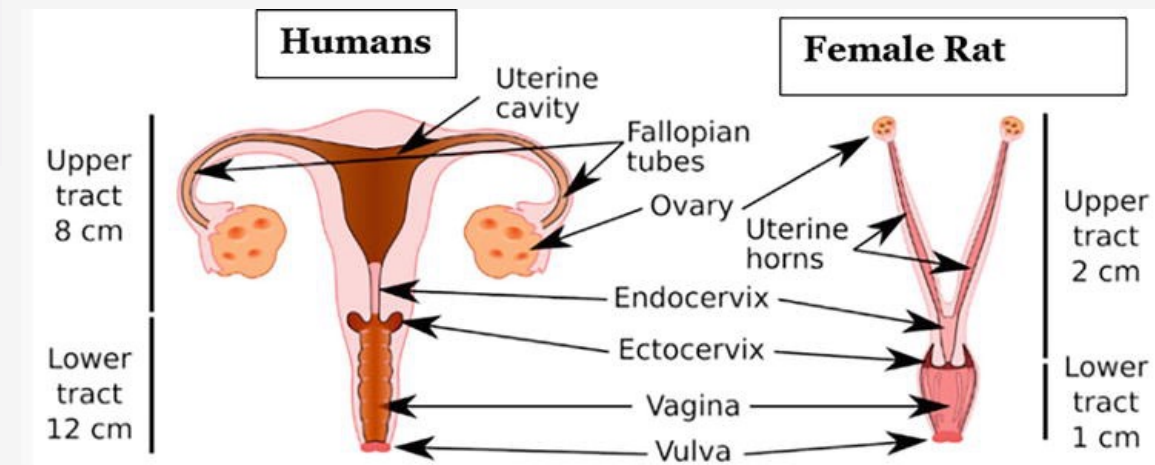
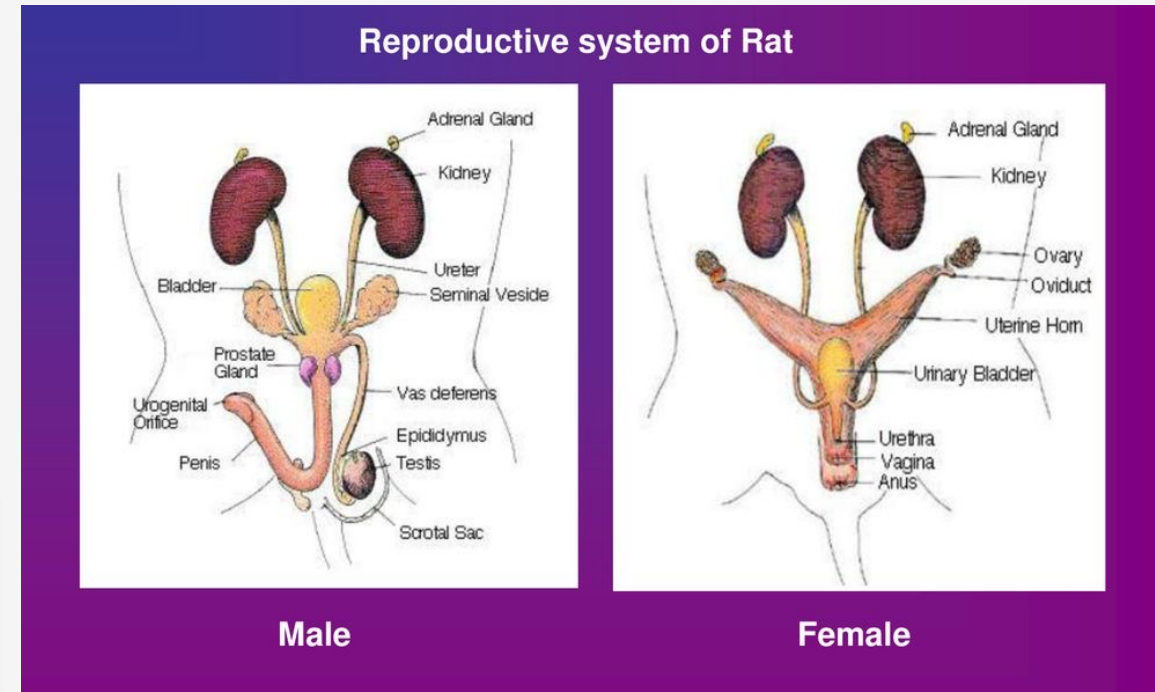
