



## HOW BIRDS BREATHE

by Lanny and Marilyn Johnson

"Dad, we went to the Museum of Natural History today, and there were signs saying that dinosaurs evolved into birds. Is that true?" asked Mary.

"I don't believe that is true. The Bible teaches that God created sea creatures, birds (and other flying animals) on Day 5 of Creation (Genesis 1:20-23). Land animals and man were created on Day 6 (Genesis 1: 24-31). Dinosaurs were land animals, Mary, so not only were they a different kind of animal than the birds, but they were created a day after birds. Therefore, the Bible shows that dinosaurs did not evolve into birds."

"But not all of my friends believe in the Bible, so is there something I could tell them that might show the idea of dinosaurs changing into birds is wrong?"

"I believe there is. Most scientists think that dinosaurs were reptiles. Reptilian lungs operate like bellows or suction pumps, similar to our own lungs. Muscles controlling the lungs cause them to expand, lowering the pressure inside the lungs compared to the pressure outside the lungs. This causes the lungs to fill with fresh air. This 'new' fresh air mixes with a small amount of 'old' stale

air that is never fully exhaled from the lungs. As a result, this 'mixed air' has less oxygen.<sup>1,2,3,4</sup>

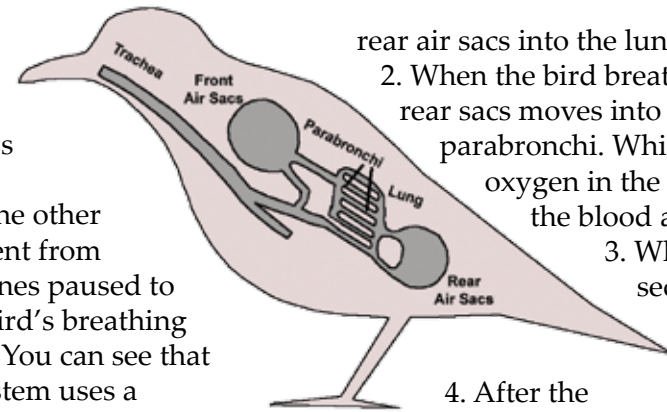
"Bird lungs, on the other hand, are very different from reptile lungs." Mr. Jones paused to find a drawing of a bird's breathing (respiratory) system. "You can see that a bird's breathing system uses a combination of a lung, special tubes in the lung (*parabronchi*)

and air sacs. These air sacs pass into the bones between the hollows of the shoulder and elbow (*humerus*), the thigh bone (*femur*), the back bone and even the skull. To make it easier to understand, the artist shows the air sacs in two main groups – rear (*posterior*) and front (*anterior*) air sacs."<sup>5</sup>

"It sure looks confusing to me," Mary said.

"It is a complicated system, but one that works very well." Mr. Jones then showed Mary a set of pictures showing how air flows through the air sacs and lung.

1. "When the bird first breathes in, the air travels through the nostrils, through the windpipe (*trachea*) and into the rear air sacs. A little bit of this air will pass through the



rear air sacs into the lung.

2. When the bird breathes out the air in the rear sacs moves into the lung and through the parabronchi. While the air is in the lung, oxygen in the air and carbon dioxide in the blood are exchanged.

3. When the bird breathes in a second time, the air moves from the lungs into the front air sacs.

4. After the second breath out, the air moves from the front air sacs, through the windpipe, and finally

out the nostrils."<sup>6</sup>

"Oh, I see how it works!" Mary exclaimed. "Instead of air moving into lungs and then back out the same way, the air travels through birds like a loop."

