

13. Worksheet: How electric eel kills its prey

The electric eel (*Electrophorus*) lurks in rivers of South America. It lives on fish which it kills by electric shock of pulses of current. It does so by producing a potential difference of several hundreds of volts along its length. The resulting current in the surrounding water can be as much as one ampere.

The voltage is generated in special sets of cells called **electroplaques**. These are physiological emf devices that are arranged in tens of rows, each row stretching horizontally along the body containing several thousands of electroplaques. Each electroplaque has an emf of 0,15V and an internal resistance of 0,25 Ω . The water around the eel completes a circuit between the two ends of the electroplaque array, one end at the animal's head and the other near its tail.

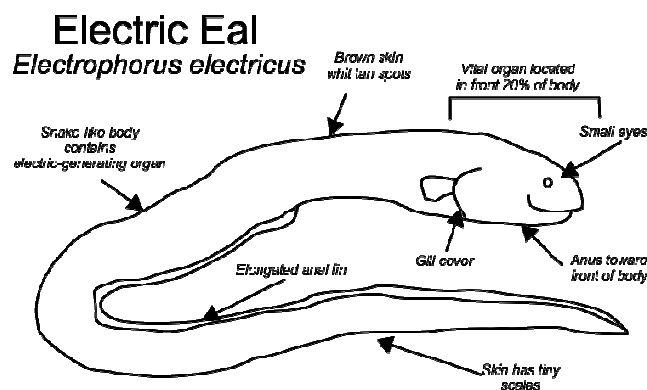


Fig. Schematic picture of electric eel

(<http://www.chm.bris.ac.uk/webprojects2001/riis/Electr2.gif>)

Other resources:

<http://www.electricshock.org/electric-animals.html>

<http://hypertextbook.com/facts/BarryLajnwand.shtml>

http://en.wikipedia.org/wiki/Electric_eel

In this activity you will investigate how is electricity used in animal world. Search information about the electric eel and other animals that are able to create electricity. Try to explain what enables the eel to use electricity to kill the fish but not to kill itself. Find out what values of voltage and current the certain eel can produce. Draw a schematic model of the eel's physiological emf device. Use the text and other resources in order to prepare a presentation for your peers.