



The Respiratory System: Viral Infections

University of Jordan

School of Medicine

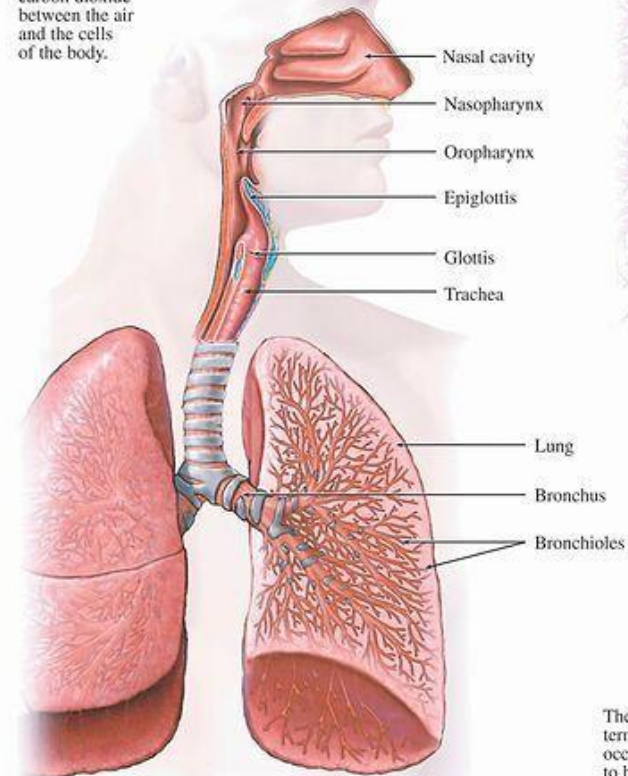
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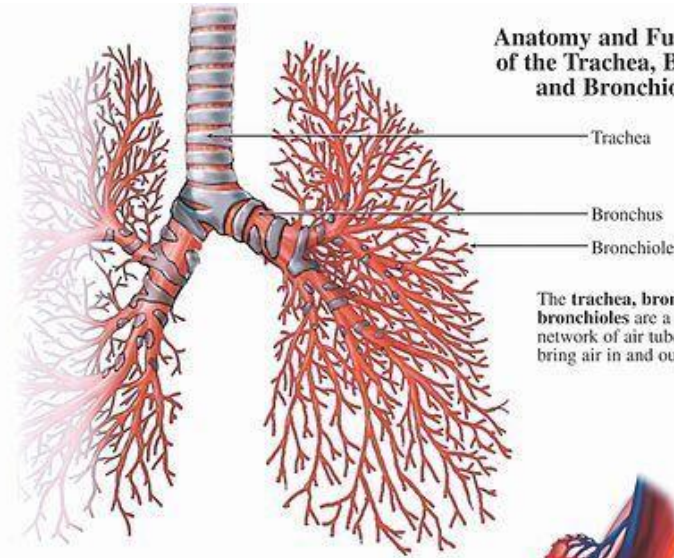
The infection-borne structures of the respiratory tract

The Respiratory System

The respiratory system consists of all the air passages from the nose to the pulmonary alveoli. Respiration is the exchange of oxygen and carbon dioxide between the air and the cells of the body.