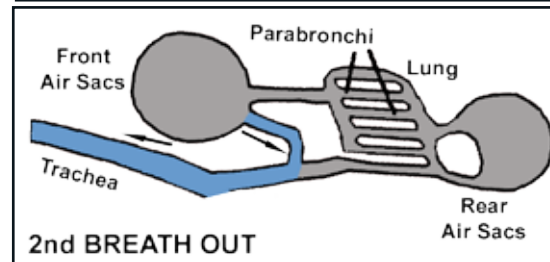
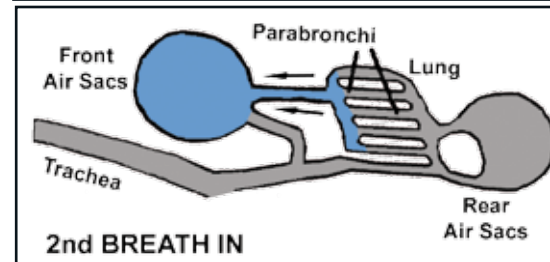
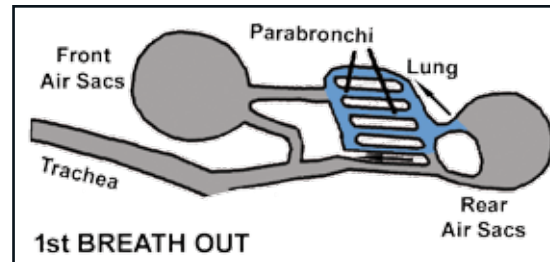
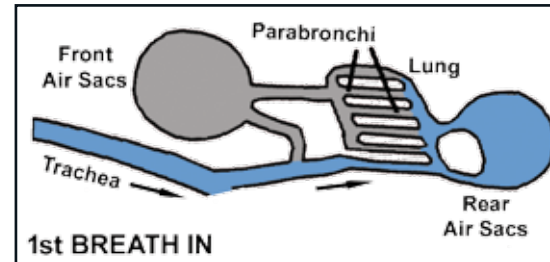
"That's right, Mary.

Notice that it takes two breathing cycles to move one breath of air completely through the bird's breathing system.

The advantage is that air, high in oxygen, always moves one direction through the lungs. This efficient way of breathing makes sense for creatures who burn large amounts of oxygen needed when flying.

This design enables some birds to fly over Mount Everest, at a height most people need oxygen tanks to stay alive.<sup>7,8</sup>

"Even some well-known evolutionary scientists have pointed out the



See if you can find the hidden objects from the Hidden Object List below.

impossibility of the bellows-style of reptile lungs evolving into birds' lungs because the 'in between' lung system would not be able to process air and the poor bird would die. Bird lungs could not have evolved from dinosaurs but were designed by God to provide what every bird needs to carry out its role in creation."<sup>9</sup>

#### REFERENCES

<sup>1</sup> <https://creation.com/did-all-dinosaurs-lay-eggs>

<sup>2</sup> <https://www.cuteness.com/article/kind-respiratory-system-do-reptiles>

<sup>3</sup> <https://creation.com/dinosaur-bird-evolution>

<sup>4</sup> <http://bcs.whfreeman.com/webpub/Ektron/Hillis-Principles-of-Life-2e/Animated-Tutorials/pol2e-at-3101-Airflow-in-Birds.html/pol2e-at-3101-Airflow-in-Birds.html>

<sup>5</sup> <https://www.petcoach.co/article/respiratory-system-of-birds-anatomy-and-function/>

<sup>6</sup> Ibid

<sup>7</sup> <http://www.fernbank.edu/Birding/respiration.htm>

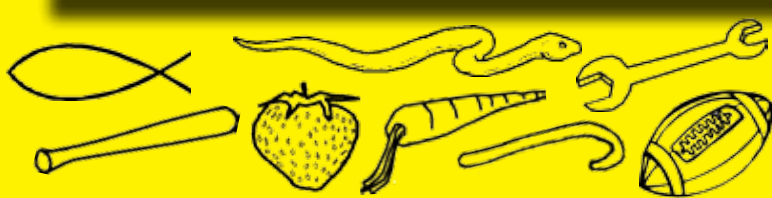
<sup>8</sup> <http://bcs.whfreeman.com/webpub/Ektron/Hillis-Principles-of-Life-2e/Animated-Tutorials/pol2e-at-3101-Airflow-in-Birds.html/pol2e-at-3101-Airflow-in-Birds.html>

<sup>9</sup> <https://creation.com/bird-breathing-anatomy-breaks-dino-to-bird-dogma>

\* Picture of bird on front page adapted from By L. Shyamal <https://commons.wikimedia.org/w/index.php?curid=3211214>">Link</a>



#### HIDDEN OBJECTS



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