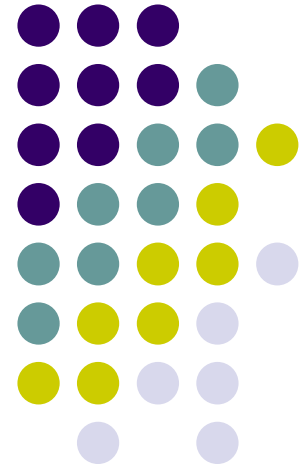


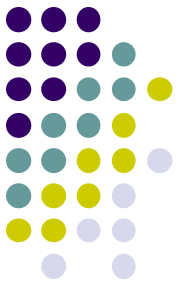
ANTITUSSIVE & EXPECTORANT DRUGS

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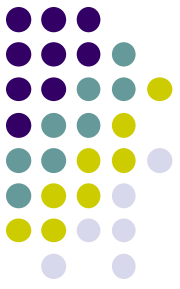


Cough reflex

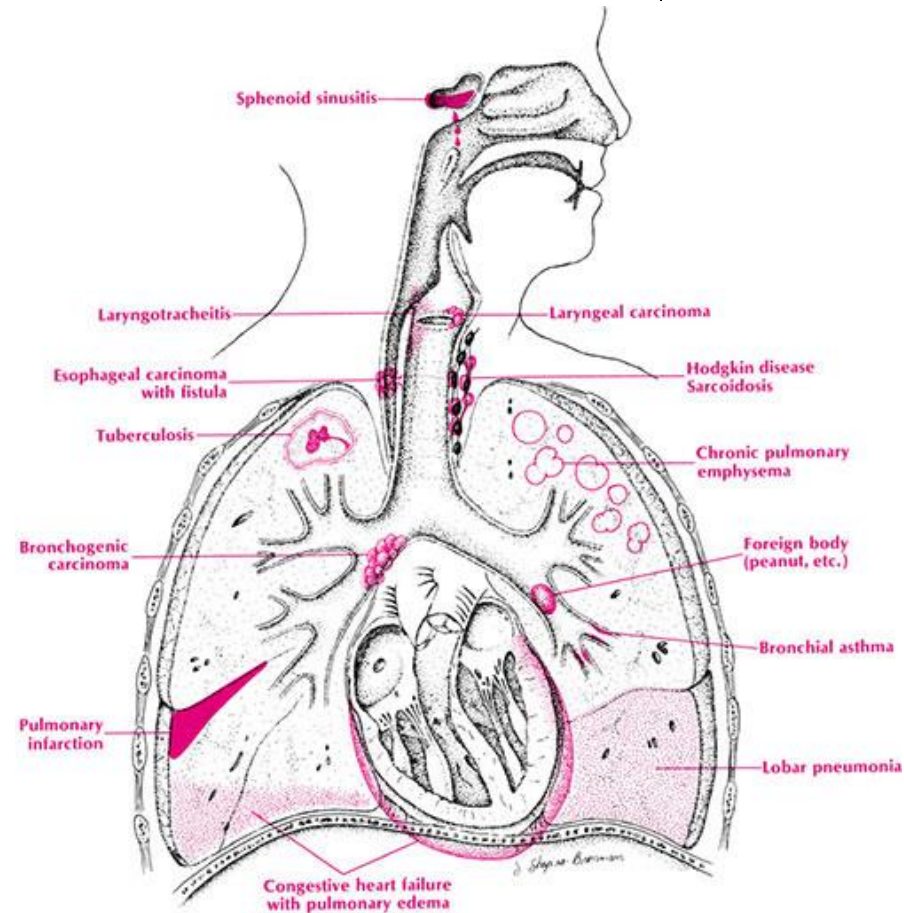


- initiates cough & expectoration
- elimination of secretions & foreign particles
- induced by irritation of sensoric receptors in respiratory tract
- 2 types of cough:
 - **productive** – eliminates excessive secretion
 - **non-productive** – dry
- cough is harmful in case of post-surgery (thorax, abdominal)