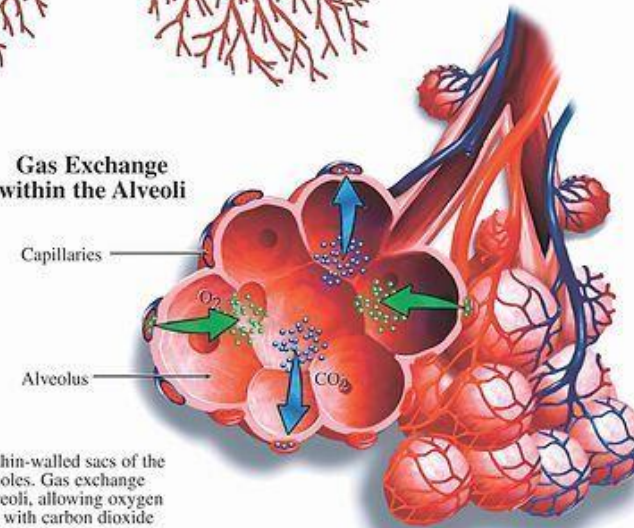


Anatomy and Functions of the Trachea, Bronchi and Bronchioles



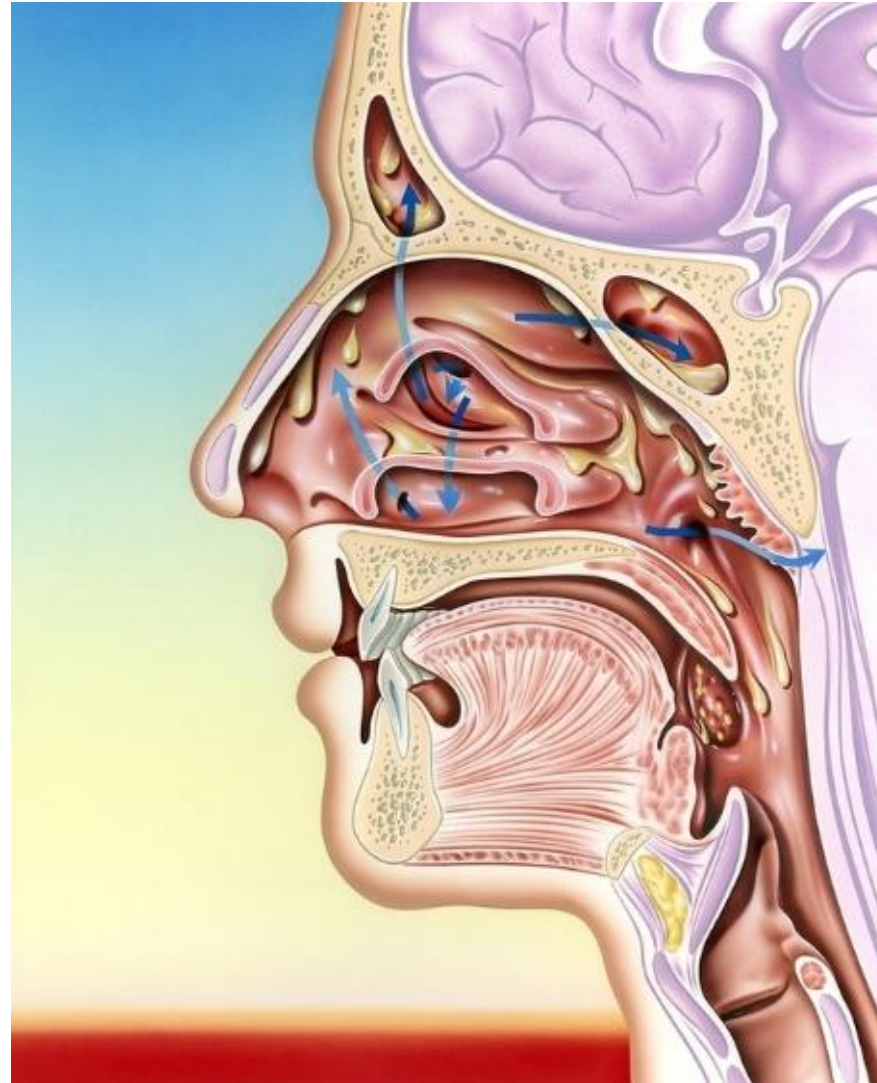
The trachea, bronchi and bronchioles are a complex network of air tubes that bring air in and out of the lungs.

Gas Exchange within the Alveoli

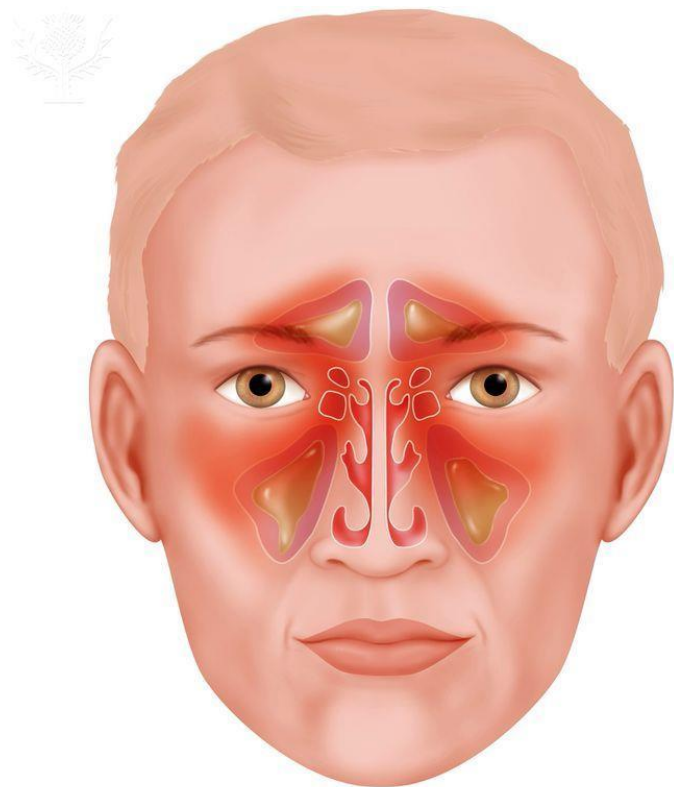


The **alveoli** are thin-walled sacs of the terminal bronchioles. Gas exchange occurs in the alveoli, allowing oxygen to be exchanged with carbon dioxide from the pulmonary capillaries.

