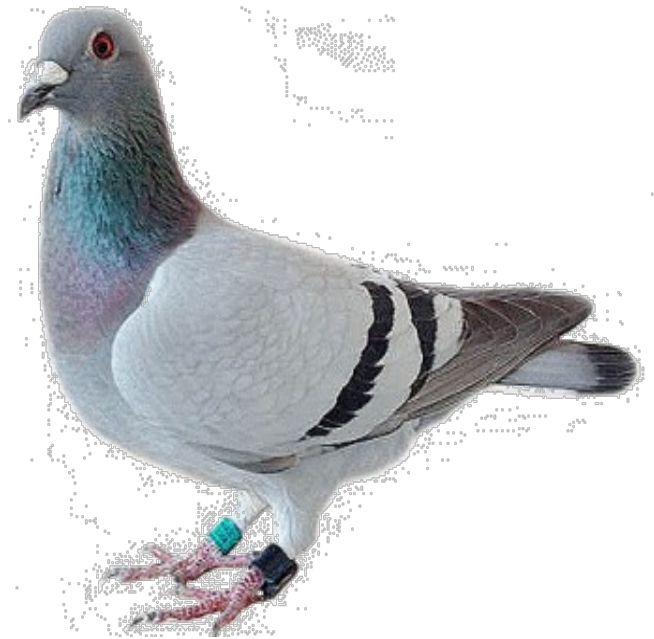


Pigeon

Columba livia

- ☐ Classification
- ☐ External Features
- ☐ Respiratory System



SYSTEMATIC POSITION

Phylum	....	Chordata
Group	....	Vertebrata
Subphylum	....	Gnathostomata
Superclass	....	Tetrapoda
Class	....	Aves
Subclass	....	Neornithes
Superorder	....	Neognathae
Order	.....	Columbiformes
Genus	....	<i>Columba</i>
Species	....	<i>livia</i>

Morphology:

The body is spindle shaped. The size varies from 20-25 cm. The body is divisible into head, neck, trunk and tail. Most part of the body is clothed in feathers.

Head:

Mouth:

Cere:

External Nares:

Eyes:

External Ear:

Neck:

Trunk:

The forelimbs are modified into wings.

Each wing consist of 3 parts: branchium (upper arm), antebranchium (fore arm) and manus (hand) with 3 fingers. while at rest the three divisions are folded in the form of Z during flight they are extended.

Between anterior portion the branchium and antebranchium is a fold of skin called the alar membrane or pre-patagium. Between posterior portion of the branchium and trunk is a small fold of skin called post patagium.

The hind limbs are adapted to balance and support the entire weight of the body at rest. Each hind limb consists of 3 parts, Femur (thigh), crus (shank) and pes (foot) with four toes.

The first toe or hallux is directed backwards the remaining three forwards. The feet are adapted for perching with long toes and curved claws. The entire foot is covered with horny epidermal scales.

Tail:

The tail is a conical projection behind the cloacal aperture. Dorsally the avian skin of tail bears an oil gland or preen gland or uropygeal gland that secretes an oil by the bird to preen its feather. It is best developed in water birds.

Exoskeletons:

The exoskeletons of birds include beak, claws, spurs scales and feathers. The beak is heavily keratinized structure.

The claws are epidermal derivatives that lie on the toes.

epidermal scalesr limited to the feet and base of beak of the birds.

The feathers, the appendages of avian skin, are also heavily keratinized.

The keratin of avian skin is α -keratin. The feathers are evolved from the epidermal scales of reptilian ancestors.

The feathers contain β -keratin which is the same type of keratin that occurs in the outer surface of scales of reptilian ancestors. The arrangement of feathers on the body is called pterylosis. The feathers are arranged in definite tracts or areas. These tracts are separated by feathers less area called apteria.

The feathers are of 3 types: quill feathers, contour feathers and filoplumes.

Respiratory System

Respiration:

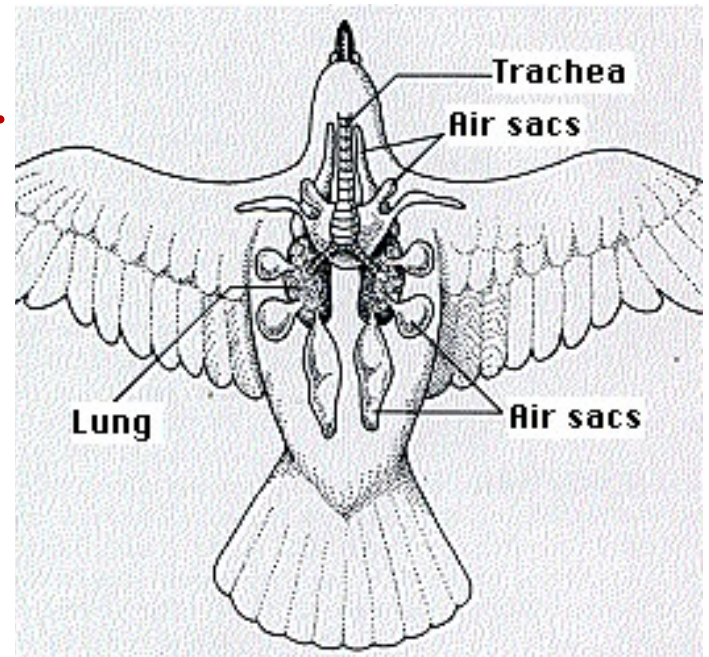
Exchange of Respiratory gases i.e. O_2 and CO_2

Pulmonary

Inhalation (Intake) and Exhalation (Expel)

Respiratory system includes ...

