

# The Weight of a Name

*How the quiet business of naming species came to shape what we can see.*

**A** Every animal, plant and fungus known to science carries a two-part Latin name: the wolf is *Canis lupus*, the domestic apple *Malus domestica*. This system, called binomial nomenclature, is so familiar that it can seem like a simple label, a tidy way of avoiding the confusion of common names that vary from one language and region to the next. Yet the choice of a name is rarely neutral. To name a species is to make a claim about what it is, which things it resembles, and where it belongs in the vast branching order of life. The label, in other words, carries an argument inside it, and the history of naming is in large part the history of that argument being fought out and revised.

**B** The convention was fixed in the eighteenth century by the Swedish naturalist Carl Linnaeus, whose great innovation was hierarchy. Each species was placed within a genus, each genus within a family, and so on upward through a nested series of ranks. The first word of the binomial names the genus, the second distinguishes the species within it. Grouping the lion and the tiger in the same genus, *Panthera*, is therefore not a matter of convenience; it asserts that the two are more closely related to each other than either is to the domestic cat. Linnaeus grouped chiefly by visible resemblance, and for a century his followers did the same.

**C** Resemblance, however, is a treacherous guide. Two species may look alike because they share a recent ancestor, or merely because they have adapted, quite separately, to similar ways of life. The swift and the swallow are superficially near-identical, yet they belong to different orders; their shared shape is a response to a shared need for agile flight, not a sign of kinship. Convergence of this kind repeatedly misled early classifiers, who had no reliable way of telling an inherited trait from an independently acquired one. A classification built on appearance alone was always liable to be a classification of lifestyles rather than of ancestry.

**D** The correction came from Charles Darwin, who argued that the natural system naturalists had been groping towards was, in fact, a genealogical one: the true relationships between organisms are the relationships of descent. On this view a classification is really a family tree, and every group worth recognising ought to consist of an ancestor and all of its descendants. This principle, though simple to state, was difficult to apply, for the ancestors themselves were long dead and the tree had to be inferred from the living twigs. For decades the reconstruction remained largely a matter of expert judgement, and different experts, weighing the same features differently, produced different trees.

**E** A more rigorous method arrived in the mid-twentieth century with the German entomologist Willi Hennig. His approach, later called cladistics, insisted that groups be defined only by shared innovations, the novel features that a common ancestor first evolved and passed on. An ancient, widespread trait tells us nothing about which species are one another's closest relatives; only a shared novelty does. By this strict rule, some long-accepted groups dissolved. Reptiles, as ordinarily understood, turned out not to be a genuine group at all, because the birds, descended from within the reptile lineage, had been left out of it. A defensible classification either had to admit the birds among the reptiles or abandon the category. Neither option was comfortable, but comfort had never been the point.

**F** The final transformation was molecular. Once biologists could read the sequence of DNA, they gained an enormous new archive of heritable characters, far more numerous than the handful of anatomical features available to earlier workers. Sequences could be compared letter by letter and the degree of difference used to estimate how long ago two lineages had parted. The results confirmed a great many traditional groupings and overturned a stubborn few. Certain flowering plants long placed together on the strength of their blossoms proved unrelated; whales were shown to sit deep within the hoofed mammals, closest of all to the hippopotamus, a conclusion no examination of external form would ever have suggested. Names that had stood for generations were quietly rewritten to match the evidence of the genome.

**G** None of this makes the names themselves obsolete. A binomial remains a compact summary of a hypothesis about relatedness, and when the hypothesis changes the name may change with it, which is why the scientific name of a familiar creature is occasionally revised in ways that irritate the public. The irritation misses the point. The name is not a mere tag stuck onto a specimen; it is a position taken in an argument about the order of nature, and revising it is how that argument, slowly and against much resistance, is allowed to reach a better answer.

### Questions 1–5 · True / False / Not Given

Do the following statements agree with the information in the passage? Write True, False, or Not Given.

1. Common names for a species can differ between regions and languages.
2. Linnaeus arranged living things as a single list of equal rank.
3. The swift and the swallow belong to different orders despite looking alike.
4. Darwin proposed a new set of Latin names to replace those of Linnaeus.
5. Molecular data overturned the majority of traditional groupings.

### Questions 6–9 · Multiple choice

Choose the correct letter, A, B, C or D.

6. Why, according to the passage, is naming a species not a neutral act?
  - A It requires a knowledge of Latin that few people possess
  - B It makes a claim about the species' resemblances and its place in the order of life
  - C It replaces the common names that ordinary people prefer to use
  - D It is decided by a committee rather than by the discoverer
7. What problem with classification by resemblance does paragraph C identify?
  - A Appearances are too subtle for non-experts to judge
  - B Latin names obscure what a species actually looks like
  - C Similar forms can arise separately from similar ways of life, not shared ancestry
  - D Most species are too rare to be observed closely
8. According to paragraph E, how did cladistics say groups should be defined?
  - A By the widest possible range of shared features
  - B By shared evolutionary innovations passed on from a common ancestor
  - C By the geographical region a species inhabits
  - D By the age of the fossils in which a trait first appears
9. Which finding does the passage give as a surprise from molecular data?
  - A Swifts and swallows are in fact closely related
  - B Reptiles form a genuine natural group after all
  - C Flowering plants cannot be classified by DNA
  - D Whales are nested among the hoofed mammals, nearest the hippopotamus

### Questions 10–11 · Sentence completion

Complete each sentence using no more than two words from the passage.

10. Linnaeus's central contribution to naming was the introduction of a system of \_\_\_\_\_ that placed each species within larger groups.
11. Darwin argued that the true relationships between organisms are relationships of \_\_\_\_\_.

### Questions 12–14 · Matching information

The passage has seven paragraphs, A–G. Which paragraph contains the following information?

12. an example of a relationship revealed by comparing genetic sequences
13. the claim that a species name contains an argument rather than a simple label
14. a well-known category that a stricter method showed to be incomplete

## Answer key

For teacher / self-study use. Fold or detach before distributing to students.

Q	Answer	Para	Explanation
1	TRUE	A	The passage states common names vary from one language and region to the next.
2	FALSE	B	His innovation was hierarchy; species nested within genus, and so on.
3	TRUE	C	Their near-identical shape is convergence, not kinship; different orders.
4	NOT GIVEN	D	Darwin reinterpreted what classification meant; renaming is not mentioned.
5	FALSE	F	It confirmed a great many groupings and overturned only a stubborn few.
6	B	B	The name carries a claim about resemblance and place in the order of life.
7	C	C	Convergence yields lookalikes without kinship.
8	B	E	Only shared novelties, not ancient traits, reveal closest relatives.
9	D	F	The whale-hippopotamus result is the offered surprise.
10	hierarchy	B	Grouping species within nested ranks was his innovation of hierarchy.
11	descent	D	He held classification is genealogical, a matter of descent.
12	F	F	Molecular comparison gave the whale-hippopotamus result (paragraph F).
13	A	A	Paragraph A states the name carries an argument inside it.
14	E	E	Reptiles, shown incomplete once birds were included (paragraph E).