

## 📖 Topic Page: [Hemoglobin](#)

Definition: **haemoglobin** from *Philip's Encyclopedia*

Red-coloured protein present in the erythrocytes (red-blood cells) of vertebrates. It carries oxygen to all cells in the body by combining with it to form oxyhaemoglobin. Oxygen attaches to the haem part of the protein, which contains iron; the globin part is a globular protein.



Image from: [Spun in a high-speed centrifuge, blood separates... in Philip's Encyclopedia](#)

### Summary Article: **haemoglobin**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Protein used by all vertebrates and some invertebrates for oxygen transport because the two substances combine reversibly. In vertebrates it occurs in red blood cells (erythrocytes), giving them their colour.

In the lungs or gills where the concentration of oxygen is high, oxygen attaches to haemoglobin to form **oxyhaemoglobin**. This process effectively increases the amount of oxygen that can be carried in the bloodstream. The oxygen is later released in the body tissues where it is at a low concentration, and the deoxygenated blood returned to the lungs or gills. Haemoglobin will combine also with carbon monoxide to form carboxyhaemoglobin, which has the effect of reducing the amount of oxygen that can be carried in the blood.

Haemoglobin also plays a role in the regulation of blood pressure. The haemoglobin molecule contains a small quantity of the amino acid cysteine that binds with nitric oxide ions (NO) in the blood. Nitric oxide acts to relax the muscles around the blood vessels, aiding their dilation and thus lowering blood pressure. According to US research in 2007, loss of nitric oxide is an important factor affecting the quality of donated blood during storage.

Haemoglobin is made up of two pairs of protein chains. Each chain has a molecular structure broadly similar to that of the single-chain oxygen carrier of the muscle, myoglobin. These two were the first proteins to have their structures elucidated by X-ray crystallography, based on breakthrough discoveries by the biochemist Max Perutz, who worked on the haemoglobin structure for several decades.

### essays

Blood, Artificial

**APA**

Chicago

Harvard

MLA

---

haemoglobin. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and*

*weather guide*. Abington, UK: Helicon. Retrieved from  
<https://search.credoreference.com/content/topic/haemoglobin>

---



© RM, 2018. All rights reserved.



© RM, 2018. All rights reserved.

## APA

haemoglobin. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from <https://search.credoreference.com/content/topic/haemoglobin>

## Chicago

"haemoglobin." In *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon. Helicon, 2018. <https://search.credoreference.com/content/topic/haemoglobin>

## Harvard

haemoglobin. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. [Online]. Abington: Helicon. Available from: <https://search.credoreference.com/content/topic/haemoglobin> [Accessed 14 November 2019].

## MLA

"haemoglobin." *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon, 2018. *Credo Reference*, <https://search.credoreference.com/content/topic/haemoglobin>. Accessed 14 Nov. 2019.