- Respiratory tract
- Respiratory organ or lungs
- Air sacs



Due to the high metabolic rate required for flight, birds have a high oxygen demand

Birds ventilate their lungs by means of air sacs
These structures are unique to birds, and perhaps dinosaurs, too

Birds' lungs obtain fresh air during both exhalation and inhalation

Birds lack a diaphragm

The entire body cavity acts as a bellows to move air through the lungs

The active phase of respiration in birds is exhalation, requiring muscular contraction

Air flows through the air sac system and Lungs

There is no mixing of oxygen-rich air and oxygen poor, carbon dioxide-rich air as in mammalian Lungs

The partial pressure of oxygen in a bird's lungs is the same as the environment

Birds have more efficient gas-exchange of both oxygen and carbon dioxide than do mammals

Respiratory tract:

- ❖ Nares, Nasal sacs and glottis
- ❖ Larynx
- ❖ Trachea
- ❖ Syrinx

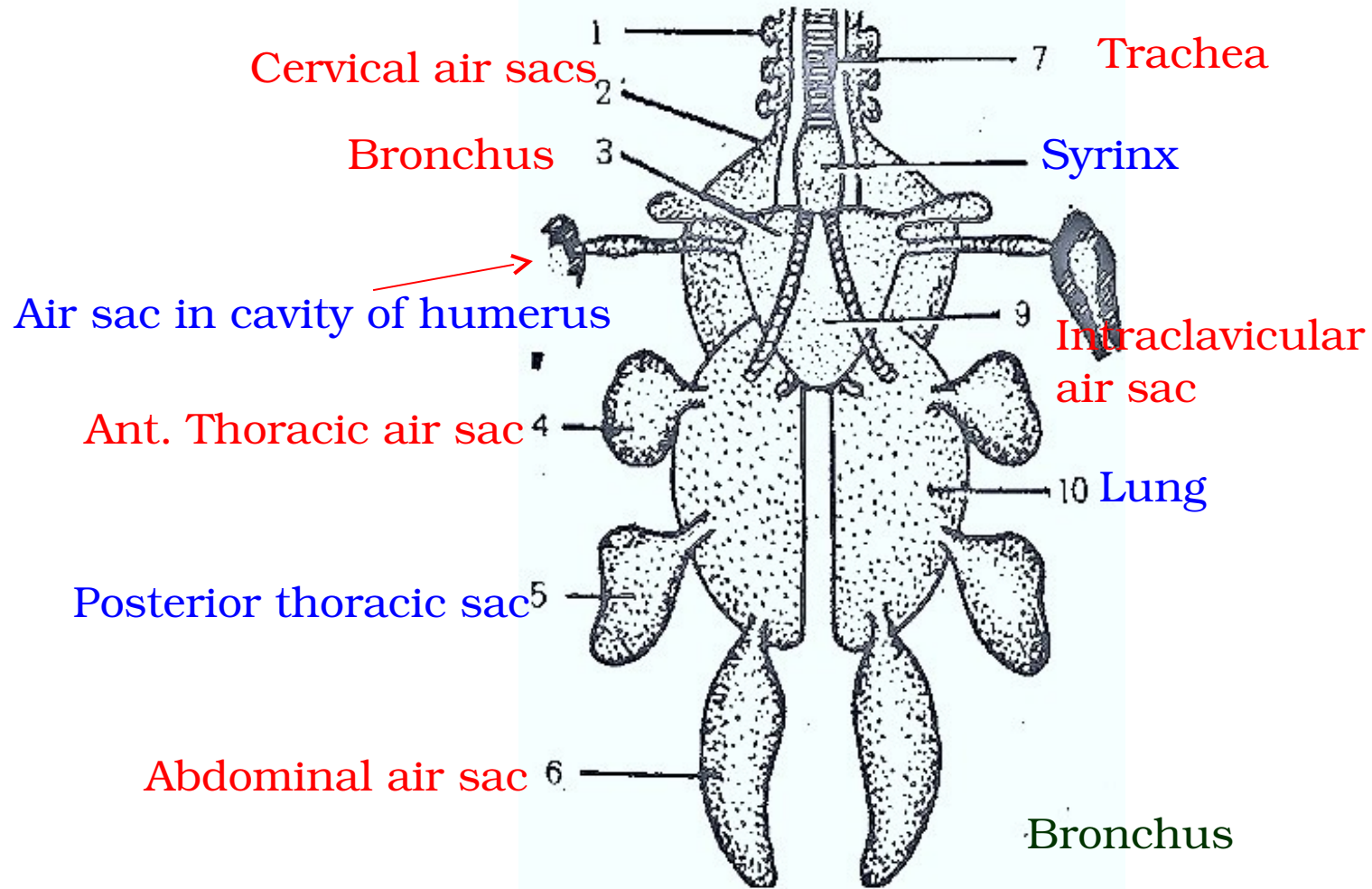
Respiratory Organ / Lungs:

Air Sacs: (varies from birds to birds)

Pigeon

1. Intraclavicular air sac
2. Anterior thoracic air sac
3. Posterior thoracic air sac
4. Abdominal air sac

Respiratory Organs



Respiratory Mechanism:

Breathing at rest : intercostals muscles

Breathing during flight: Wings stroke.

Body temperature maintaining from 102°F
to 111°F

