**Worksheet: The missing link between dinosaurs and birds**



 ***Archaeopteryx***

***Archaeopteryx*** , meaning "old wing" (sometimes referred to by its German name ***Urvogel*** ("original bird" or "first bird")), is a [genus](https://en.wikipedia.org/wiki/Genus) of bird-like [dinosaurs](https://en.wikipedia.org/wiki/Dinosaur) that is [transitional](https://en.wikipedia.org/wiki/Transitional_fossil) between non-avian [feathered dinosaurs](https://en.wikipedia.org/wiki/Feathered_dinosaur) and modern [birds](https://en.wikipedia.org/wiki/Bird). The name derives from the [ancient Greek](https://en.wikipedia.org/wiki/Ancient_Greek) *archaīos* meaning "ancient", and *ptéryx* meaning "feather" or "wing". Between the late nineteenth century and the early twenty-first century, *Archaeopteryx* had been generally accepted by [palaeontologists](https://en.wikipedia.org/wiki/Paleontology%22%20%5Co%20%22Paleontology) and popular reference books as the oldest known bird (member of the group [Avialae](https://en.wikipedia.org/wiki/Avialae%22%20%5Co%20%22Avialae)).

*Archaeopteryx* lived in the [Late Jurassic](https://en.wikipedia.org/wiki/Late_Jurassic) around 150 million years ago, in what is now southern Germany during a time when Europe was an archipelago of islands in a shallow warm tropical sea, much closer to the [equator](https://en.wikipedia.org/wiki/Equator) than it is now., the largest species of *Archaeopteryx* could grow to about 0.5 m in length and weighting between 0.8 to 1kilograms. Despite their small size, broad wings, and inferred ability to fly or glide, *Archaeopteryx* had more in common with other small [dinosaurs](https://en.wikipedia.org/wiki/Dinosaur) than with modern birds. In particular, they shared the following features with the dinosaurs: jaws with sharp [teeth](https://en.wikipedia.org/wiki/Tooth), three fingers with [claws](https://en.wikipedia.org/wiki/Claw), a long bony tail, second toes ("killing claw"), feathers (which also suggest [warm-bloodedness](https://en.wikipedia.org/wiki/Homeothermy)), and various features of the [skeleton](https://en.wikipedia.org/wiki/Skeleton).

the time.

Because it displays features common to both birds and non-avian dinosaurs, *Archaeopteryx* has often been considered a link between them.  In the 1970s, [John Ostrom](https://en.wikipedia.org/wiki/John_Ostrom), argued that birds evolved within theropod dinosaurs and *Archaeopteryx* was a critical piece of evidence for this argument; it had several avian features, such as a wishbone, flight feathers, wings, and a partially reversed first toe along with dinosaur and theropod features.

Adapted from Wikipedia

1. Define the term “transitional fossil”.

2. How long ago was the *Archaeopteryx* alive?

3. The *Archaeopteryx* has bird-like and dinosaur-like features. Tabulate the bird-like and dinousour-like features.

4. In which country was the *Archaeopteryx* discovered?

**Memo:**

1. It is a fossil that exhibits traits common to both an ancestral group and its derived descendant group.

2. 150mya

3.

|  |  |
| --- | --- |
| **Bird features** | **Dinosaur features** |
| Feathers | Bony tail |
| Hollow bones | Bony sternum(breastbone) |
| Had a wishbone | Abdomen “Belly” ribs |
| Feet had three forward pointing toes and one backward pointing toe | Claws  |
| Wings | Jaws with teeth |

4. Germany