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Computational biology has become an increasingly popular subject among researchers from all over the world. New mathematical tools are required to be applied in dealing with complex phenomena stemming from biological systems. One of the powerful tools used to extract some hidden aspects of the phenomena with memory effect, which appear in biological processes, is provided by the fractional calculus. Existence of diverse families of fractional-calculus operators can be used efficiently depending on the specific real-world problems. The question as to which kernel corresponding to a non-local operator is suitable to model a complicated biological system is still an open issue for the researchers in this area.

This special issue received 332 submissions written by authors from many countries. However, after the review process, only 154 submissions were accepted for publication.

The topics of the accepted papers deal mainly with complex dynamical biological systems, nonlinearity, chaos, and fractional dynamics in the area of the computational biology. New and diverse models were designed with the generalized fractional-calculus operators. A special part was devoted to the investigation of the COVID-19 epidemic as well as to other important epidemiological diseases. Besides, the control strategies were used to investigate the dynamics of some specific biological systems.

We hope that the content of this published special issue will contribute to the development and applications of new methods and techniques used in the modern computational biology.

Finally, we acknowledge that this special issue has polarized the interest of several researchers from many different fields of science, engineering and medicine.

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