

PTC 5874

Sistema Cardio-respiratório

HENRIQUE TAKACHI MORIYA

APRESENTAÇÃO

- **Sala D2-01**
- **3091-1723**
- **htmoriya@usp.br**
- **Moodle**

ALUNOS

- **Formação**
- **Por que PG?**
- **Projeto**
- **Orientador**

DISCIPLINA

- **Noções de:**
 - **Anatomia**
 - **Fisiologia**
 - **Patologias**
 - **Aspectos de modelagem, simulação e controle**
 - **Pesquisas científicas**

DISCIPLINA

➤ Avaliação

➤ Exercícios semanais (ES)

➤ Prova (P)

➤ Média (M)

$$M = \frac{ES + P}{2}$$

DISCIPLINA

➤ Cronograma

➤ 21/02/2017 – Aula 01

➤ Anatomia do sistema cardio-respiratório

➤ 28/02/2017 – NÃO HAVERÁ AULA

➤ Carnaval

➤ 07/03/2017 – Aula 02

➤ Anatomia do sistema cardio-respiratório

DISCIPLINA

➤ Cronograma

- 14/03/2017 – Aula 03
 - Fisiologia do sistema cardio-respiratório
- 21/03/2017 – Aula 04
 - Fisiologia do sistema cardio-respiratório
- 28/03/2017 – Aula 05
 - Modelagem do sistema cardio-respiratório

DISCIPLINA

➤ Cronograma

- 04/04/2017 – Aula 06
 - Modelagem do sistema cardio-respiratório
- 11/04/2017 – Aula 07
 - Professor convidado
- 18/04/2017 – Aula 08
 - Professor convidado

DISCIPLINA

➤ Cronograma

- 25/04/2017 – Aula 09
 - Medicina hiperbárica
- 02/05/2017 – Aula 10
 - Aspectos de cirurgia vascular
- 09/05/2017 – Aula 11
 - Pesquisas experimentais na área vascular

DISCIPLINA

➤ Cronograma

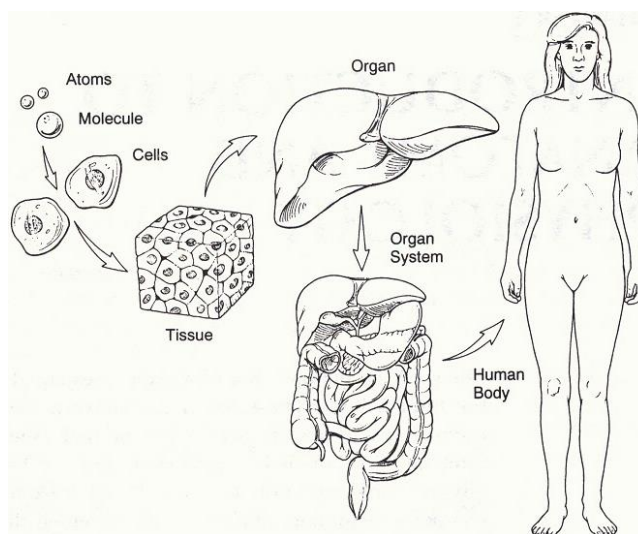
- 16/05/2017 – Aula 12
 - Exame Final

DEFINIÇÕES

➤ Anatomia

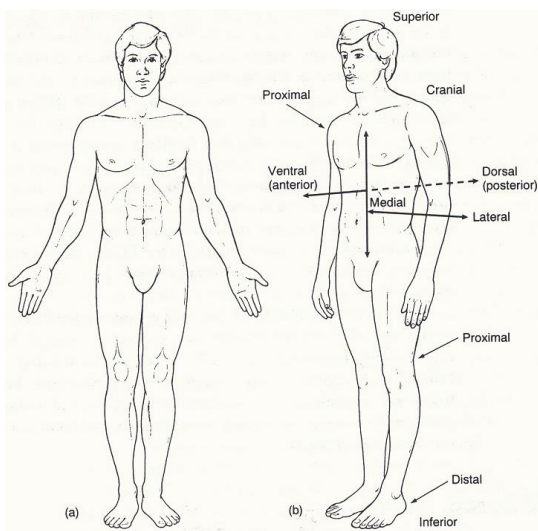
- ✓ Ciência que estuda a estrutura do corpo

NÍVEIS DE ESTRUTURA



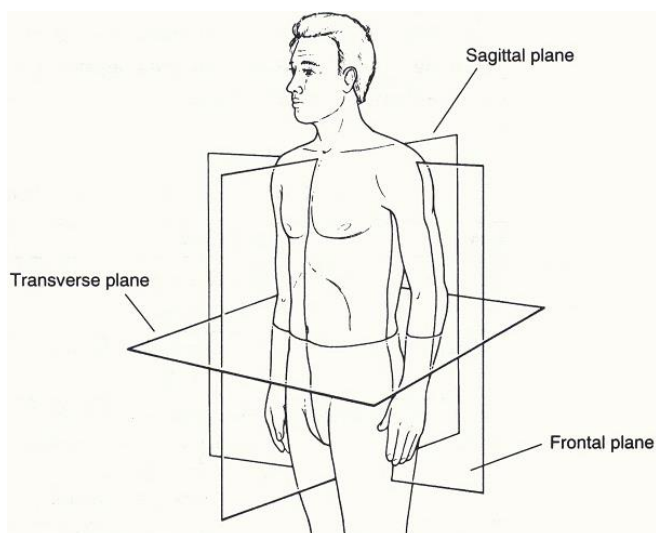
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

DIREÇÕES



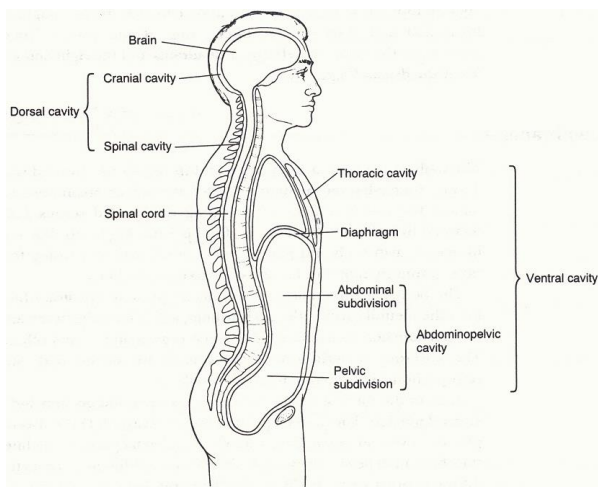
Alcorno, I. E. Anatomy & physiology the easy way. Barron's, 1996.

PLANOS



Alcorno, I. E. Anatomy & physiology the easy way. Barron's, 1996.

CAVIDADES



Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

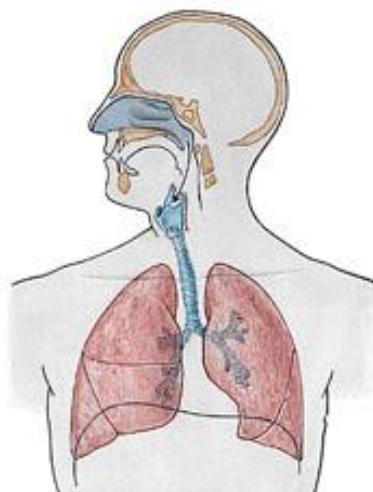
CIRURGIA LAPAROSCÓPICA



ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO

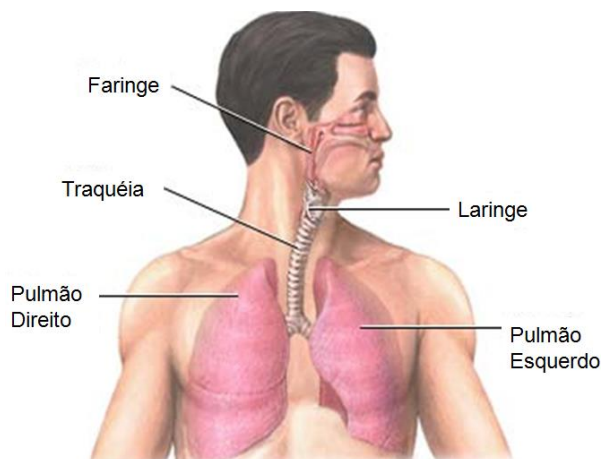
- Vias de condução
- Vias de transição
- Caixa torácica

ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO



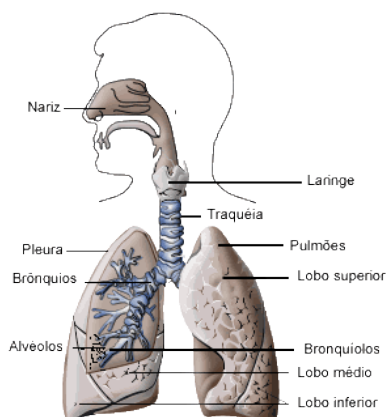
(www.auladeanatomia.com). Acesso em 01 de Maio de 2011

ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO



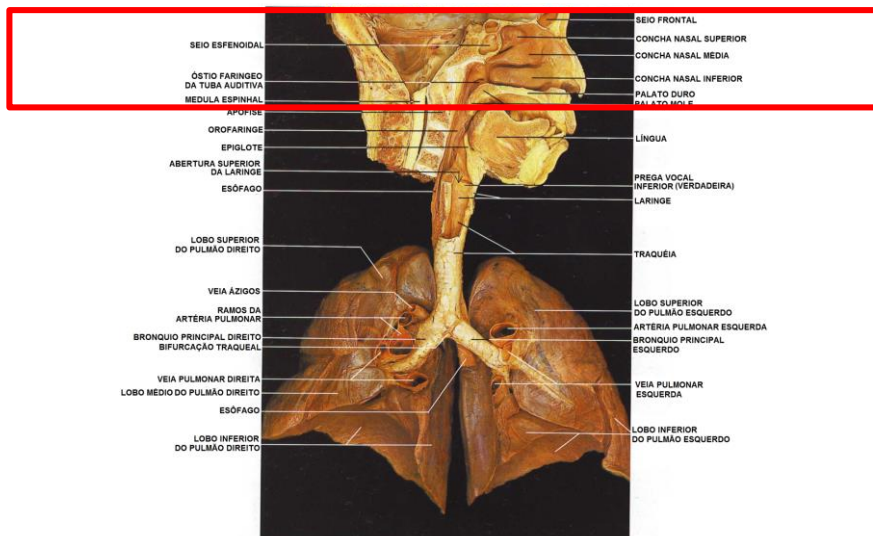
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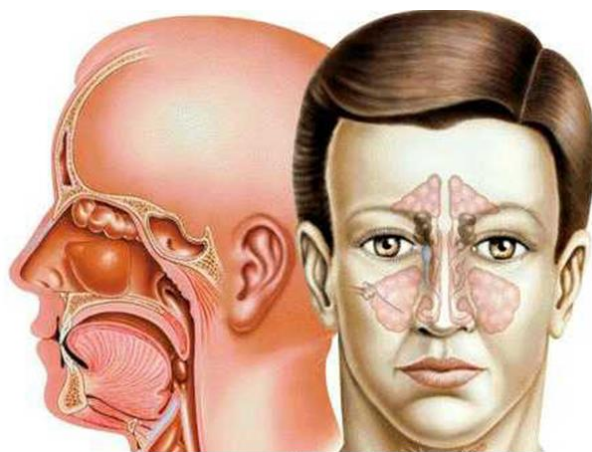
(<http://helenagabrieliabiofies.wordpress.com/category/uncategorized/>) Acesso em 25/04/11

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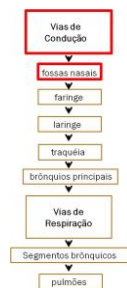


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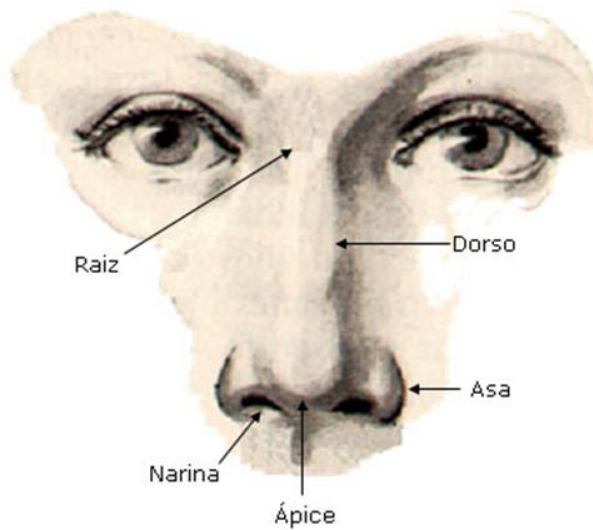
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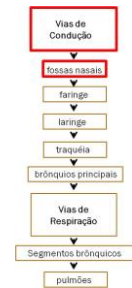
(www.auladeanatomia.com). Acesso em 01 de Maio de 2011



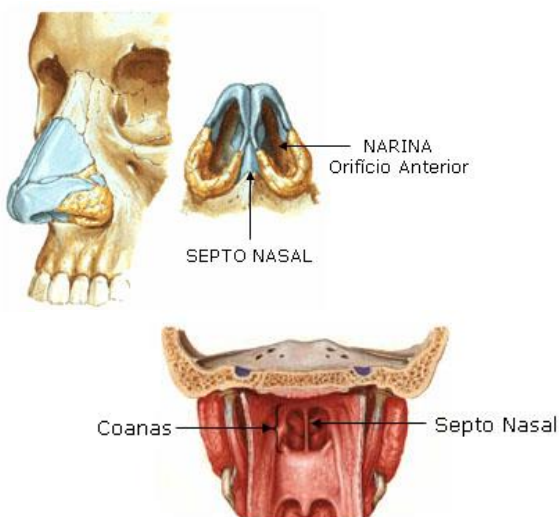
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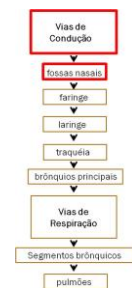
(www.auladeanatomia.com). Acesso em 01 de Maio de 2011



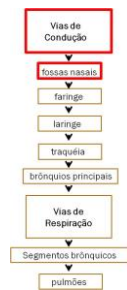
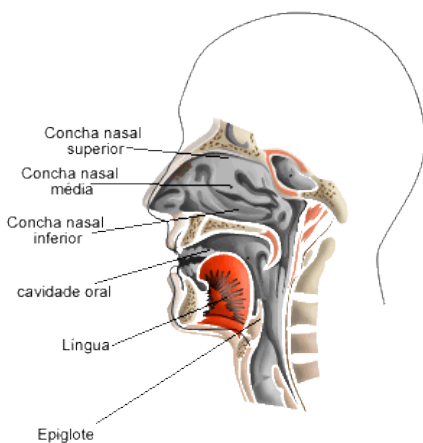
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(www.auladeanatomia.com). Acesso em 01 de Maio de 2011

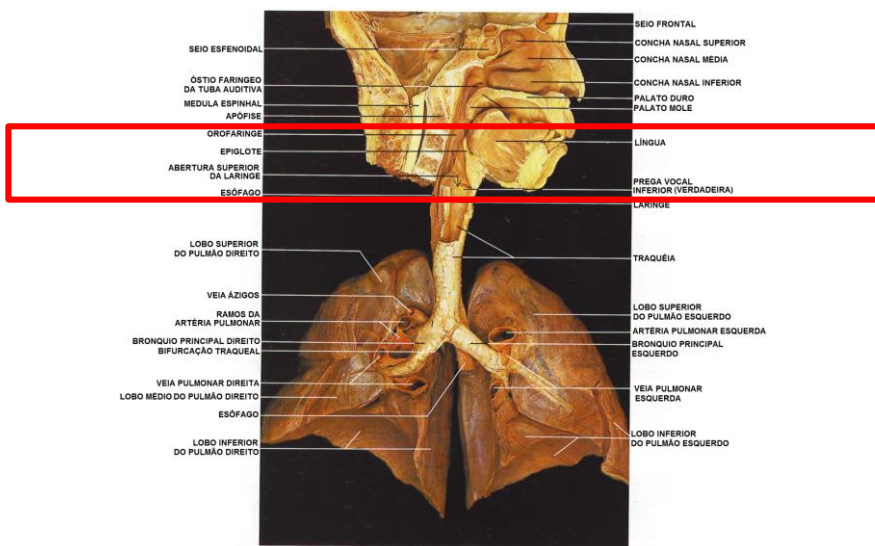


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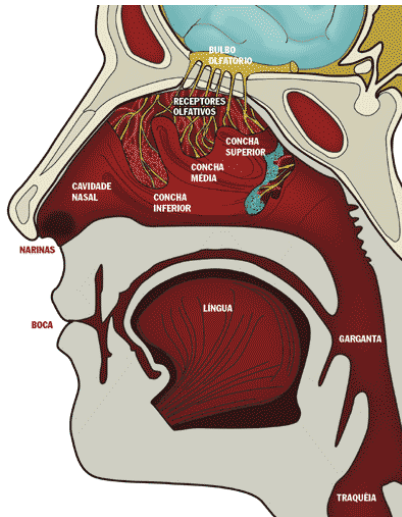
(<http://prof-julia.blogspot.com/2010/09/orgaos-do-sistema-respiratorio.html>) Acesso em 25/04/11

ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO

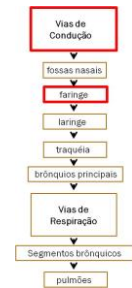


Modificado a partir: Atlas Fotográfico do Corpo Humano - YOKOCHI e ROHEN, 1991

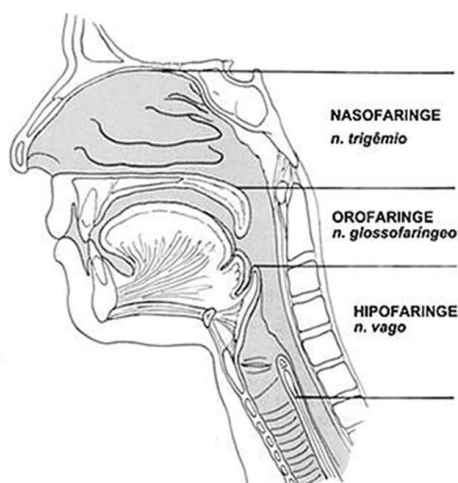
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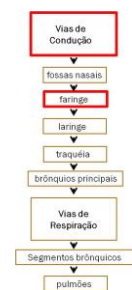
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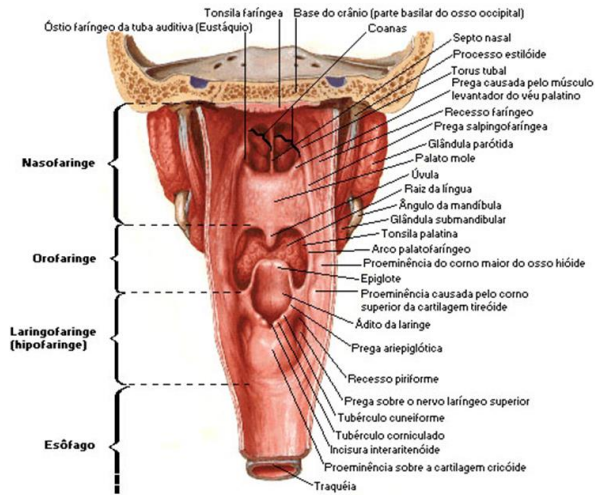
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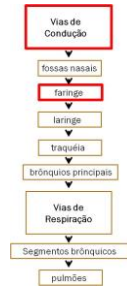
(http://4bp.blogspot.com/_Oli4d8BvVNQ/SUK2zlahN2I/AAAAAAAAAFw/dia5V6RTQA/s1600-h/imagem2.JPG). Acesso em 16 de Maio de 2011



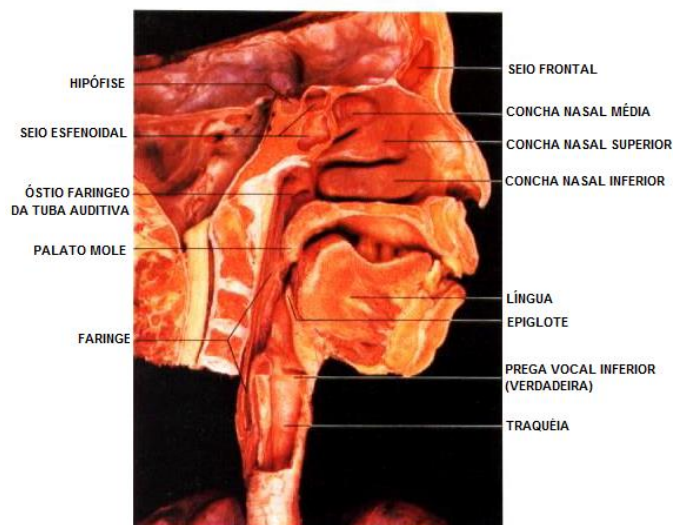
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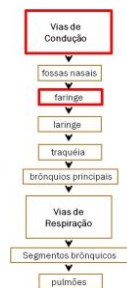
NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.



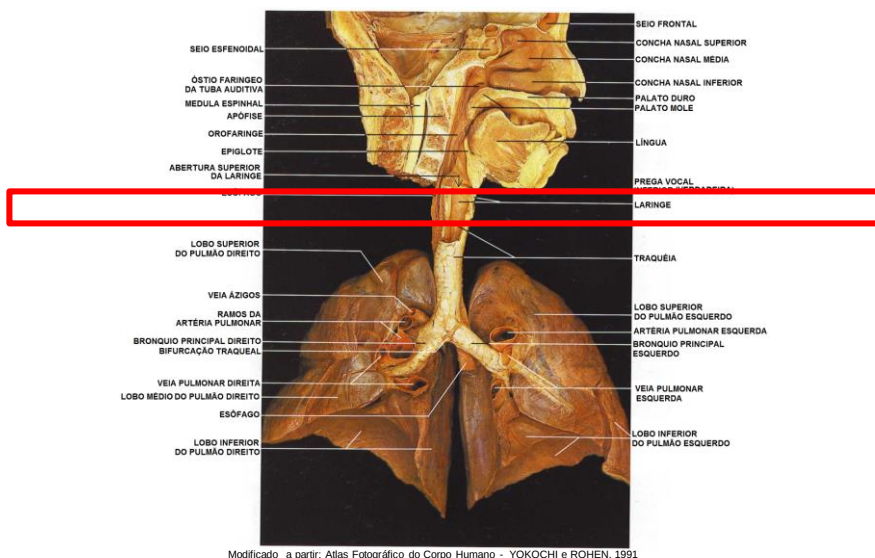
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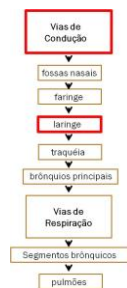
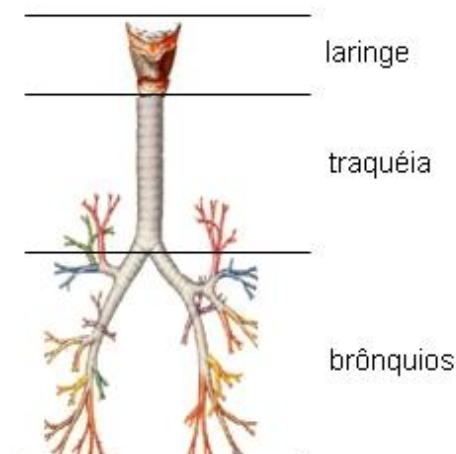


ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO



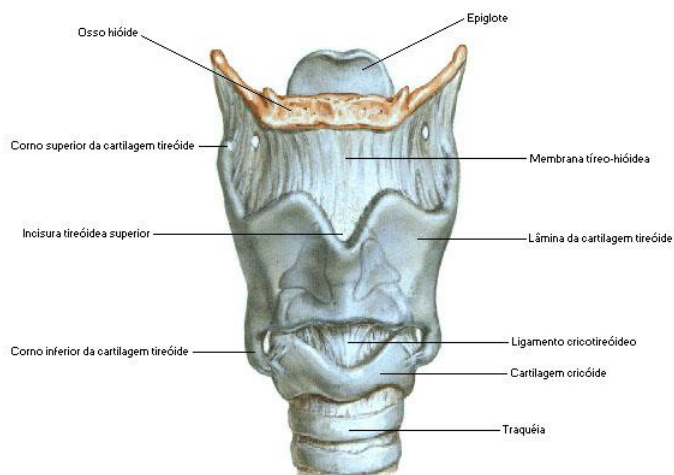
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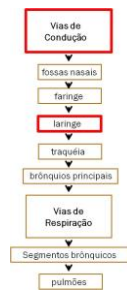


NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.

LARINGE



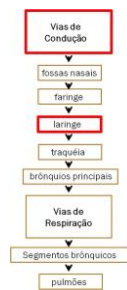
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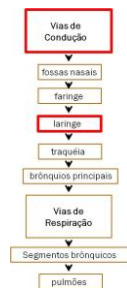
LARINGE