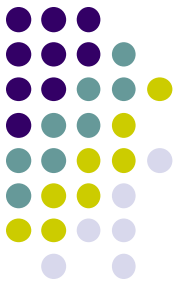
Sites of cough induction



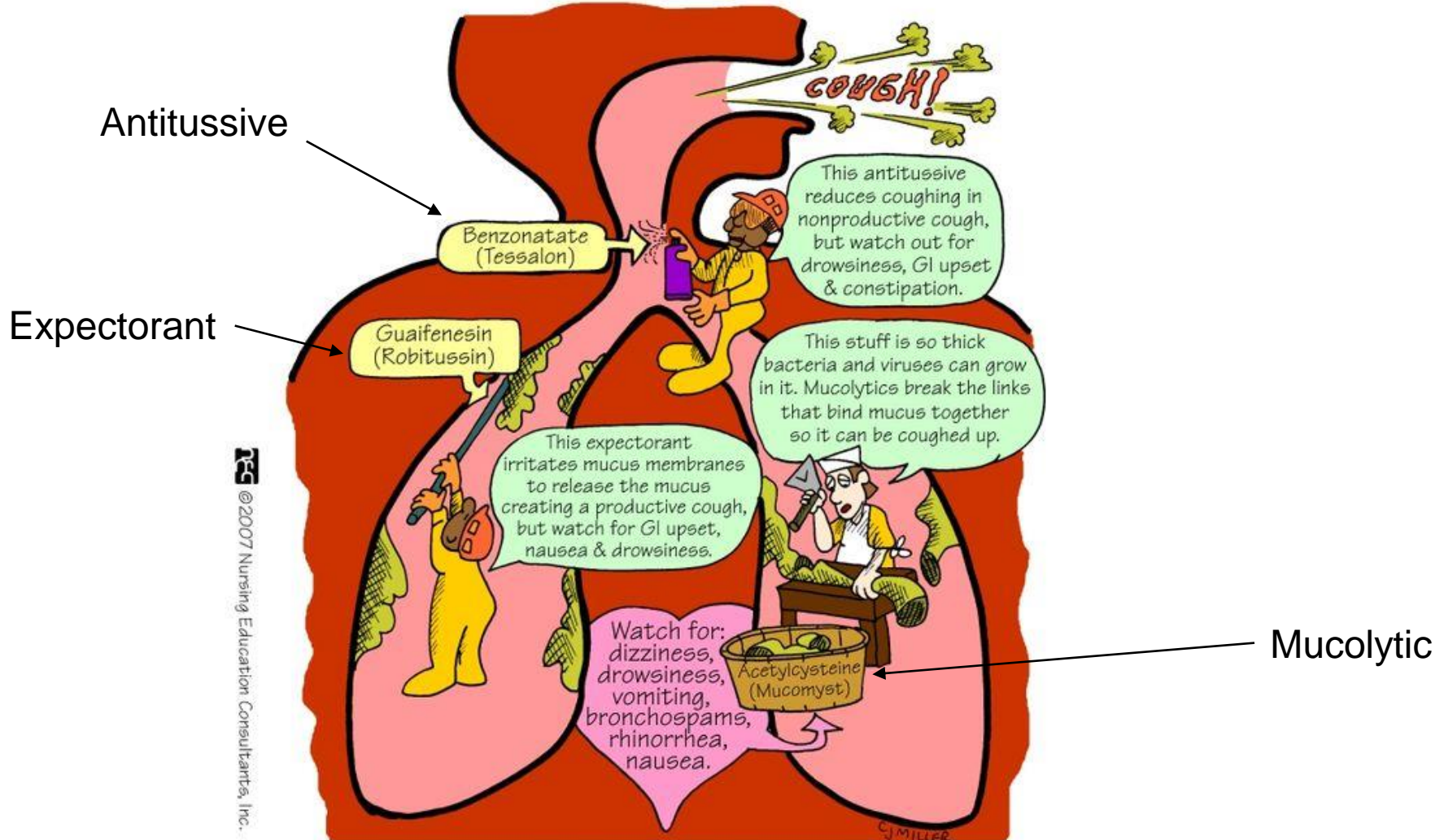
- **intrinsic**
 - + pharynx
 - + larynx
 - + tracheobronchial space
 - + alveoli
- **external**
 - + mediastinum structures
 - + oesophagus
 - + increased heart volume (congestive disease, valvular diseases, etc.)
 - + enlarged lymphatic nodes



