

NAMES AND SURNAMES: \_\_\_\_\_

## VENOM

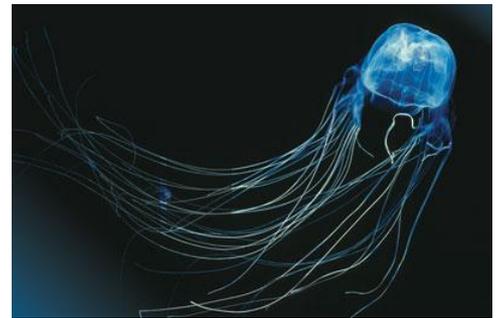
Invertebrates are the most successful animals on Earth because there are not only far more individuals, but also far more species.

This great achievement is due to a number of factors. One of them is that they have developed efficient survival mechanisms, including how they eat or avoid being eaten - two common issues for all living things. The surprising thing in the case of invertebrates is that many species have found a common solution to both problems: **venom**. In other words, substances that help them to hunt and to avoid being hunted.

### The box jellyfish

The world's most venomous animal is the *box jellyfish*. It has caused almost 6,000 deaths since 1954. Its venom is one of the world's most deadly because its toxins not only attack the skin and the heart, but also the nervous system (which is why it is called neurotoxic venom). The pain produced by the venom is so intense that those who are stung go into a state of shock and die of asphyxiation. If the victim survives the sting, the pain can last for weeks.

If a person is stung by a jellyfish and survives, vinegar should be applied to the wound for at least thirty seconds until he/she can get to a health centre. Vinegar is acetic acid and, while it does not erase the pain, it does inactivate any venom *nematocysts* that have not yet reached the bloodstream.



### The marbled-cone snail



Even though it is very small, the marbled-cone snail is a very dangerous animal. Just one drop of its venom is so strong that it can kill twenty people. The symptoms generated by its sting can begin straight away or after a few days and this complicates treatment.

Its sting causes very intense pain, swelling (since it is hemotoxic, it damages tissues and causes inflammation), numbness and pins and needles. The most serious cases involve paralysis, problems with vision and breathing difficulties. There is no antidote. Around thirty deaths have been registered as a result of this animal's venom.

### The blue-ringed octopus

The blue-ringed octopus is around the size of a ping-pong ball but its venom is deadly enough to kill a person. Each individual has enough venom to kill twenty-six adults in a matter of minutes. There is no antidote.

Since it does not cause pain, the sting appears to be inoffensive. However, the deadly neurotoxins act immediately and cause weakness to muscles and numbness followed by an inability to breathe and, in the end, death.



### The Israeli gold scorpion

On the whole, people believe that scorpions are relatively harmless to humans and that their stings only produce localised symptoms such as pain, numbness and swelling. But the Israeli gold scorpion is so dangerous to human beings that its venom - a powerful mix of neurotoxins - causes intense, unbearable pain followed by a high temperature, convulsions, paralysis, a state of coma and death. Whilst its sting is very dangerous, when adequate medical treatment is provided, it does not generally cause death except in children, the elderly and people with heart conditions.



1. Are all these animal vertebrates or invertebrates? How do you know it? Has any of them some type of skeleton?
  2. Classify the invertebrates presented in this worksheet. Give reasons.
  3. What type of symmetry does the box jellyfish have? What about the Israeli gold scorpion?
  4. Which is the most venomous of all the animals mentioned above? Explain your answer.
  5. Do you think that venom can be used as a defence mechanism? Why?
  6. What do you think a neurotoxic venom is? What about a hemotoxic venom? Which of the animals mentioned above has a hemotoxic venom? And which have a neurotoxic venom?
  7. Are all the invertebrates mentioned here deadly to human beings? Explain your answer.
  8. What is a nematocyst? And an antidote?
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