(www.auladeanatomia.com). Acesso em 01 de Maio de 2011

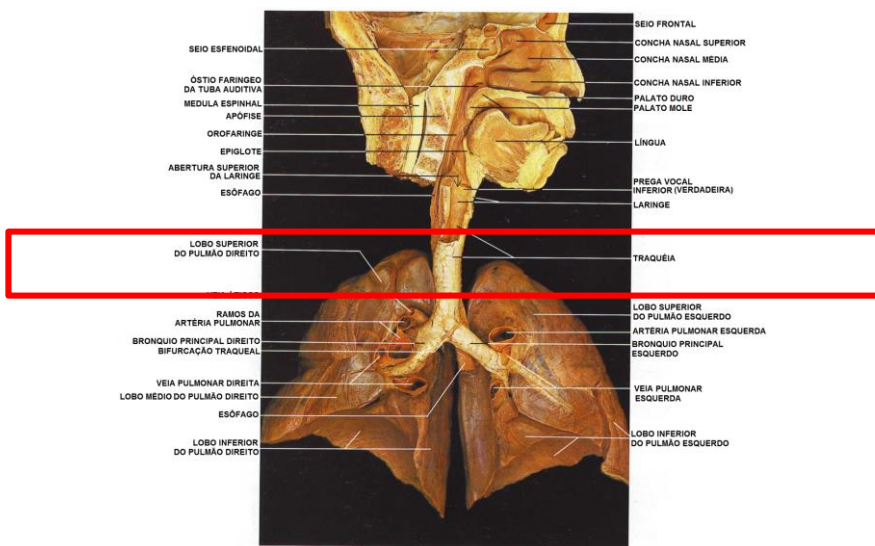


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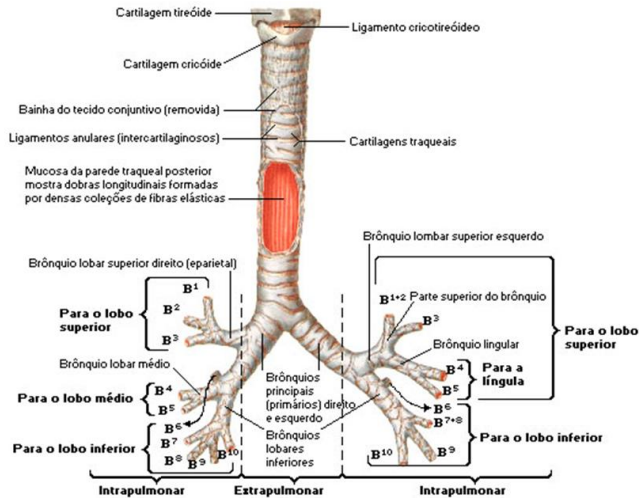
(www.ibb.unesp.br/nadi/Museu2_qualidade/Museu2_corpo_humano/Museu2_como_funciona/Museu_homem_nervoso/Museu2_homem_nervoso_audicao/imagens/cordas_anatomia.jpg) - Acesso em 01 de Maio de 2011

ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO



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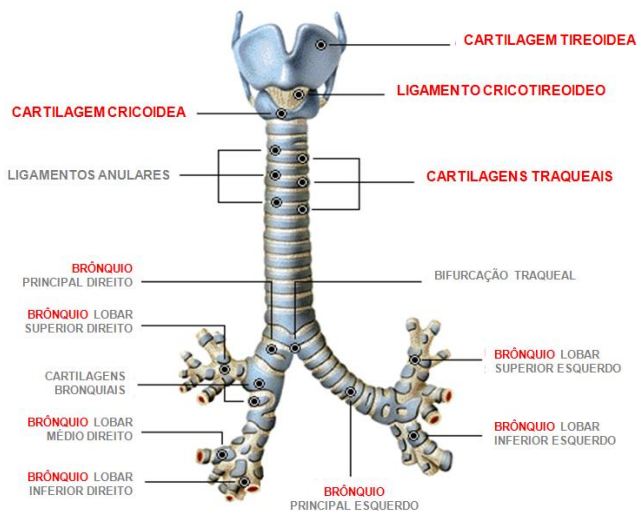
TRAQUEIA



NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.



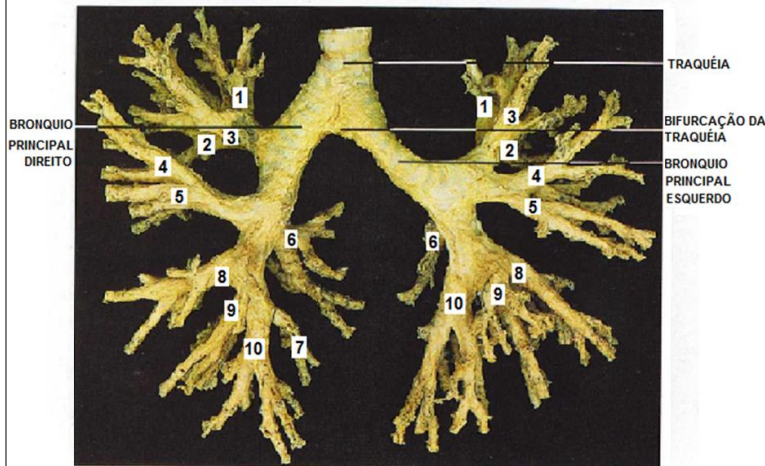
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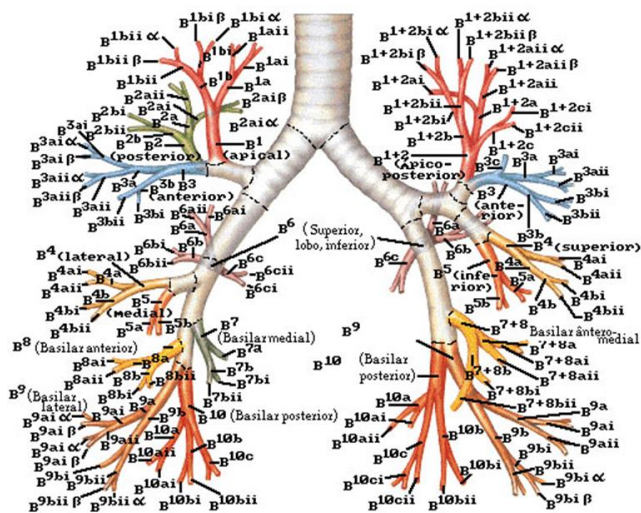
BRÔNQUIOS PRINCIPAIS



Modificado a partir: Atlas Fotográfico do Corpo Humano - YOKOCHI e ROHEN, 1991



SEGMENTOS BRÔNQUICOS



(www.auladeanatomia.com). Acesso em 01 de Maio de 2011



SEGMENTOS BRÔNQUICOS

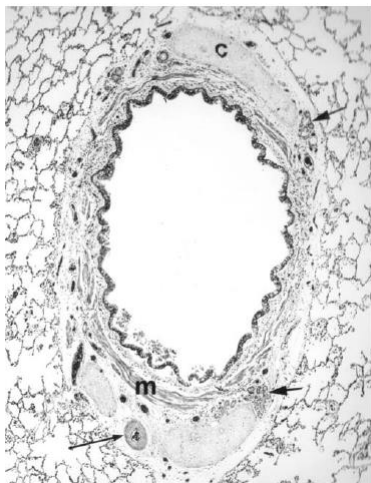
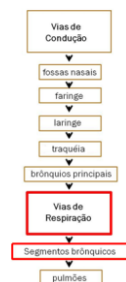


FIGURE 1-1 Conducting airway (hematoxylin-eosin stain). Subsegmental bronchus showing cartilage (c), mucous glands (short arrows), bronchial artery (long arrow), and muscle (m). Reproduced with permission from Fraser RS, Müller NL, Colman N, Paré PD, *Diagnosis of Diseases of the Chest*, IV edition. Philadelphia: WB Saunders; 1999.



SEGMENTOS BRÔNQUICOS

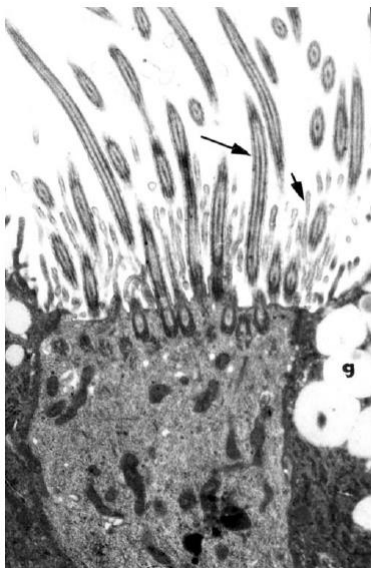
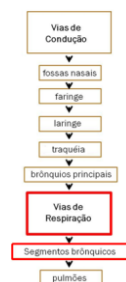
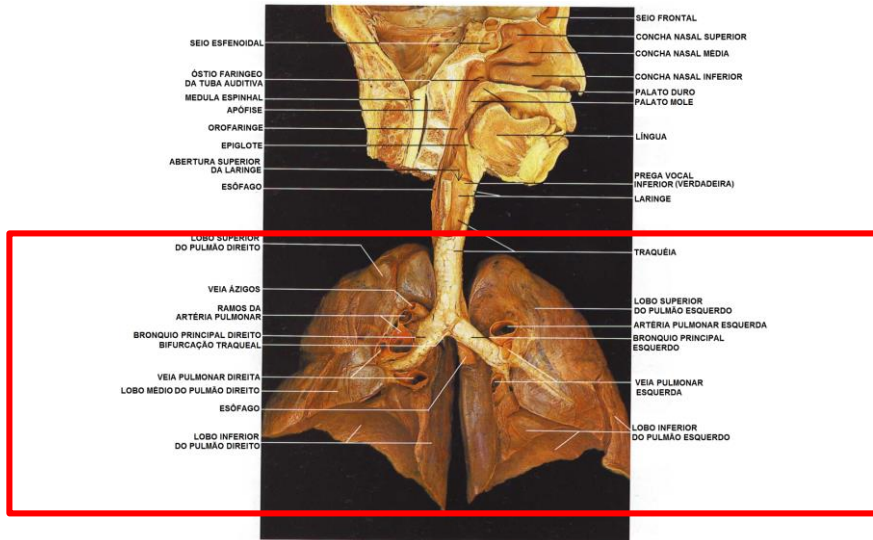


FIGURE 1-3 Ciliated cell (electron micrograph). Apical portion of cell showing cilia (long arrow) and microvilli (short arrow). Secretory granules (g) of a goblet cell can be seen in the adjacent cell. Reproduced with permission Fraser RS, Müller NL, Colman N, Paré PD, *Diagnosis of Diseases of the Chest*, IV edition. Philadelphia: WB Saunders; 1999.

