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Special Issue on Microorganisms in Tumor Development: Foes and Allies

Guest Editors

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Malignant tumors remain one of the leading causes of death worldwide, though significant milestones in diagnosing and treatment have been achieved in the past decades. The role of different microorganisms has long been studied in the complex etiology of tumors.

So far, only 11 microorganisms have been recognized as directly carcinogenic to humans. They include one species of bacteria (*Helicobacter pylori*), seven species of viruses (Epstein-Barr virus, hepatitis B virus, hepatitis C virus, Kaposi’s sarcoma-associated herpesvirus, human immunodeficiency virus-1, human papillomaviruses, and human T-cell lymphotropic virus), and three species of parasitic worms (*Opisthorchis viverrini, Clonorchis sinensis*, and *Schistosoma haematobium*). Some others, like protozoa *Plasmodium falciparum* and multiple polyomaviruses, are classified as probably carcinogenic, and numerous others are currently being evaluated for carcinogenicity. Additionally, many more microorganisms can indirectly be associated with cancer development, like representatives of the normal microbiota of different regions.

On the other hand, microorganisms with anti-tumor properties have garnered significant attention in cancer research. These pathogens, including bacteria, viruses, and fungi, possess unique characteristics that make them potential valuable allies in the fight against tumors. Bacteria and bacterial anticancer agents have been suggested as an optimistic alternative for cancer therapeutics. The *Salmonella, Clostridium, Bifidobacterium, Lactobacillus, Escherichia, Pseudomonas, Caulobacter, Listeria, Proteus*, and *Streptococcus* genera have been already noted for their anticancer
potential. Other promising microorganisms in the clash against tumors are the oncolytic viruses (OVs). Genetically engineered OVs have been developed to combat malignancies and are a new class of anticancer drugs today.

Some viruses have an innate tropism for tumor cells, like reoviruses, Newcastle disease virus (NDV), and coxsackievirus (CV), with novel data hinting at an oncopreventive role of the human cytomegalovirus as well. Certain fungi, such as Cordyceps, have also demonstrated anti-tumor effects. Natural compounds derived from the endophytic flora of fungi offer potential solutions for cancer treatment due to their safety, cost-effectiveness, biocompatibility, and reduced toxicity concerns.

This special issue aims to include research concerning an interplay between microorganisms and tumors: their negative roles, which can contribute to tumor development and their possible positive effects in the fight against tumors.

The special issue welcomes original research articles, case reports, rapid-communications, and review articles.

Keywords for this special issue are:

- tumor-associated microorganisms
- oncogenic viruses
- infection-associated tumors
- anti-tumor bacteria
- oncolytic viruses
- anti-tumor fungi

Original research articles, review articles, case reports and rapid-communications are welcome for this special issue (https://www.degruyter.com/journal/key/oncologie/html).

Publication of the special issue is planned for end of April 2024.

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