Viral Infections of the Upper Respiratory Tract



Rhinitis



Viral Rhinitis (common cold)





Viral Rhinitis - Etiology

Viral cause of the common cold

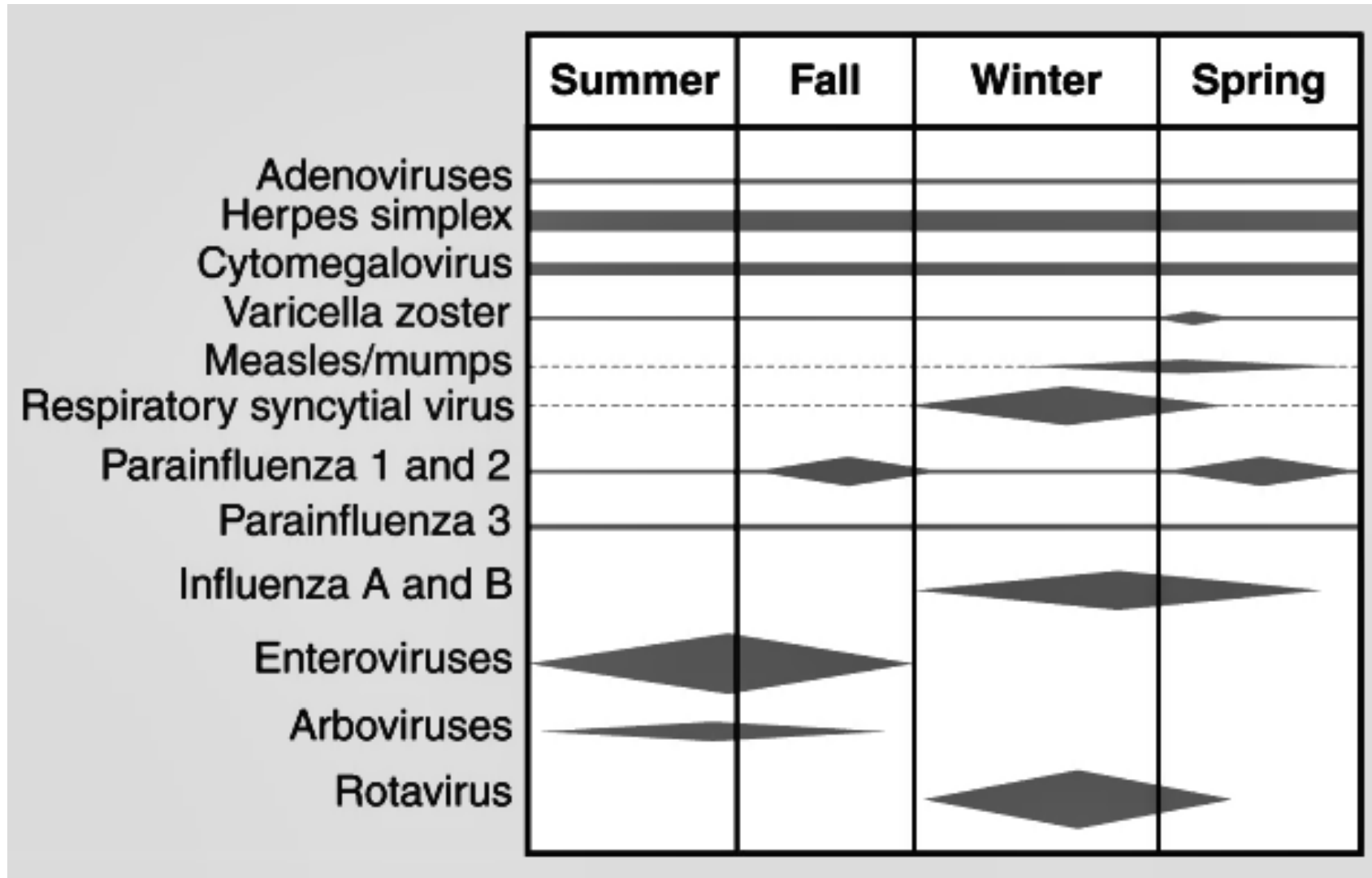
Virus	Estimated annual proportion of cases
Rhinoviruses	30–50%
Coronaviruses	10–15%
Influenza viruses	5–15%
Respiratory syncytial virus	5%
Parainfluenza viruses	5%
Adenoviruses	<5%
Enteroviruses	<5%
Metapneumovirus	Unknown
Unknown	20–30%