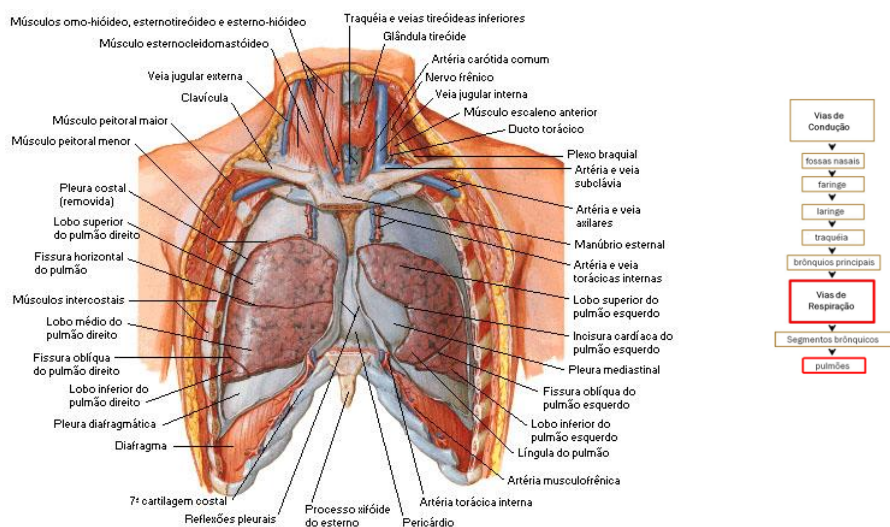


ANATOMIA DO SISTEMA RESPIRATÓRIO HUMANO



Modificado a partir: Atlas Fotográfico do Corpo Humano - YOKOCHI e ROHEN, 1991

PULMÕES

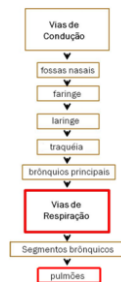


NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.

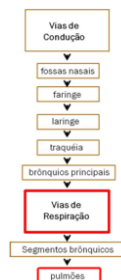
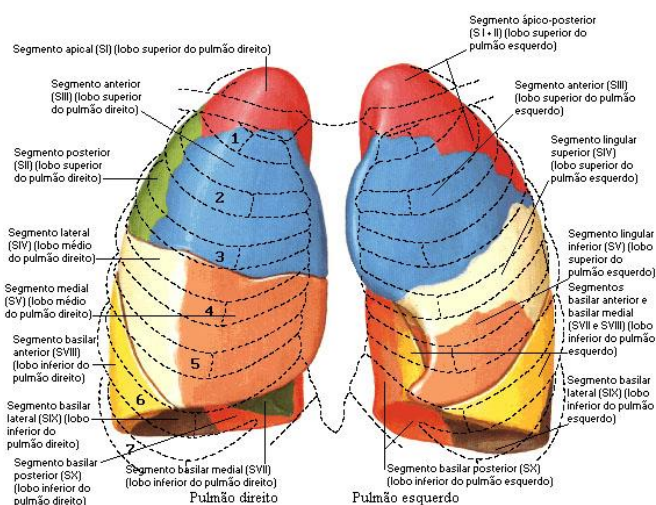
PULMÕES

PULMÃO DIREITO	
Brônquio Lobar	Brônquio Segmentar
Superior	Apical
	Posterior
	Anterior
Médio	Lateral
	Medial
Inferior	Superior
	Basal medial
	Basal anterior
	Basal lateral
	Basal posterior

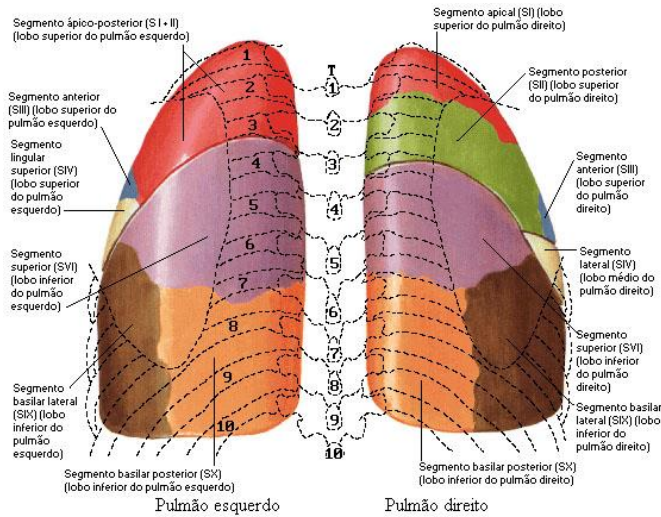
PULMÃO ESQUERDO		
Brônquio Lobar	Divisão	Brônquio Segmentar
Superior	Divisão Superior	Apico-posterior
	Divisão Inferior (Lingula)	Anterior
Inferior		Superior
		Inferior
		Superior
		Basal ântero-medial
		Basal lateral
		Basal posterior



PULMÕES



PULMÕES



NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.



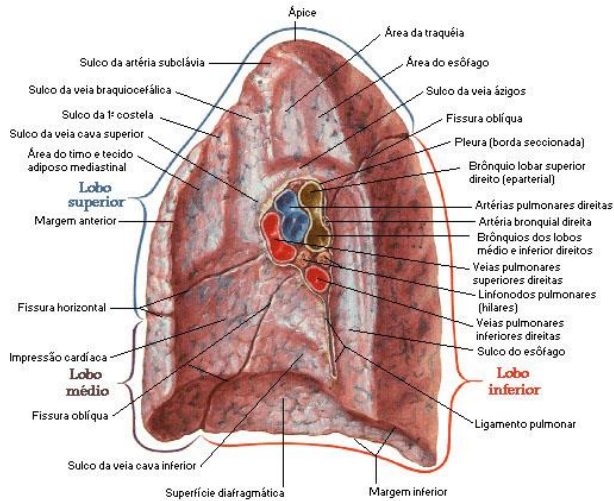
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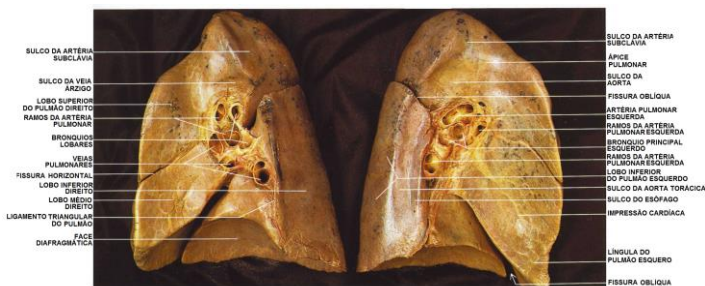
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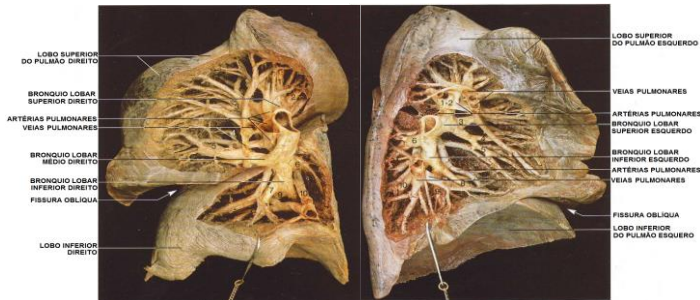
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Modificado a partir: Atlas Fotográfico do Corpo Humano - YOKOCHI e ROHEN, 1991



