

Dear Friends,

The pandemic of the new coronavirus confirmed once again the known fact that a majority of the causative agents of dangerous human infections trace their origin to pathogens circulating in wild animal populations. The theory of emerging infectious diseases appeared in the late 1930s through the efforts of the outstanding Russian parasitologist Evgeny Pavlovsky. It says essentially that the causative agents of these diseases exist in nature independently of man, who remains for them a random, unpromising host—until they acquire, as a result of evolution, the ability to effectively spread from a sick human host to a healthy one. Fortunately, these events are still rare.

Who are the causative agents of natural focal infections? They are viruses, bacteria, or multicellular organisms (e.g., tapeworms), with terrestrial and aquatic animals serving as their natural reservoirs and carriers. Moreover, about 17% of all infectious disease cases globally can blame their cause on pathogens transmitted by blood-sucking vectors (mosquitoes, flies, etc.). In middle latitudes, the greatest danger comes from ixodid ticks, which can carry causative agents of about three dozen different infections, including the widespread tick-borne encephalitis and borreliosis (Lyme disease).

In this new journal issue, Novosibirsk scientists from the Institute of Fundamental Biology and Experimental Medicine (Siberian Branch of the Russian Academy of Sciences) tell the reader about the habits and lifestyle of ixodid ticks. These ticks live not only in Russia; they also inhabit other regions of our planet. The reader will learn what pathogens they carry and what measures he or she can take to protect themselves against ticks. The reader will also learn about prophylaxis of tick-borne infections.

Important news is that different tick species have been expanding their habitats in recent years, which process ignites the natural foci of tick-borne infections. The quantity of infected ticks is also growing, and growing everywhere—ticks now appear even in parks of metropolises. In Russia, some time ago, tick-borne infections were only a problem of Siberia and the Far East, but now they have become a problem of European Russia too. Ticks are spreading in other parts of the planet too: in the United States and Canada, in China and the countries of Southeast Asia, in South America. Scientists blame the cause on climate warming and business activities. Another factor that contributes to the tick expansion is the cross-breeding of different tick species. Some ticks can cross-breed to produce fertile hybrids—scientists now observe this phenomenon in Western Siberia.

Another article in this journal is written as a piece of bouts-rimés, a game of rhymed-ends. It tells about the discovery of Novosibirsk geneticists who found an “extra” chromosome



*in the sexual cells (or germ cells) of a whole variety of songbirds. This germline-restricted chromosome (GRC), previously found in two Brazilian species only, was seen until recently as a biological oddity. In 2015, however, scientists from the Institute of Cytology and Genetics (Siberian Branch of the Russian Academy of Sciences) accidentally discovered a GRC in the sand martin (*Riparia riparia*). This discovery inspired them to conduct a targeted search in 15 more species of songbirds. When they applied DNA probes, they uncovered a similarity between the GRC in the different species and the content of the main genome. This new finding allowed them to reconstruct a possible scenario for the emergence and evolution of this unique chromosome, whose role and functions are yet to be revealed.*

In 2019, a Russian expedition discovered new archaeological monuments in Zanskar, a little-understood and hard-to-reach area in Lesser Tibet (Ladakh) on the territory of modern India. The leader of this archaeological expedition was Natalia Polosmak, known for her discovery of the “frozen Pazyryk graves” on the Ukok Plateau in the Altai Mountains. In this journal, she tells the reader about the unique petroglyphs found in Zanskar. This rock art is now our only source of knowledge about the ancient past of this region. The images of earlier epochs reveal a great thematic and stylistic likeness between the petroglyphs of Zanskar and Central Asia, including Mongolia, Tyva, and Altai. This likeness may speak of a common lifestyle and religious ideas shared by peoples who lived in these lands in ancient times.

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