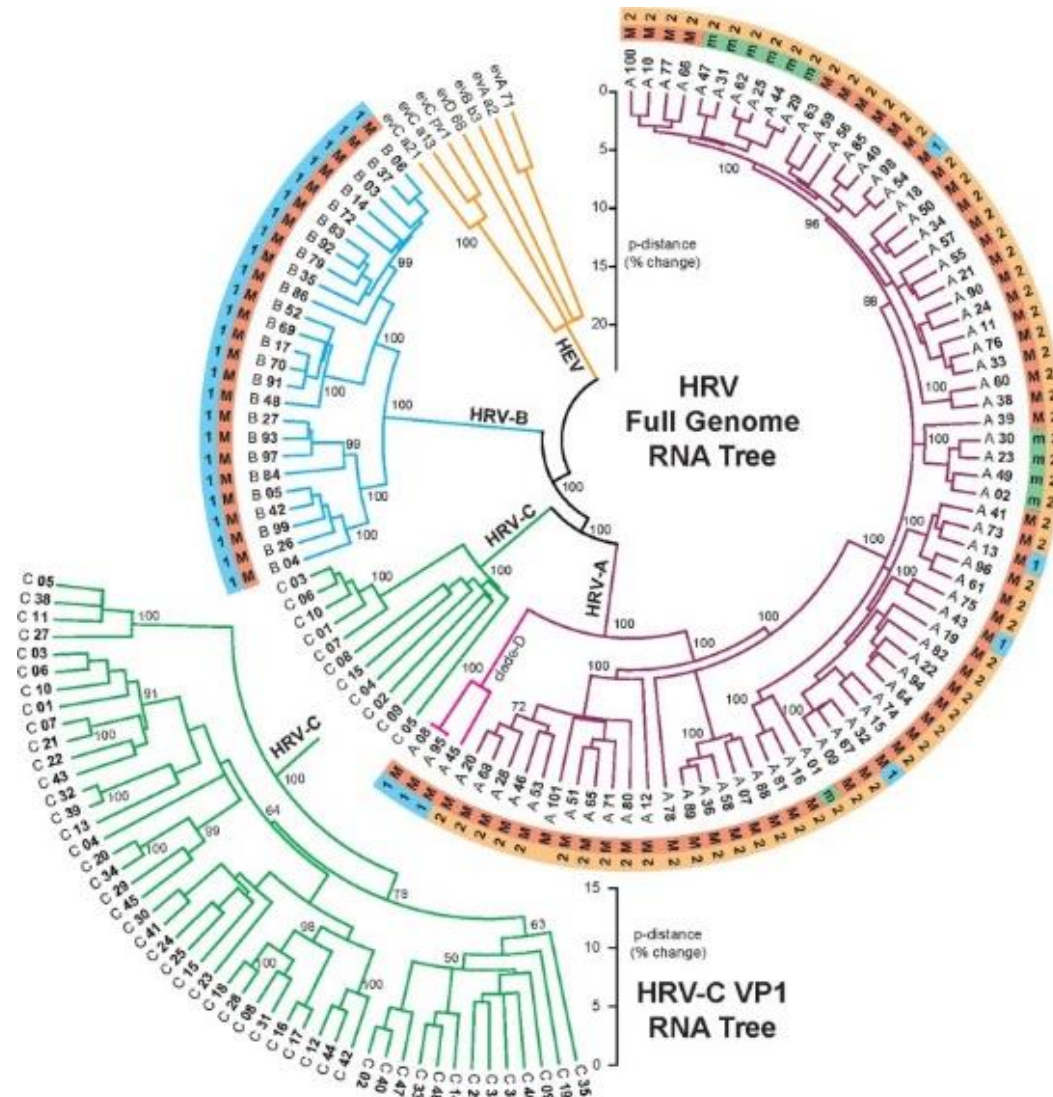
Common cold

Viruses	Types involved	Attachment mechanism	Disease
Rhinoviruses (> 100 types)	Several at any given time in the community	Capsid protein binds to ICAM-1 type molecule on cell	Common cold
Coxsackie virus A (24 types)	Especially A21	Capsid protein binds to ICAM-1 type molecule on cell	Common cold; also oropharyngeal vesicles (herpangina) and hand, foot and mouth disease (A16)
Influenza virus	Several	Hemagglutinin binds to neuraminic acid-containing glycoprotein on cell tract	May also invade lower respiratory tract
Parainfluenza virus (4 types)	1,2,3,4	Viral envelope protein binds to glycoside on cell	May also invade larynx
Respiratory syncytial virus	2 types	G protein on virus attaches to receptor on cell	May also invade lower respiratory tract
Coronaviruses (several types)	All	Viral envelope protein binds to glycoprotein receptors on cell	Common cold; severe acute respiratory syndrome
Adenovirus (41 types)	5–10 types	Penton fibre binds to cell receptor	Mainly pharyngitis; also conjunctivitis, bronchitis
Echovirus (34 types)	4,9,11,20,25		Common cold