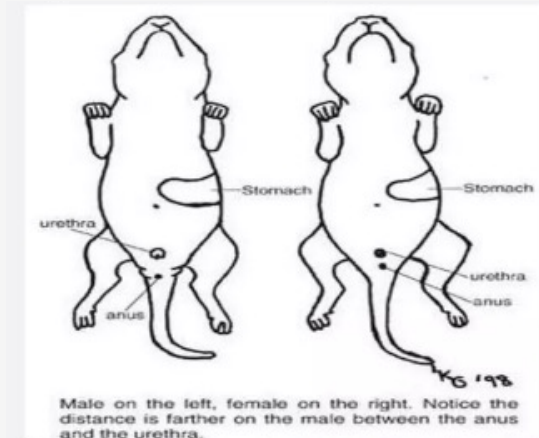
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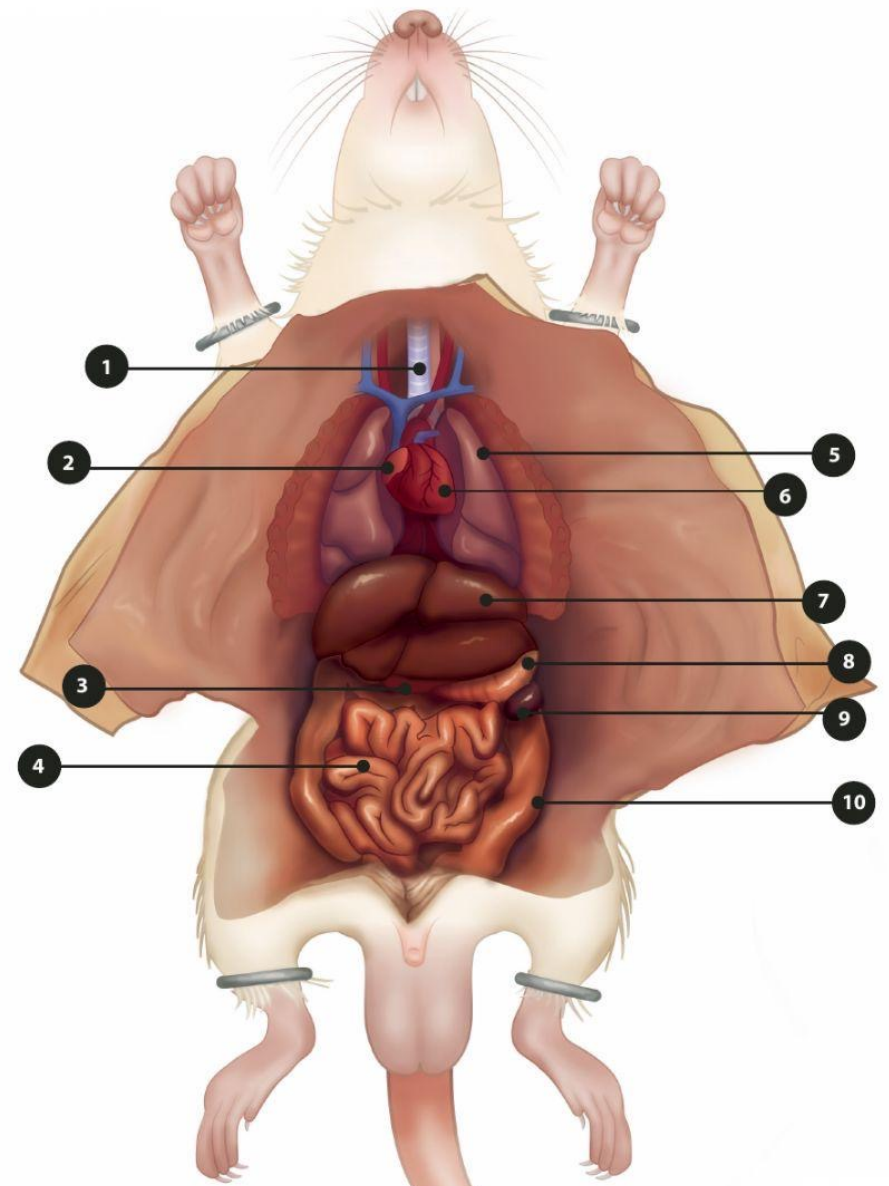
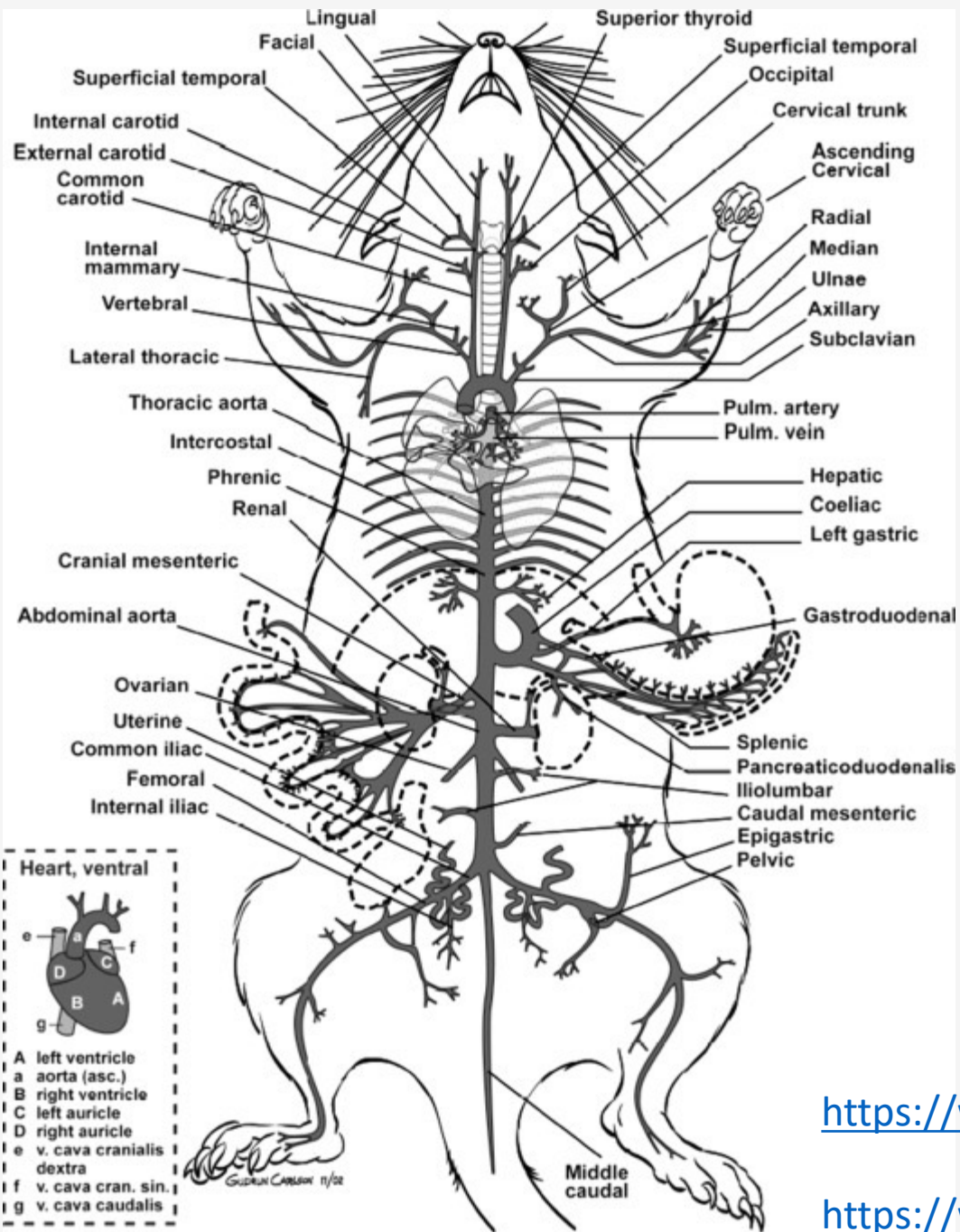