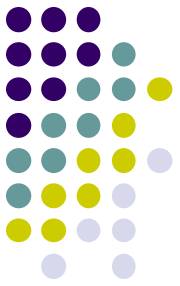
Representatives of different categories



Antitussives, Expectorants, & Mucolytics



ANTITUSSIVE DRUGS



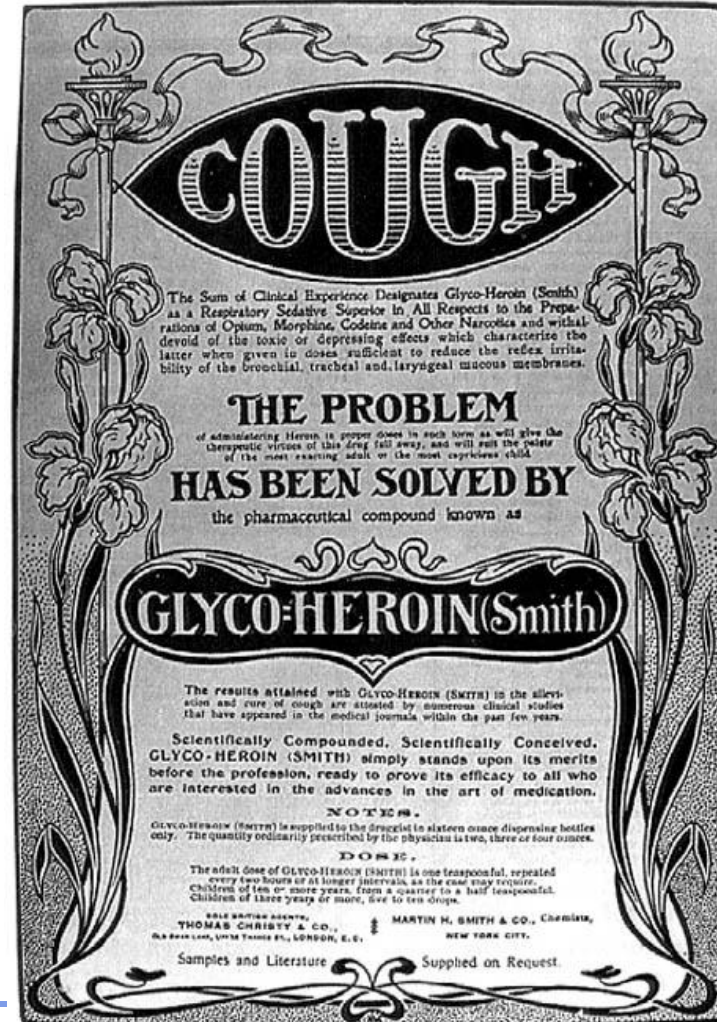
- given to stop or cough reduction
- **opioids & non-opioids**
- used only in **dry cough**

Mechanism of action - opioids

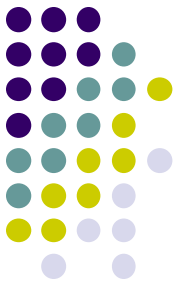


- inhibit cough reflex by inhibiting cough center in the brain (medulla):