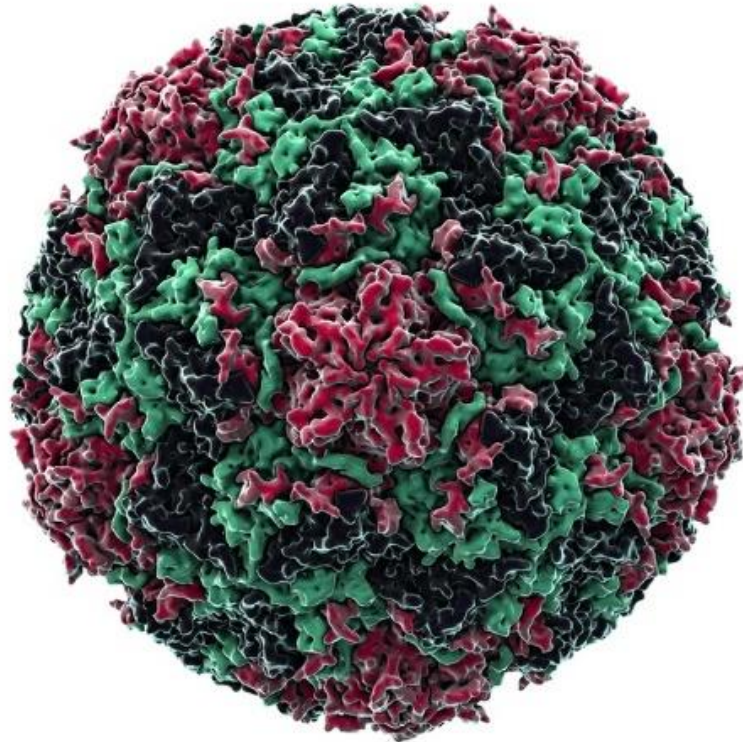
Viral Rhinitis - Etiology



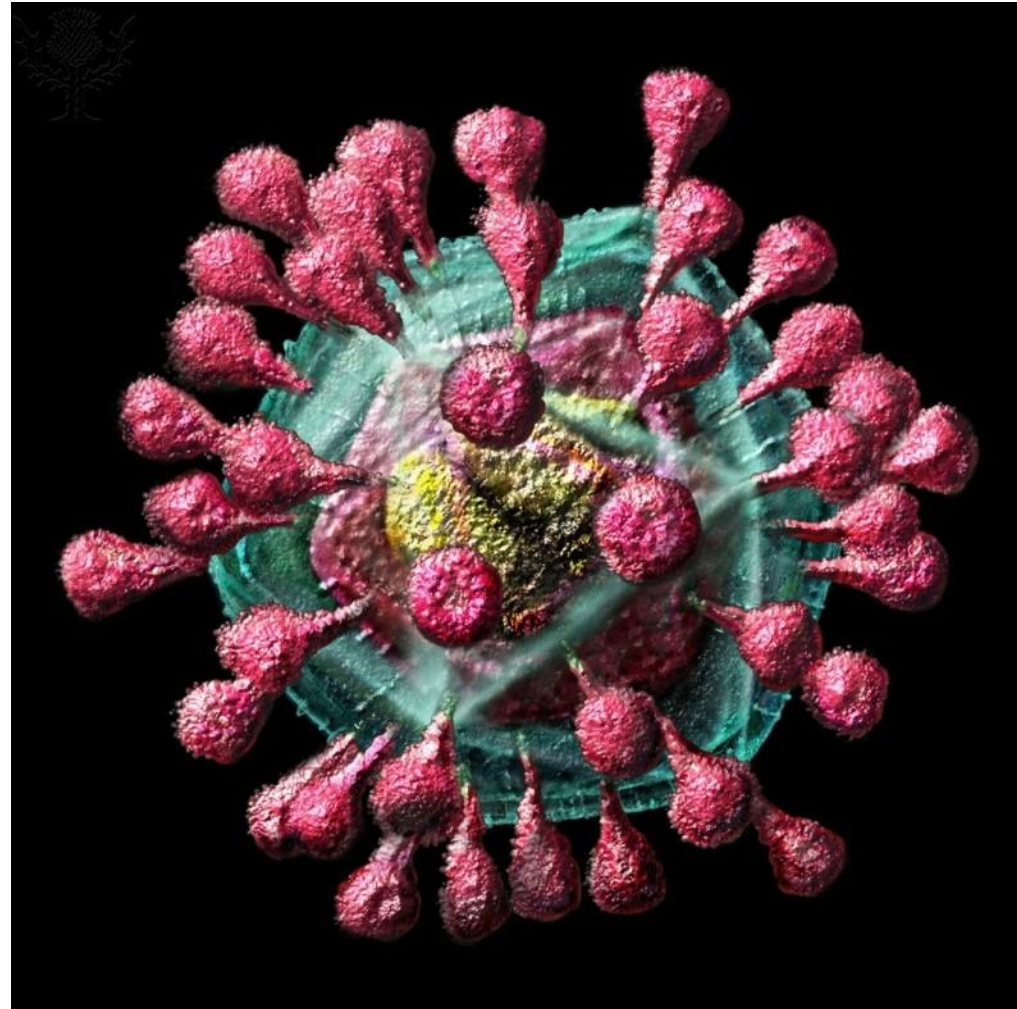
Viral Rhinitis – Etiology - Rhinovirus



Viral Rhinitis – Etiology - Rhinovirus



Viral Rhinitis – Etiology - Coronavirus



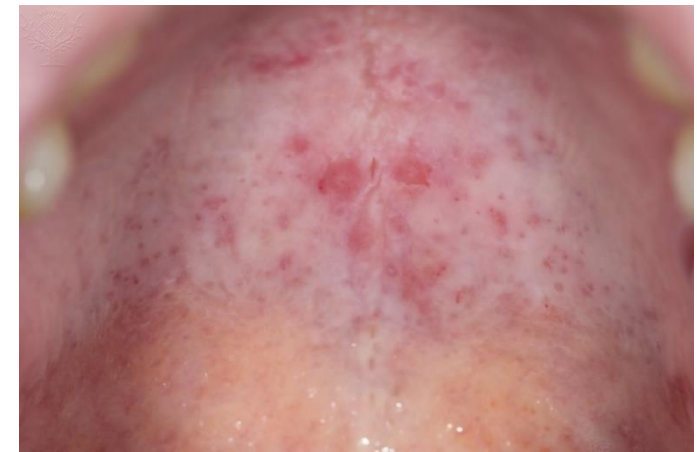
Pharyngitis (Sore Throat) and Tonsillitis