SISTEMA REPRODUTOR

Como distinguir os sexos?

- A identificação visual do sexo dos roedores é feita com base na distância entre o ânus e a abertura urogenital
- Os machos apresentam uma maior distância entre o ânus e abertura urogenital que as fêmeas





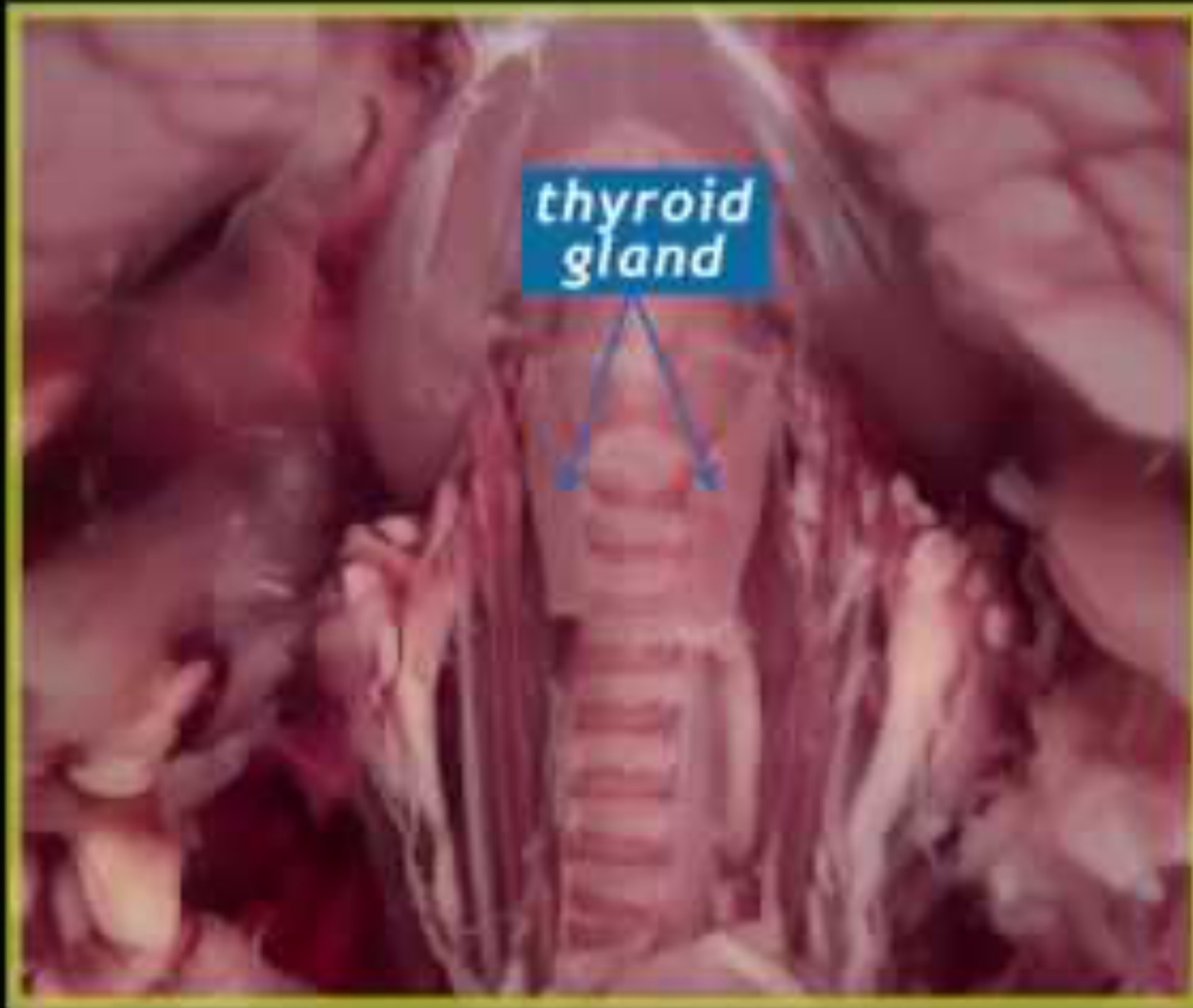
<https://www.purposegames.com/game/dbbe25f92f>