- *codeine*
- *hydrocodone*
- *pholcodine*
- *dextromethorphan*



Mechanism of action – non-opioids

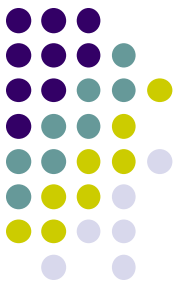


- **inhibit cough reflex by preventive inhibition at site of irritation:**

- ✚ ***benzonatate***

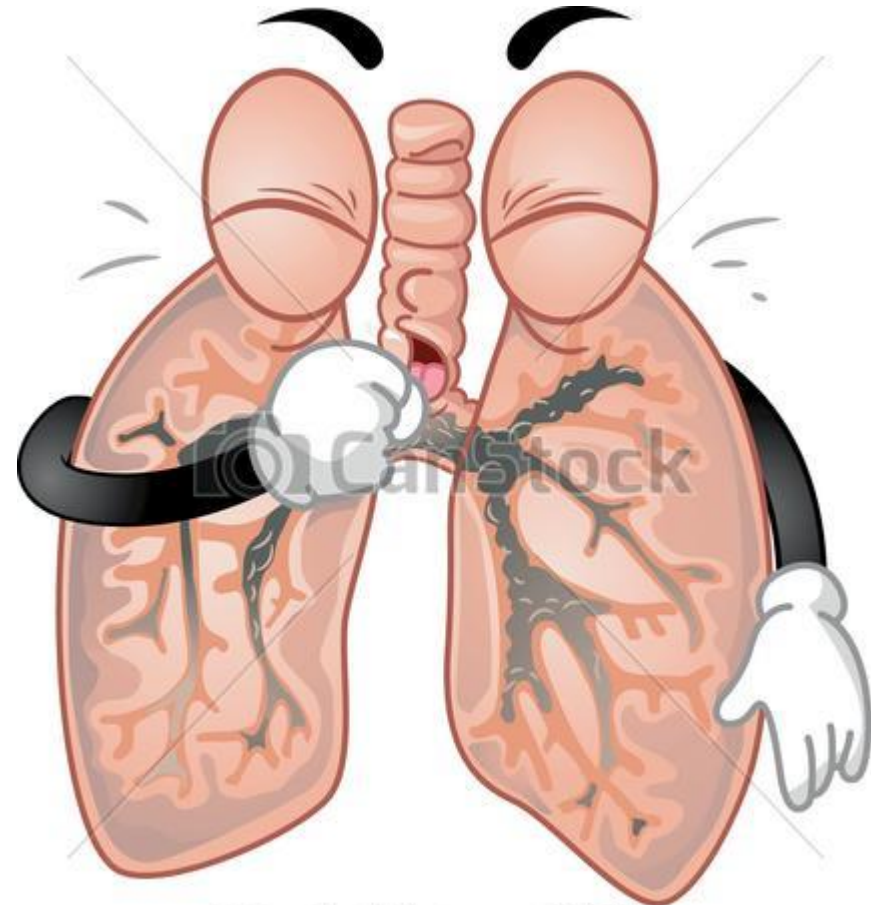
- ✚ ***butamirate***



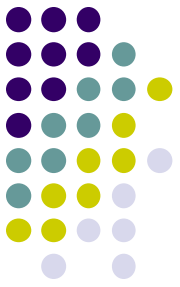


Indications of antitussives

- **exclusively for inhibition of cough reflex, if the cough is dry &/or harmful:**
 - ✚ dry, irritating & exhausting cough
 - ✚ after surgery
 - ✚ in lung cancer



