

## Differences between Invertebrates and Vertebrates

The animal kingdom has been divided into two major groups: Invertebrates (Non-Chordates) and Vertebrates (Chordates). Invertebrates are those that do not possess a vertebral column or backbone while Vertebrates are those where vertebral column or backbone is present.

These two groups have some differences as follows:

S.N.	Characteristics	Invertebrates (Non-Chordates)	Vertebrates (Chordates)
1.	Symmetry	Radial, Bi-radial or Absent	Bilateral
2.	Metamerism	True or pseudo metamerism or Absent	True metamerism
3.	Post-anal tail	Absent	Usually Present
4.	Grade of organization	Protoplasmic or organ-system	Organ System
5.	Germ Layers	Two (diploblastic), Three (Triploblastic) or Absent	Three (Triploblastic)
6.	Coelom	Acoelomate, pseudocoelomate or Truly coelomate	Truly coelomate
7.	Limbs	From the same	From several segments

	derivation	segment	
8.	Notochord	Notochord or Backbone Absent	Present at some stage or replaced by a backbone made of ring-like vertebrae
9.	Gut position	Dorsal to the nerve cord	Ventral to the nerve cord
10.	Pharyngeal gill- slits	Absent	Present at some stage of life
11.	Anus	Opens on the last segment or Absent	Differentiated and opens before the last segment
12.	Blood vascular system	Open, Closed or Absent	Closed and much developed
13.	Heart	Dorsal, Lateral or Absent	Ventrally placed
14.	Dorsal blood vessel	Blood flows anteriorly	Blood flows posteriorly
15.	Hepatic portal system	Absent	Present
16.	Haemoglobin	In plasma or Absent	In red blood corpuscles
17.	Respiration	Through body surface, gills or tracheae	Through gills or lungs
18.	Nervous System	Solid	Hollow

19.	Brain	Above pharynx or Absent	Dorsal to pharynx in head
20.	Nerve cord	Double, ventral, usually bearing ganglia	Single, dorsal, without ganglia
21.	Segmental nerve roots	Dorsal and ventral roots not separate	Dorsal and ventral roots separate
22.	Reproduction	Asexual reproduction predominant	Sexual reproduction predominant
23.	Regeneration power	Usually good	Usually poor
24.	Body temperature	Cold-blooded	Cold or warm-blooded