<https://www.purposegames.com/game/rat-internal-organs-quiz>

*Mouse
dissection*



Respiratory System

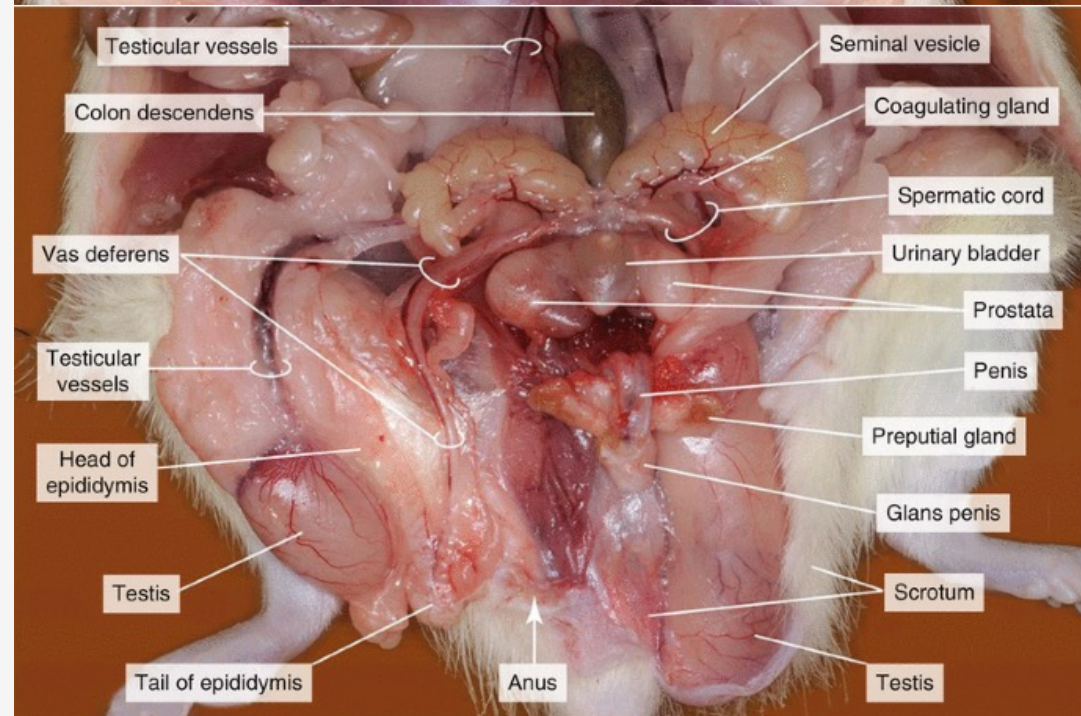