Side effects of antitussives



- ***opioids***

**sedation, nausea,
vomiting,
constipation, urine
retention**



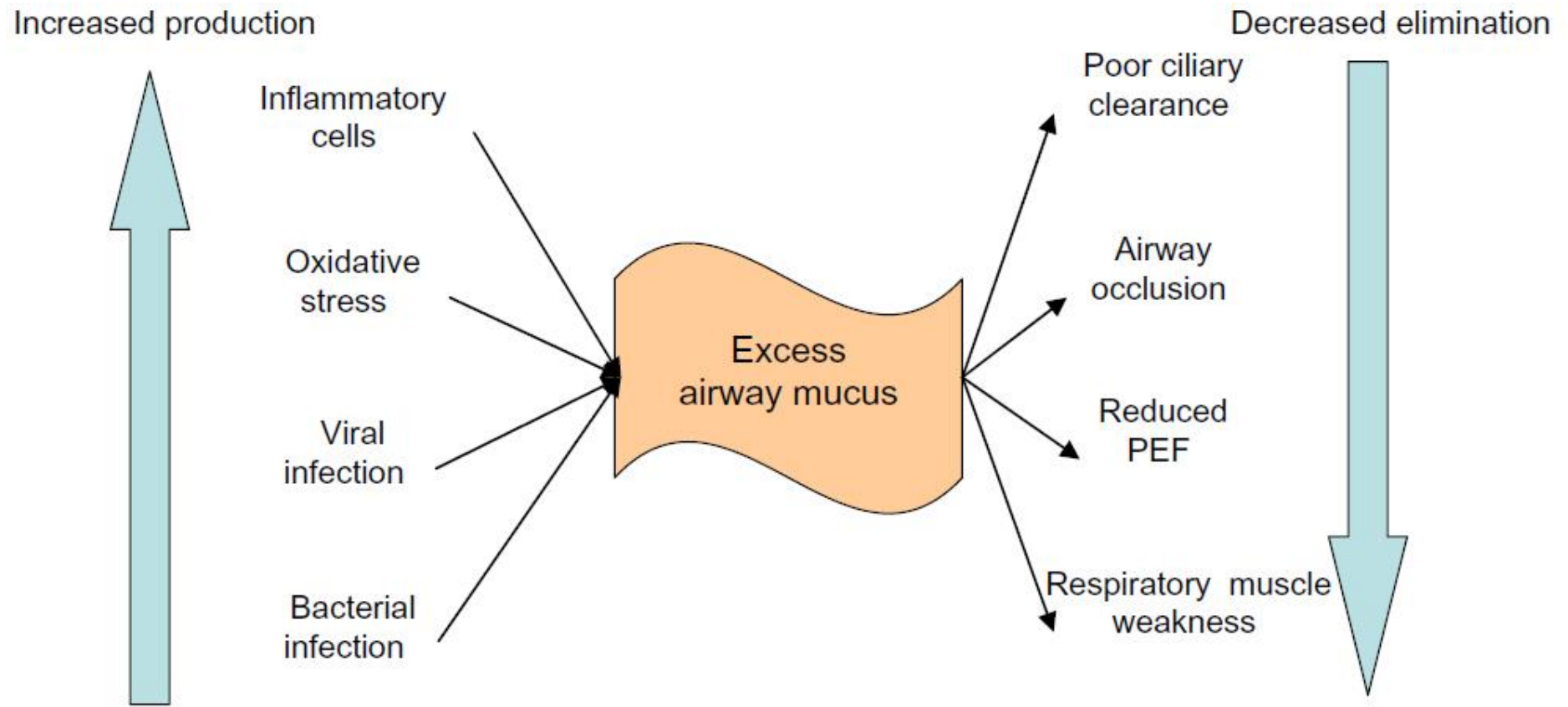
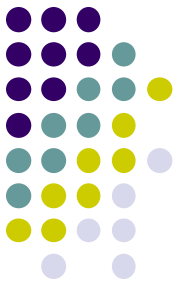
- ***benzonatate***

**nausea, GI upset,
constipation,
headache, sickness,
drowsiness, sedation**



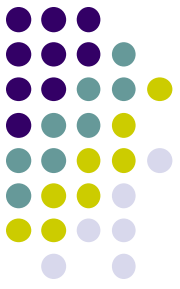
EXPECTORANT DRUGS

Accumulation of mucus



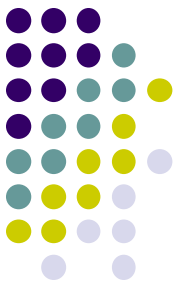
Expectorant drugs

Mechanisms of action



- **direct stimulation** of the secretory glands in respiratory tract
- **↑ production & secretion** of fluid in respiratory tract
- **loosening & thinning** the respiratory tract secretions
- **reduction of thickness, adherence & superficial strain** of mucus
- **disintegration & reduction of viscosity** of secretions
- **alleviate drainage** of airways

Mechanism of action – direct stimulation

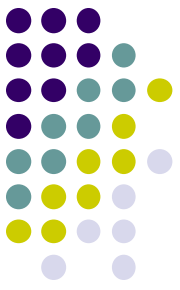


- **secretory glands are directly stimulated, ↑↑ fluid secretion, e.g.:**

✚ ***glycerol iodide***

✚ ***potassium iodide***





Mechanism of action – reflex stimulation

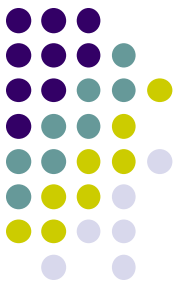
- drugs irritate GIT
- bronchial secretion ↑↑ reflexively as a result of irritation (n.vagus):