Herpangina



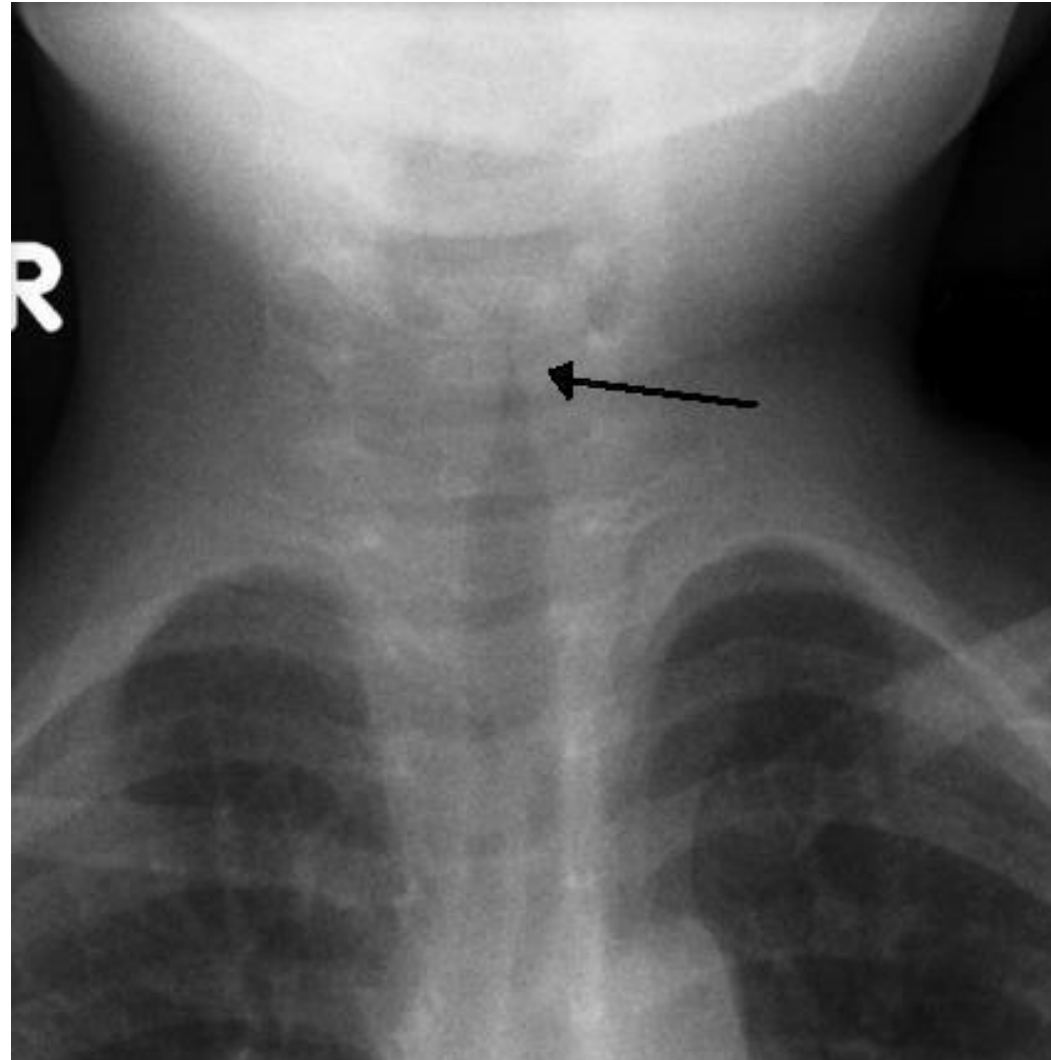
Hand-foot-and-mouth disease



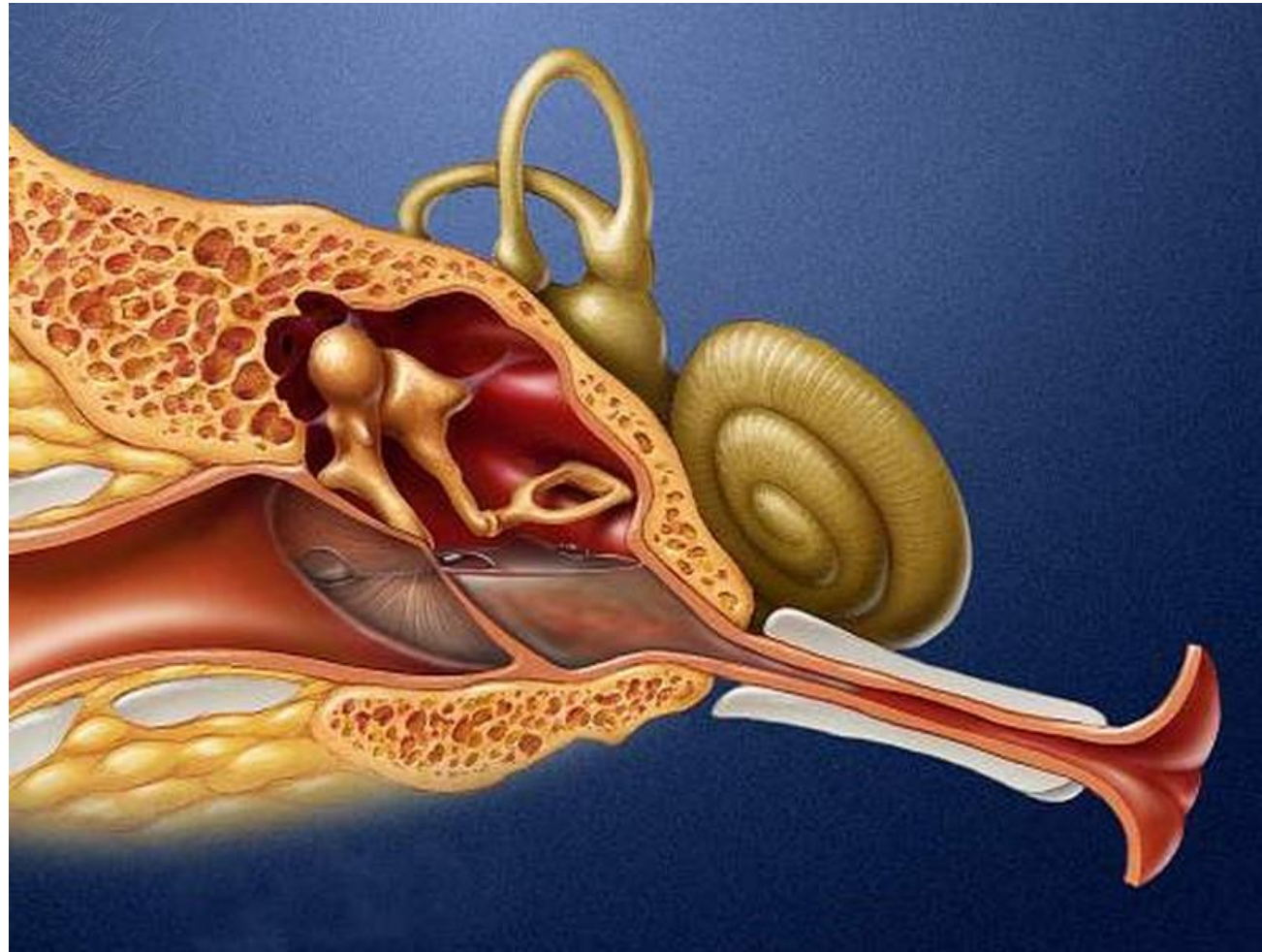