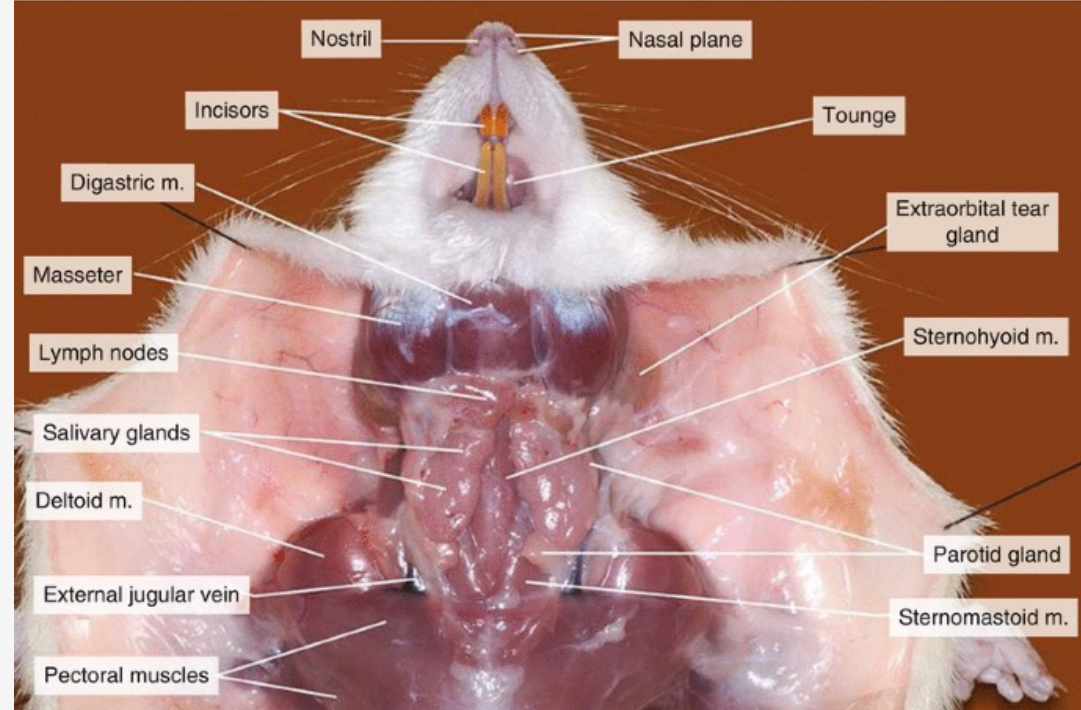
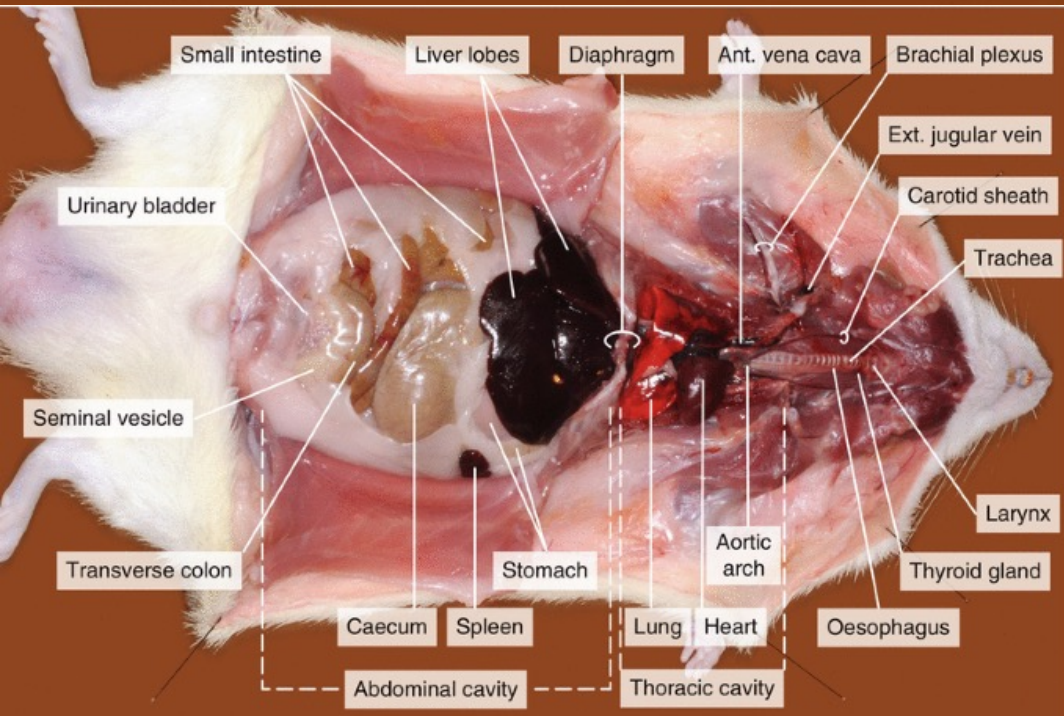
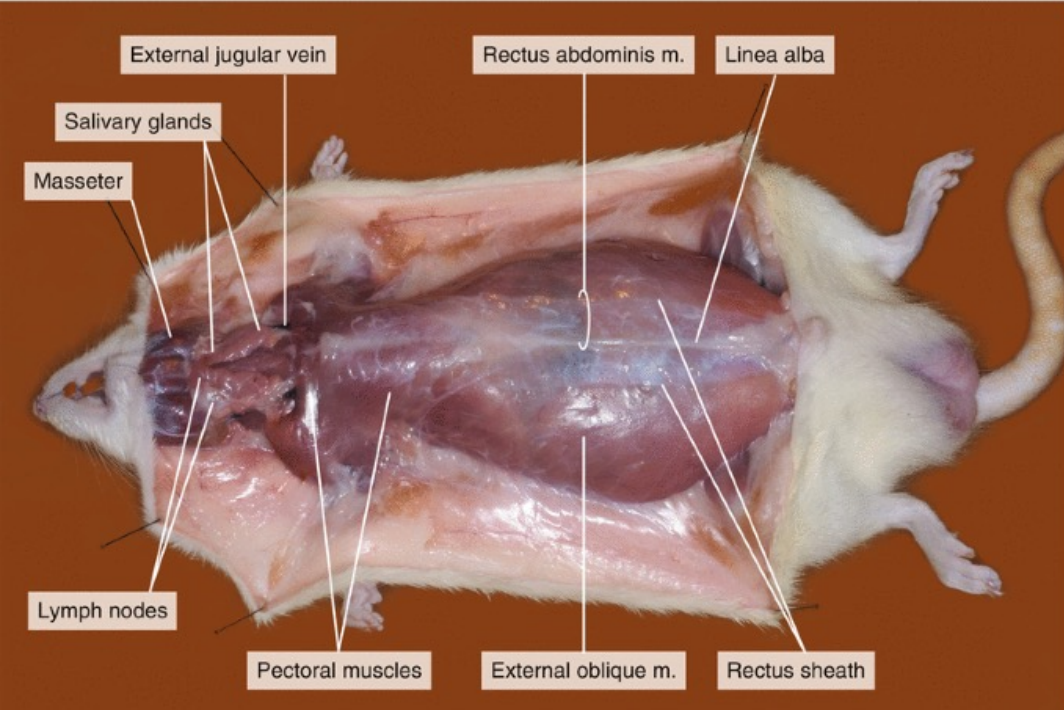