+ *guaifenesin*



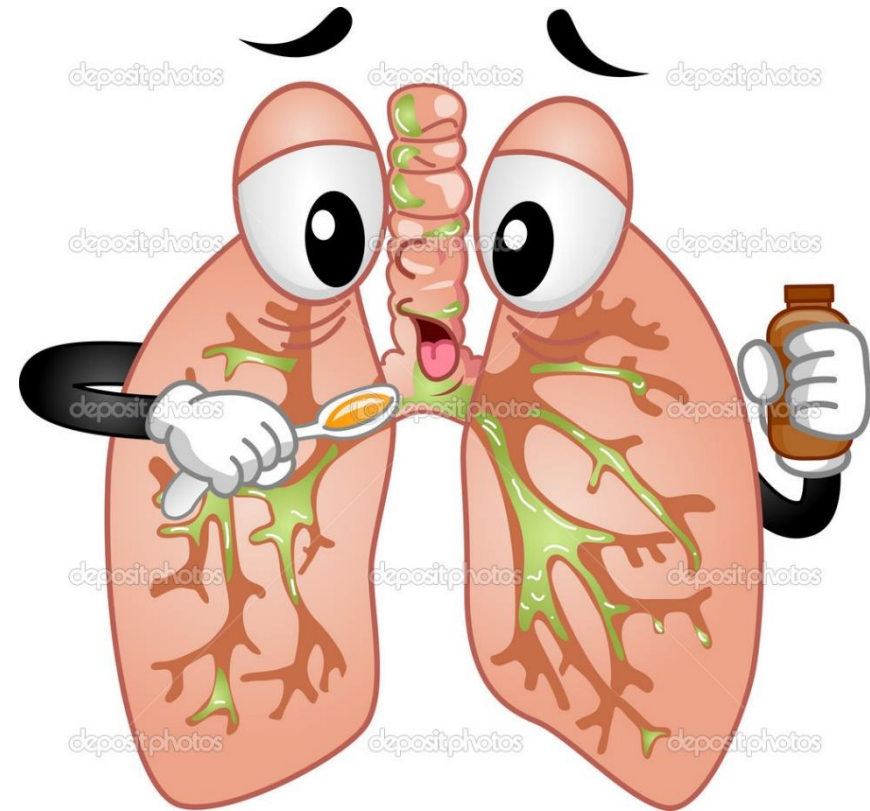
GUAIFENESIN COUGH SYRUP_

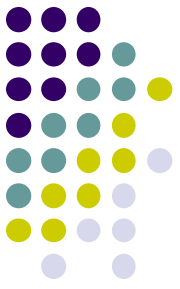
Indications of expectorants



- **cough inhibition & relief of expectoration in:**

- ✚ colds
- ✚ moderate bronchial irritation
- ✚ bronchitis, laryngitis, pharyngitis
- ✚ flu
- ✚ sinusitis
- ✚ bronchial asthma
- ✚ emphysema
- ✚ other respiratory diseases