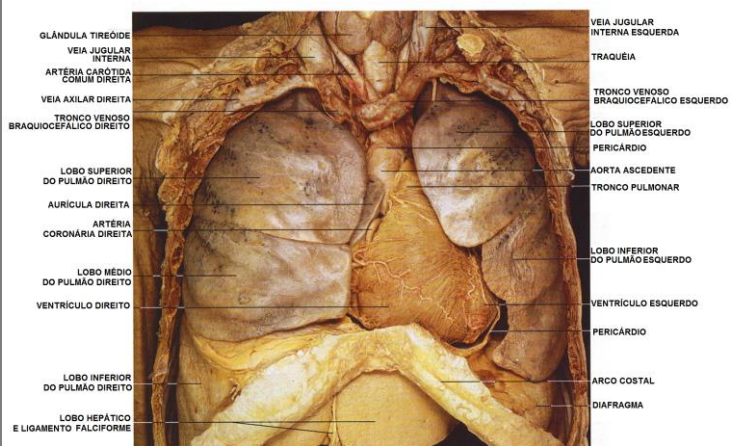
PULMÕES



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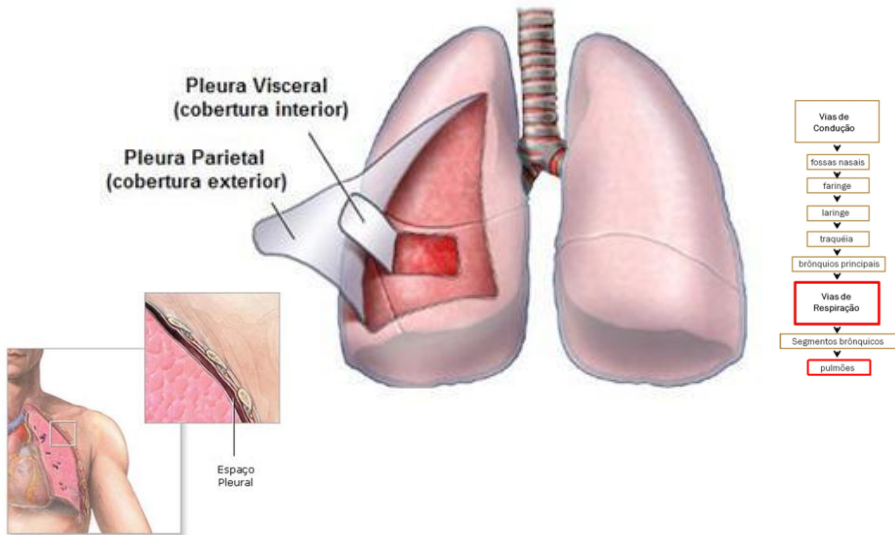
PULMÕES



Modificado a partir: Atlas Fotográfico do Corpo Humano - YOKOCHI e ROHEN, 1991



PULMÕES



(www.derramepleural.com/sistema-respiratorio-anatomia.html) Acesso em 25/04/11

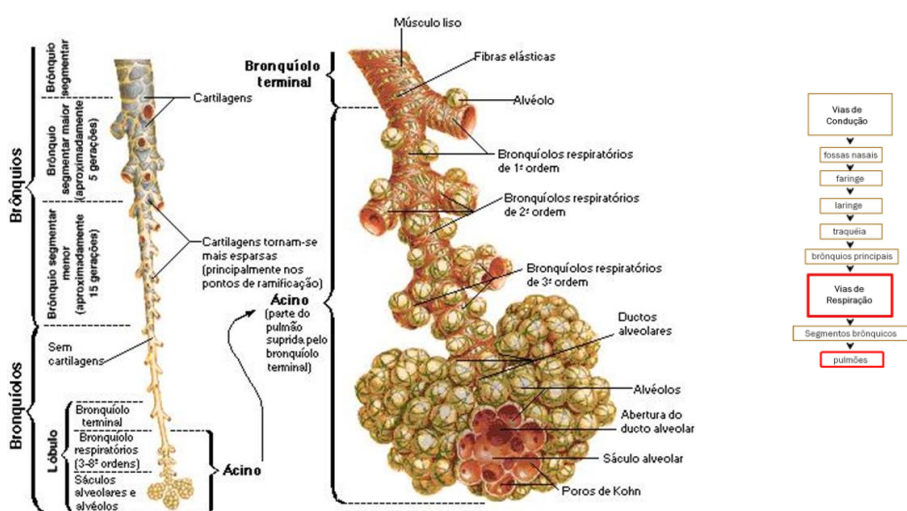
PLEURA



PULMÕES

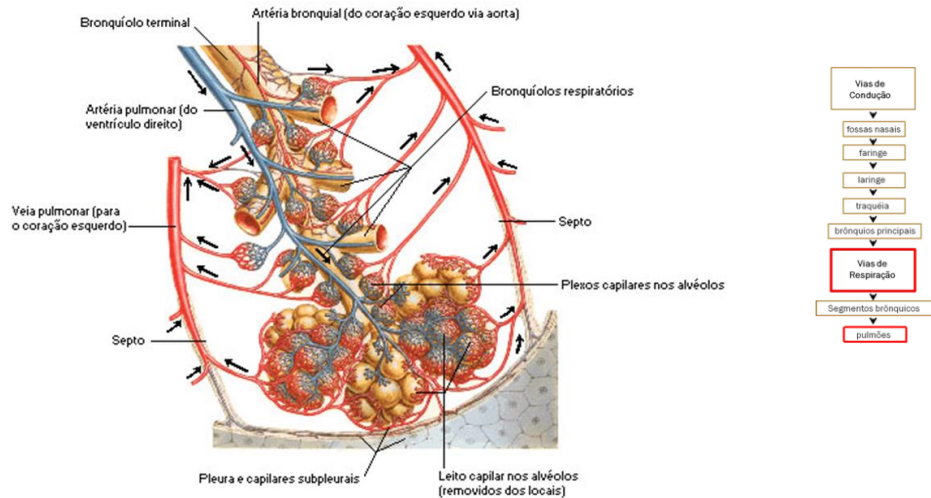


ALVÉOLOS



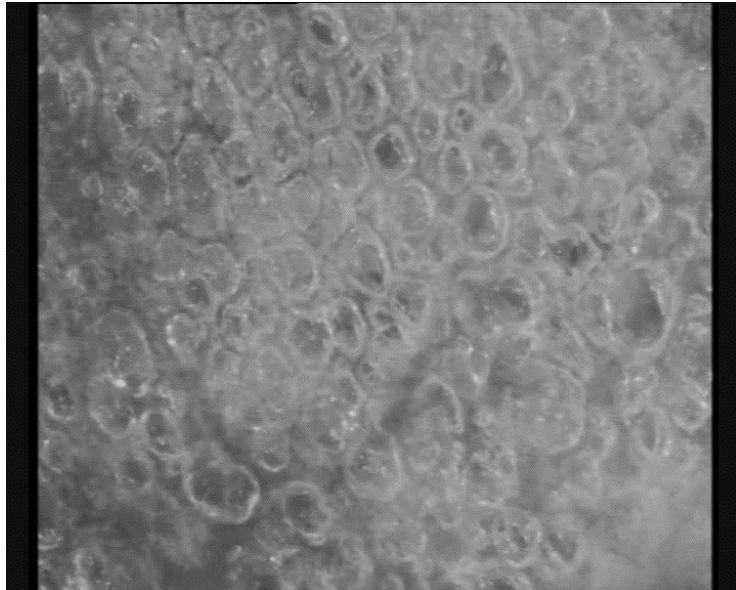
NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.

ALVÉOLOS

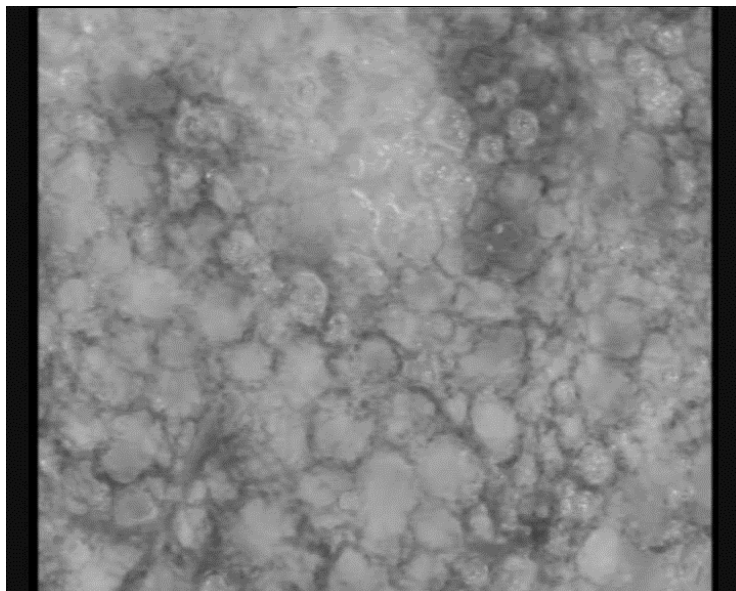


NETTER, Frank H. Atlas de Anatomia Humana. 2ed. Porto Alegre: Artmed, 2000.