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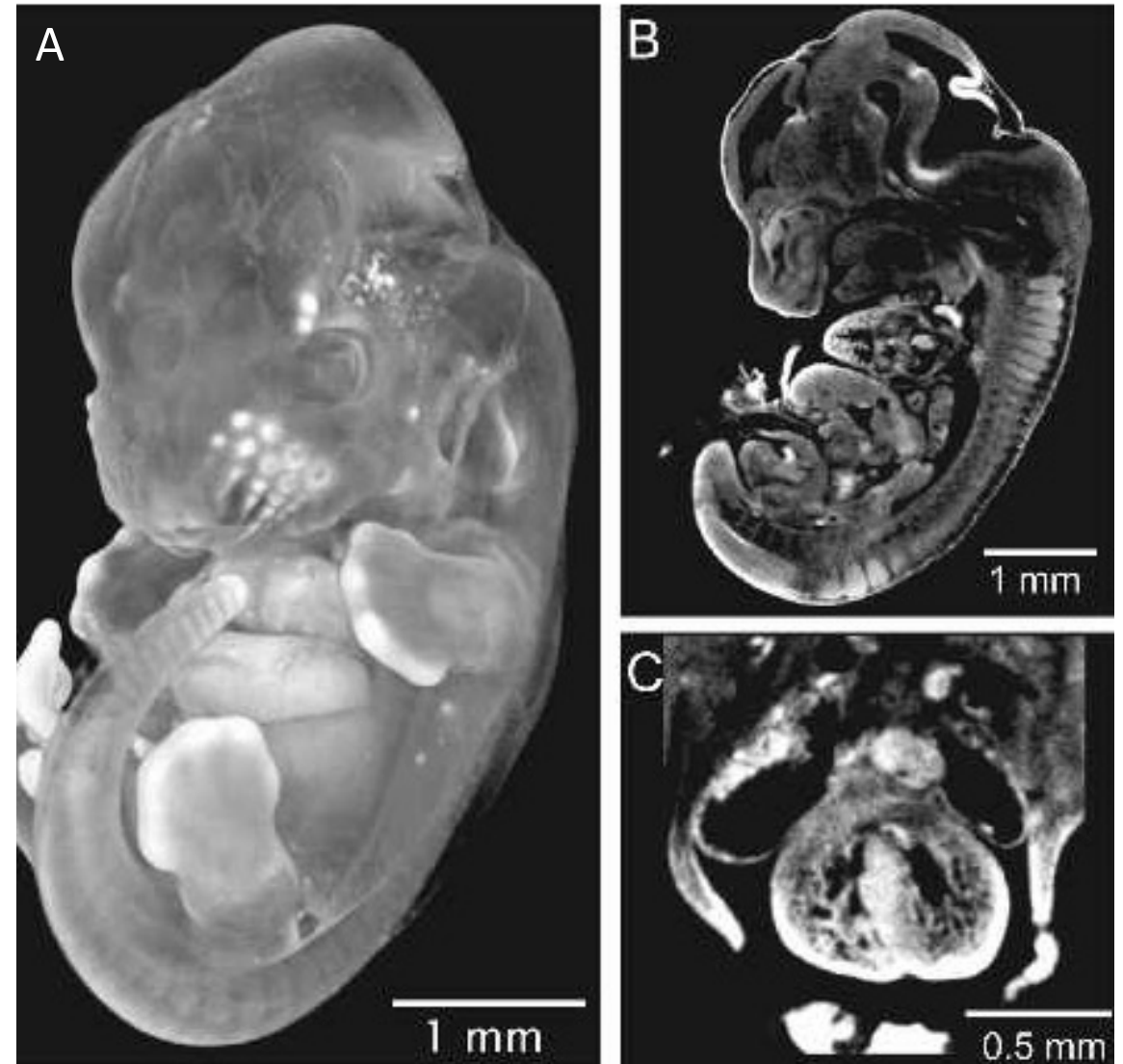