Common side effects

- ***guaifenesin***

- ✚ nausea, vomiting, stomach irritation

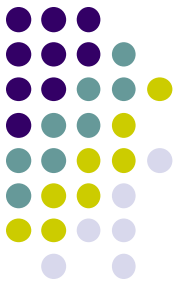
- ***glycerol iodide***

- ✚ GI irritation, rash, thyroid enlargement

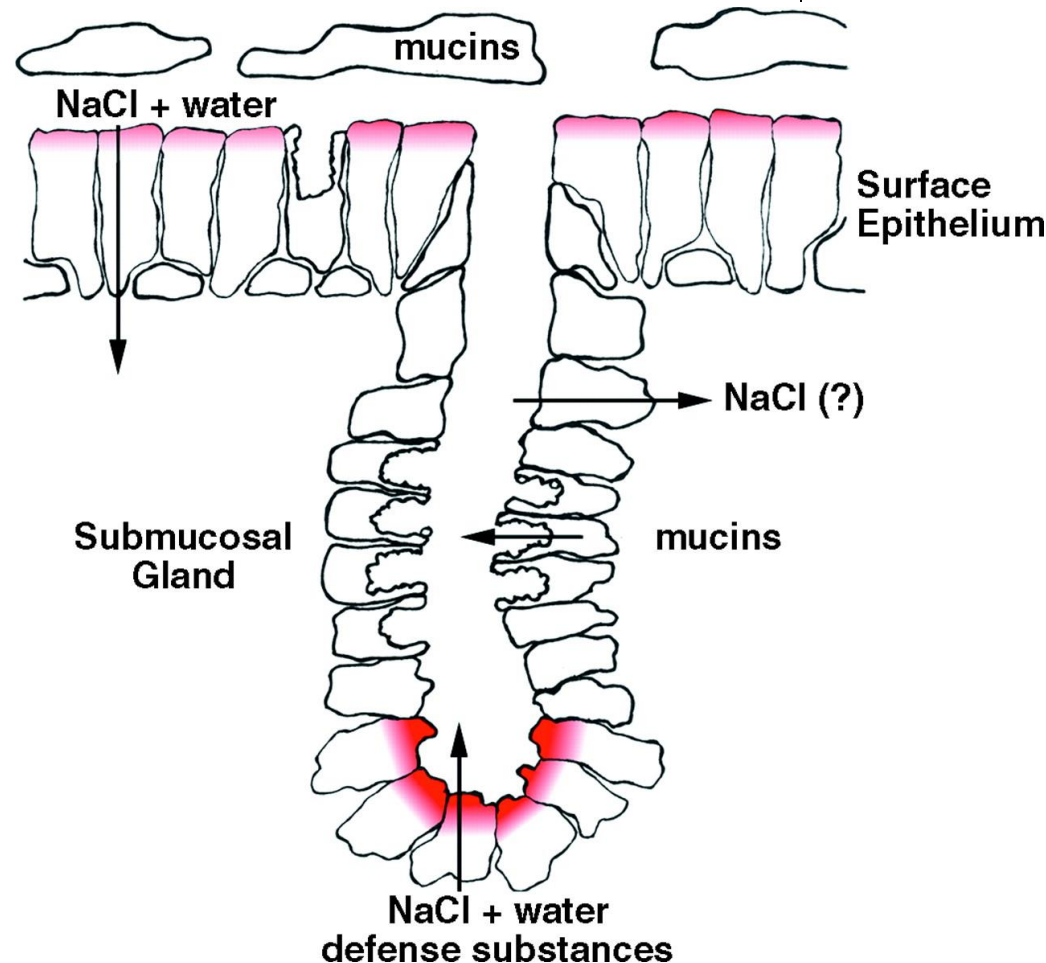
- ***potassium iodide***

- ✚ nausea, vomiting, bad taste

MUCOLYTICS



- act directly on mucus
- eliminate viscous secretion
- facilitate easier elimination



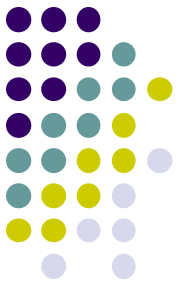
Bromhexine, ambroxole



- *ambroxole* is a *bromhexine* derivative
- **effective mucolytics & mucokinetics**
- **depolymerize mucopolysacharides:**
 - ✚ directly
 - ✚ by lysosomal enzyme release
 - ✚ disturb structure of filaments in viscous sputum
- **side effects:**
 - ✚ lacrimation
 - ✚ nasal discharge
 - ✚ stomach irritation
 - ✚ hypersensitivity