Infectious mononucleosis



Croup



Otitis Media



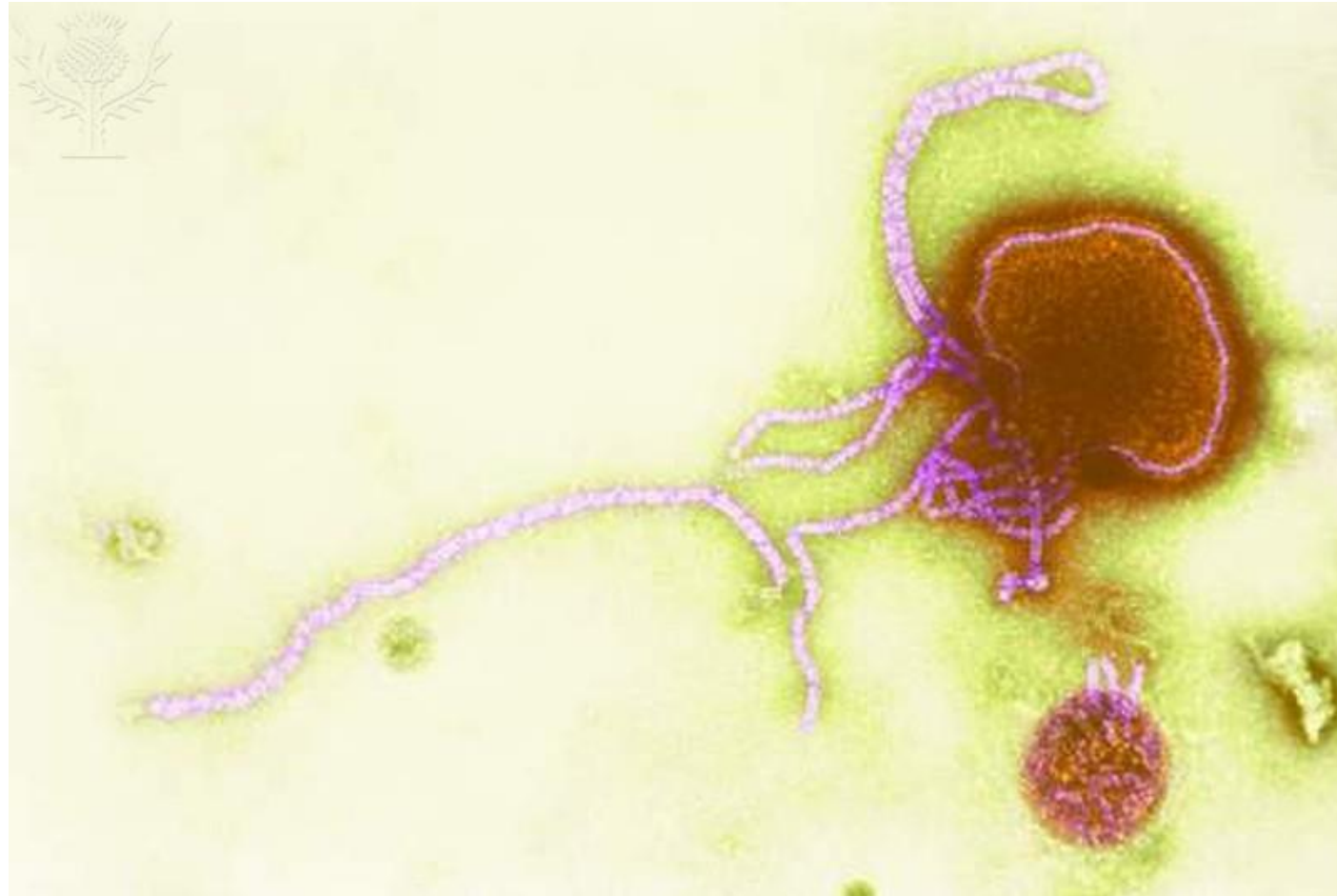
Otitis Media



Laryngitis



Laryngitis





References

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