



What tumors teach us – Jana Šmardová

Before I started reading and already knew roughly what the book would be about, I approached the subject matter with slight skepticism. There are parallels between the behavior of cells in biological systems and the behavior of humans in society, but if you take them too literally, you can end up in a difficult situation to resolve. For example, apoptosis - programmed cell death - plays an important role in the smooth functioning of a complex biological system, from embryogenesis to further development. Applied to society - who among us should voluntarily end life for the good of the whole?

But when I started reading the book, I was soon shaken out of my skepticism in an absolutely elegant way. The reader is first introduced to the basics of cell biology in an understandable way, and then the author leads him mentally to increasingly complex but all the more interesting concepts in an impressive alternation of chapters with the latest biological findings and then chapters, which are even color-coded, in which she explains the overlaps with human society. All theses and statements are carefully substantiated and documented.

In connection with the development of tumor cells, a parallel is drawn with human society. Even if most people are honest and strive for the well-being of themselves and others, there will always be individuals who do not follow the rules and cause harm. According to Christian ethics, humans are endowed with free will so that they can choose good or evil.

But do cells have free will? Reading the book can inspire us to this almost metaphysical sphere. And this is just the prelude to the perhaps surprising realization that the individual cells in complex organisms are not controlled by a control center, but have considerable autonomy and individual responsibility. And one of the inevitable consequences of the functioning of a multicellular system is that the formation of renegade cells cannot be prevented, they can only be halted by various mechanisms.

And the author offers more and more such impressive metaphors, and at the same time it seems as if she relies on the reader to continue imagining things with her.

I was most impressed by the chapters comparing the two main theories of tumorigenesis: the currently prevailing theory of somatic mutation and the alternative theory of the field of tissue organization, which is strictly opposed to it.

However, these two seemingly contradictory interpretations complement each other in many ways, and as the author convincingly argues, both aspects will be incorporated into the evolving integrated theory of tumor growth, including epigenetic mechanisms, as research progresses and we gain further insights.

I strongly recommend this wonderful book to inquisitive readers who are interested in exploring things from many angles, seeing how biological and social sciences intersect and complement each other, and being inspired to get to know and understand better a great phenomenon that can be summarized in all its complexity in one word - life.

Zdeněk Hostomský, Ph.D.

Vice-director of the Institute of Organic Chemistry and Biochemistry of the CAS