ALVÉOLOS



ALVÉOLOS

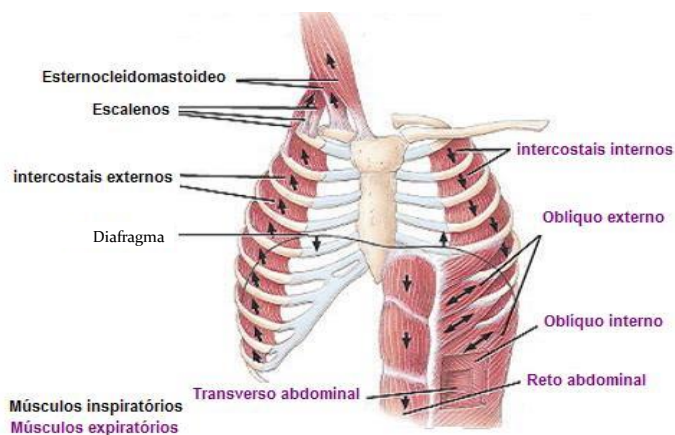


CAIXA TORÁCICA



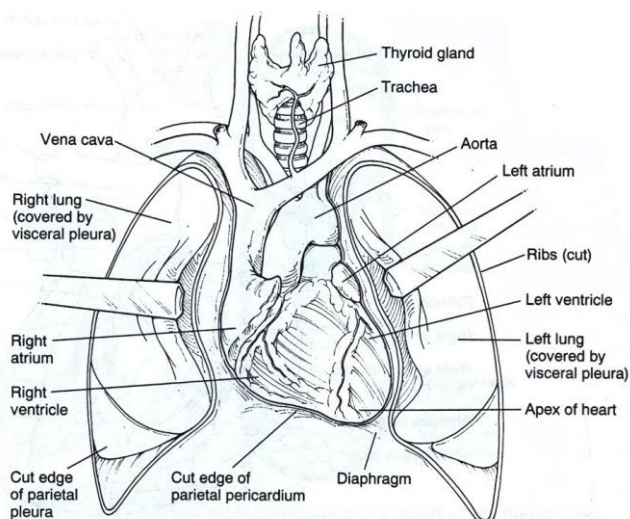
(<http://gabi-superblogspot.blogspot.com/>) Acesso em 25/04/11

CAIXA TORÁCICA



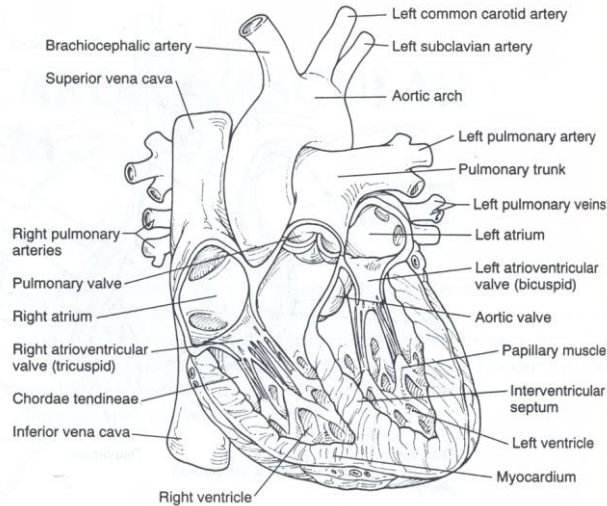
(www.medicinageriatrica.com.br/2007/09/30/doencas-da-parede-toracica/) Acesso em 25/04/11

CORAÇÃO HUMANO



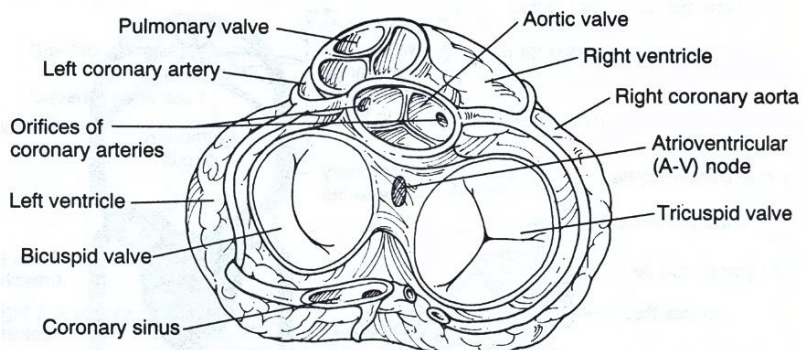
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

CORAÇÃO HUMANO



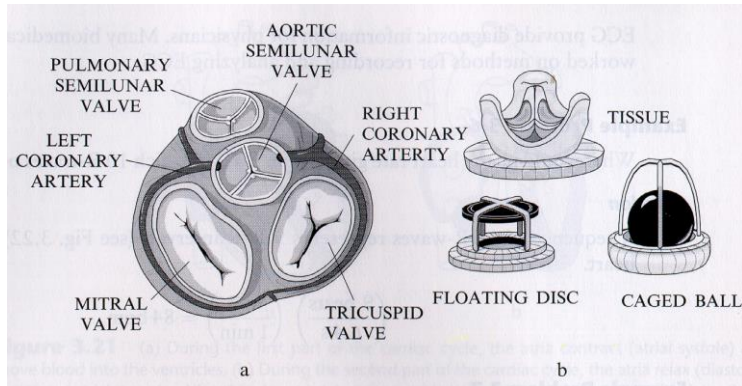
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

VÁLVULAS CARDÍACAS



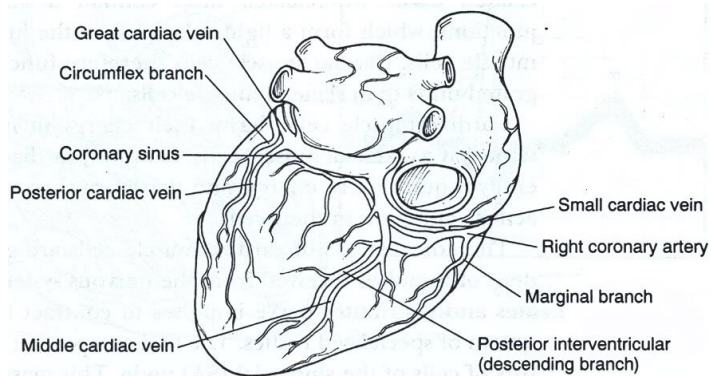
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

VÁLVULAS CARDÍACAS



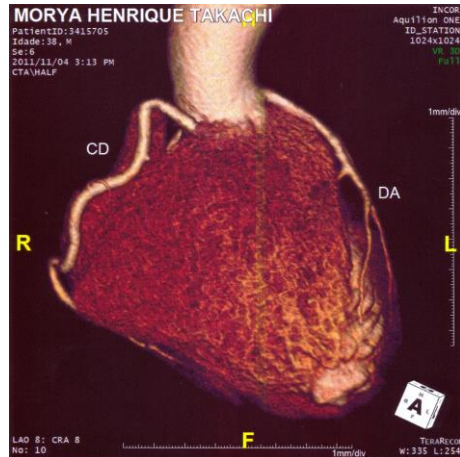
Enderle, J.; Blanchard, S.; Bronzino, J. Introduction to biomedical engineering. 2nd ed. Elsevier, 2005.