OPTICAL PROJECTION TOMOGRAPHY

A **tomografia de projeção óptica (OPT)** é uma nova técnica para imagens tridimensionais (3D) de pequenos tecidos biológicos. É particularmente útil para reconstruir embriões de vertebrados e para examinar a anatomia 3D de órgãos em desenvolvimento.

(A) Imagens de Tomografia de Projeção Óptica de um embrião de ratinho com 12,5 dias. (B) Corte sagittal do mesmo embrião. (C) Secção axial do mesmo embrião colocando em evidência a região cardíaca.

From Kulandavelu et al., 2006



Review
A coming of age: advanced imaging technologies for characterising the developing mouse

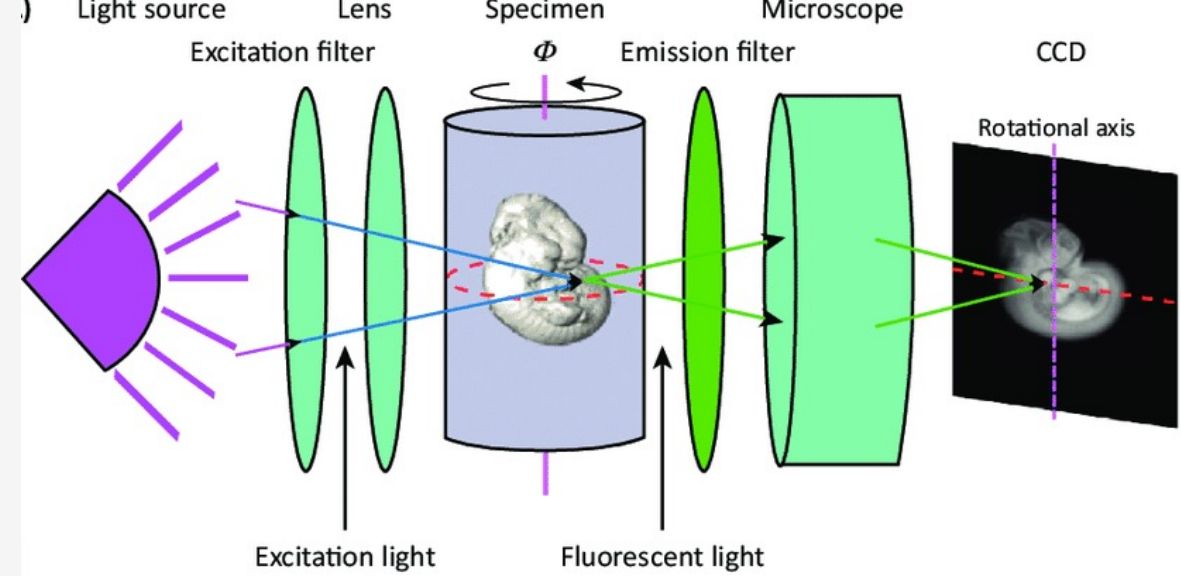
Francesca C. Norris^{1,2}, Michael D. Wong^{3,4}, Nicholas D.E. Greene⁵, Peter J. Scambler⁶, Tom Weaver⁷, Wolfgang J. Weninger⁸, Timothy J. Mohun⁹, R. Mark Henkelman^{3,4}, Mark F. Lythgoe¹ ✉

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<https://doi.org/10.1016/j.tig.2013.08.004>

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Norris et al. (2013). A coming of age: advanced imaging technologies for characterising the developing mouse
<https://doi.org/10.1016/j.tig.2013.08.004>