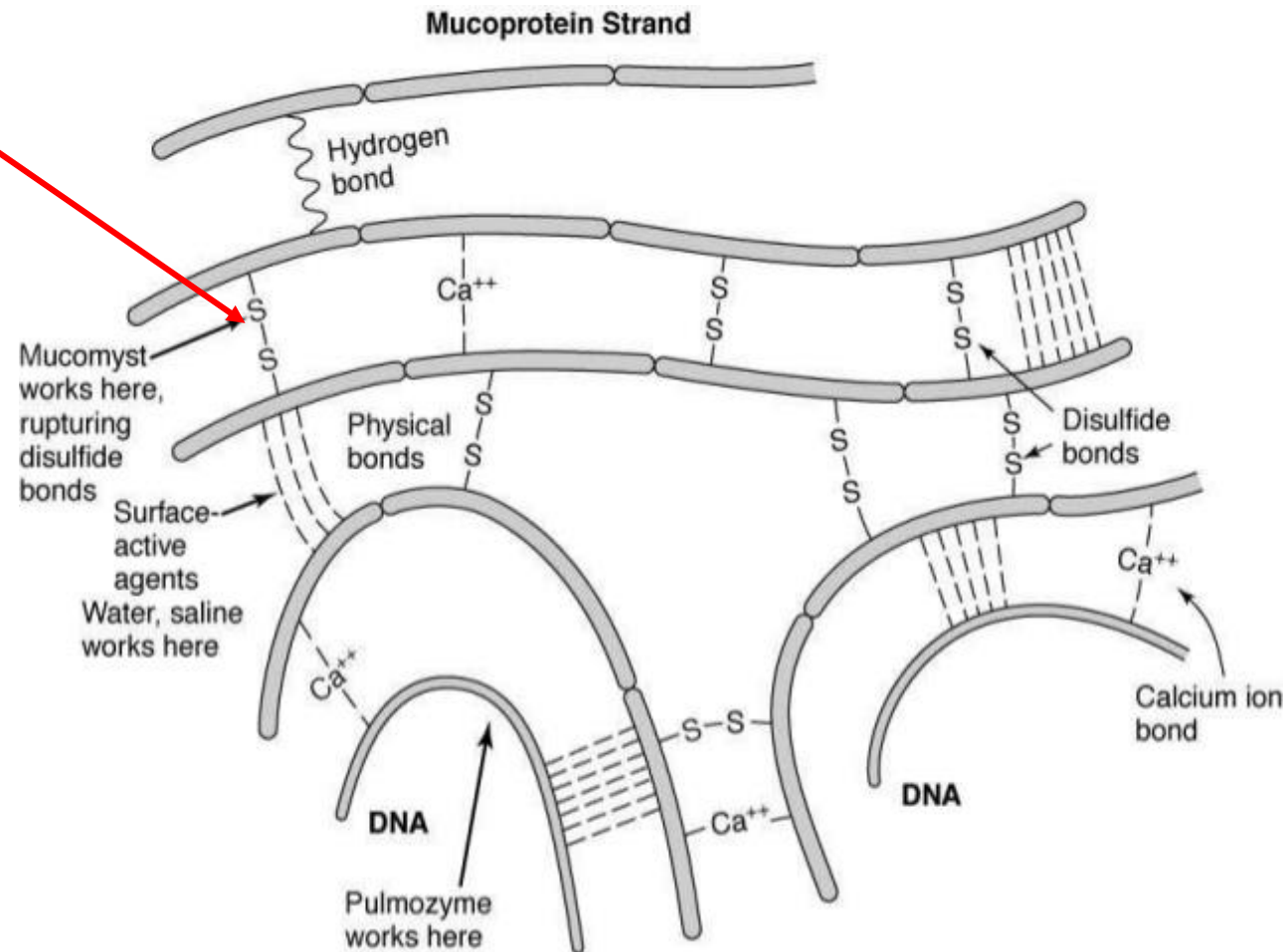
N-acetylcysteine

Mechanism of action



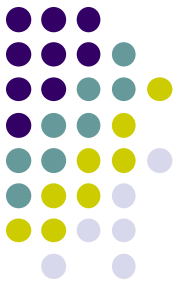
N-acetylcysteine

- **dissociates disulfidic bonds** in mucoproteins present in sputum



N-acetylcysteine

Characteristics



- **directly applicable into airways** (bronchoscopy)
- suitable for mucus removal before other endoscopic procedures (e.g. in urology)
- **used also:**
 - ❖ as an antidote in *paracetamol intoxication* (free radical scavenger)
 - ❖ renal protection
 - ❖ interstitial lung disease
 - ❖ COPD





Si vous toussiez
prenez des
**PASTILLES
GÉRAUDEL**