CIRCULAÇÃO CORONARIANA

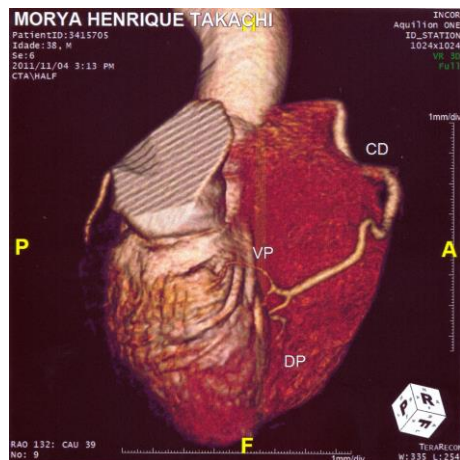


Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

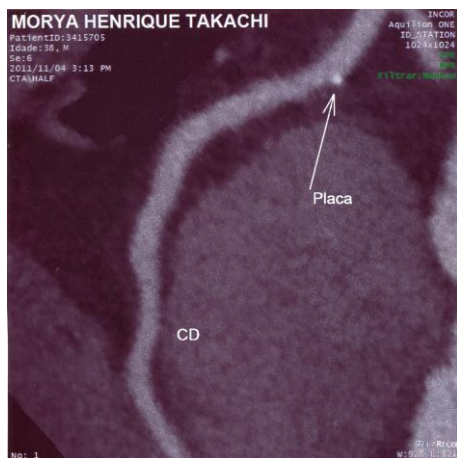
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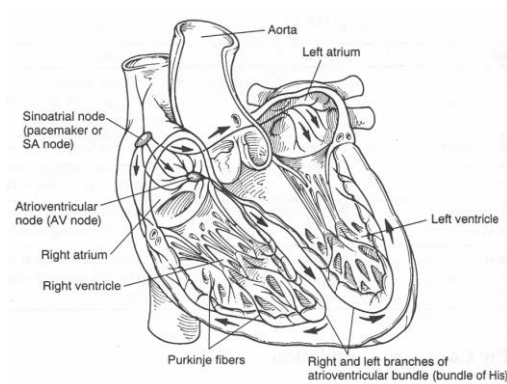
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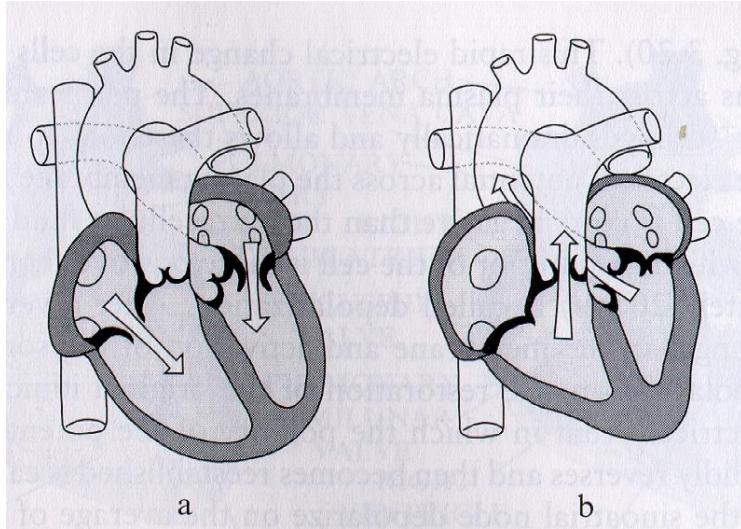


SISTEMA CARDIOVASCULAR HUMANO



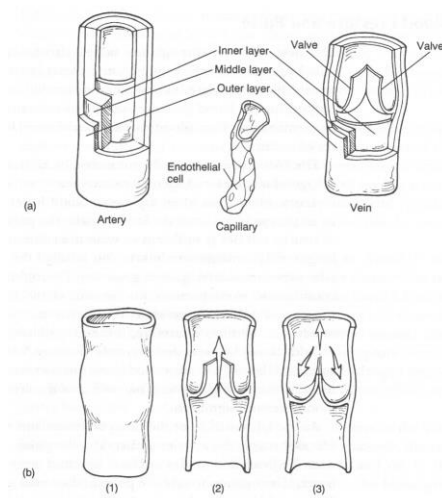
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

SISTEMA CARDIOVASCULAR HUMANO



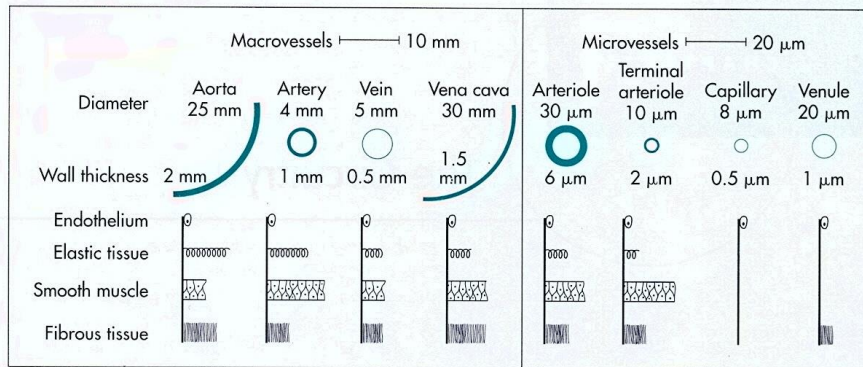
Enderle, J.; Blanchard, S.; Bronzino, J. Introduction to biomedical engineering. 2nd ed. Elsevier, 2005.

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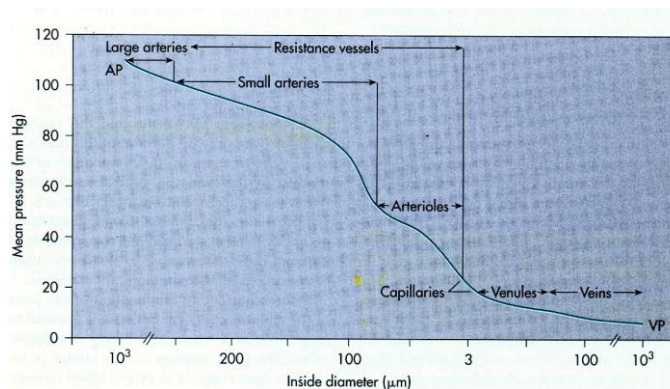
Alcamo, I. E. Anatomy & physiology the easy way. Barron's, 1996.

SISTEMA CARDIOVASCULAR HUMANO



Berne, R. M., Levy, M. N. Cardiovascular physiology. 8th ed. Mosby, 2001.

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SISTEMA CARDIOVASCULAR HUMANO

TABLE 1-1

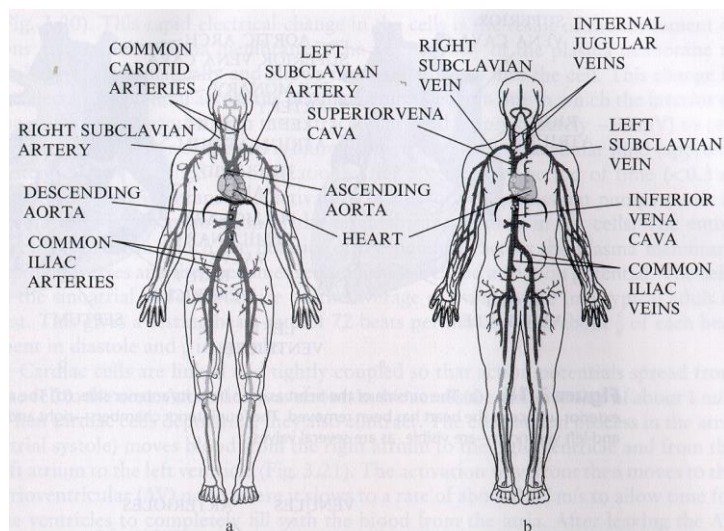
Vascular dimensions in a 20-kg dog

Vessels	No.	Total cross-sectional area (cm ²)	Total blood volume (%)
Systemic			
Aorta	1	2.8	11
Arteries	40 to 110,000	40	
Arterioles	2.8×10^6	55	
Capillaries	2.7×10^9	1357	5
Venules	1×10^7	785	67
Veins	660,000 to 110	631	
Venae cavae	2	3.1	
Pulmonary			
Arteries and arterioles	$1-1.5 \times 10^6$	137	3
Capillaries	2.7×10^9	1357	4
Venules and veins	2×10^6 to 4	210	5
Heart			
Atria	2		5
Ventricles	2		

Data from Milnor WR: *Hemodynamics*, Baltimore, 1982, Williams & Wilkins.

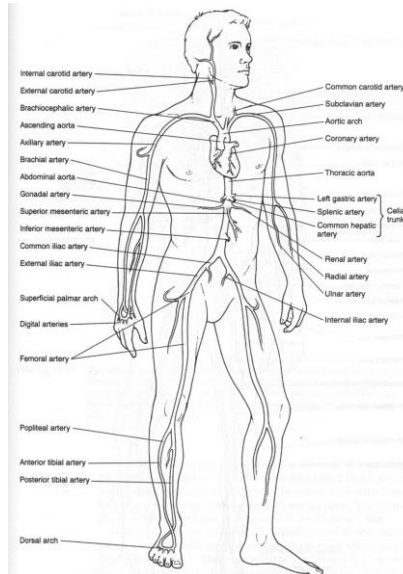
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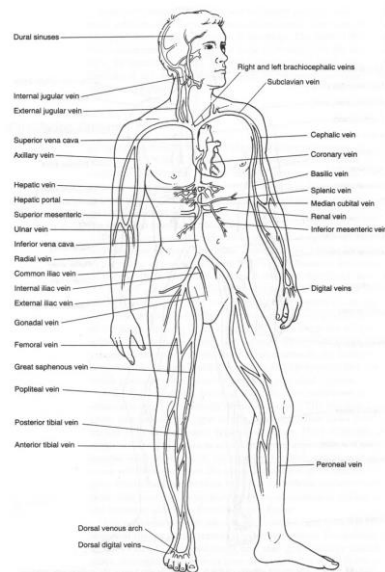
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EXERCÍCIO SEMANAL

- **Apresentação**
 - **Como fazer uma apresentação?**
 - **Anatomia sistema cardio-respiratório**
 - **Animais de experimentação**
 - **Referência/Fonte**
 - **htmoriya@usp.br**