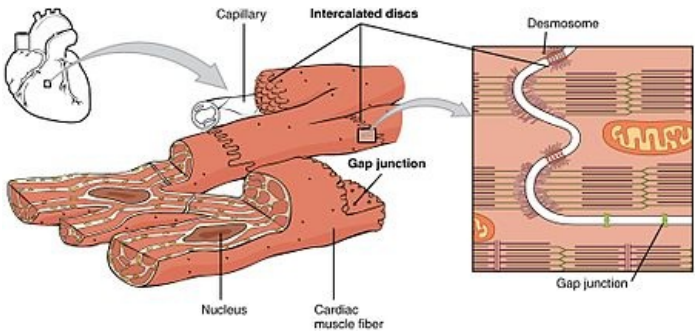
Cardiomyocyte

This article has been translated from WikiSkripta; ready for the **editor's review**.

A **cardiomyocyte** is a terminally differentiated, postmitotic cardiac muscle cell. Its shape resembles the letter **Y** (85-100 µm long and 15 µm wide[1]). Its terminal processes are connected to other cells by intercalary discs. In this way, a complex network is created that ensures the interplay of the entire myocardium during the cardiac cycle.

Structure

The cell is bordered by a **sarcolemma**' ***which pinches into the cell and thus creates transverse*** *T-tubules****. These are deeper and more densely arranged than in skeletal muscle, and are deposited at the Z-lines rather than at the A/I strip interface. They live in close proximity to the terminal cisterns and thus form formations called*** *dyads*.



Cardiomyocytes connected by intercalary discs

Sarcoplasm contains 1–2[2] oval nuclei stored in the center of the cell. At both poles, there are distinct perinuclear clearings (caused by the absence of myofibrils), in which we find organelles. A large part of the sarcoplasm consists of striated myofibrils . As in a muscle cell, they are made up of contractile actin and myosin filaments. Approximately 40 % [3] of the cell's volume is made up of mitochondria.

Another structure present in the cardiomyocyte is the Golgi complex. Granules (0.2–0.3 µm[1]) are attached to it, which are the most numerous in the muscle of the heart atria. They contain a high-molecular-weight precursor of atrial natriuretic peptide, which is a hormone that increases sodium excretion. Furthermore, in the sarcoplasm there are lipid droplets, glycogen particles and near the nucleus there is a yellow or brown pigment lipofuscin.

The cells are connected to each other by intercalary discs. These are structures composed of fasciae adherentes, desmosomes and nexus. The cells join together in bundles of fibers that further form muscle layers spiraling from the apex of the heart to its base.

Links

Related Articles

- Myocardium
- Heart
- Cardiac conduction system
- Pacemaker Potential

External links

- Cardiomyocyte (Czech wikipedia)
- Cardiomyocyte (English Wikipedia)
- Cardiac muscle tissue (http://philschatz.com/anatomy-book/contents/m46404.html)

References

1. JUNQUIERA, L.Carlos – CARNEIRO, Jose – KELLEY, Robert O, et al. *Fundamentals of Histology.* 1. edition. Jinocany : H & H, 1997. 502 pp. pp. 198. ISBN 80-85787-37-7.
2. BALKO, Jan – TONAR, Zbyněk, et al. *Memorix histology.* 1. edition. 2016. pp. 139. ISBN 978-80-7553-009-7.
3. **Cite error: Invalid <ref> tag; no text was provided for refs named `Fundamentals of histology`**

References

- JUNQUIERA, L.Carlos – CARNEIRO, Jose – KELLEY, Robert O, et al. *Fundamentals of Histology.* 1. edition. Jinocany : H & H, 1997. 502 pp. ISBN 80-85787-37-7.
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