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| Autore | Yoshimasa Saito |
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| Nota di contenuto | Alterations of epigenetics and microRNAs in cancer and cancer stem cell / Yoshimasa Saito -- Culturing intestinal stem cells: applications for colorectal cancer research / Masayuki Fuji and Toshiro Sato -- Characterizing the Retinoblastoma 1 locus: putative elements for Rb1 regulation by in silico analysis / Mohammadreza Hajjari, Atefeh Khoshnevisan and Bernardo Lemos -- Multilayer-omics analyses of human cancers: exploration of biomarkers and drug targets based on the activities of the International Human Epigenome Consortium / Yae Kanai and Eri Arai -- Non-coding RNAs as epigenetic regulator of glioma stem-like cell differentiation / Keisuke Katsushima and Yutaka Kondo -- Aberrantly methylated genes in human papillary thyroid cancer and their association with BRAF/RAS mutation / Yasuko Kikuchi, Eiichi Tsuji, Koichi Yagi, Keisuke Matsusaka, Shingo Tsuji, Junichi Kurebayashi, Toshihisa Ogawa, Hiroyuki Aburatani, Atsushi Kaneda -- MicroRNAs in Barrett's esophagus: future prospects / Juntaro Matsuzaki and Hidekazu Suzuki -- Epigenetic alteration and microRNA dysregulation in cancer / Hiromu Suzuki, Reo Maruyama, Eiichiro Yamamoto and Masahiro Kai -- The role of microRNAs in the regulation |

of cancer stem cells / Ryou-u Takahashi, Hiroaki Miyazaki and Takahiro Ochiya -- Disruption of the expression and function of microRNAs in lung cancer as a result of epigenetic changes / Kousuke Watanabe and Daiya Takai -- The role of mesenchymal stem cell in cancer development / Hiroshi Yagi and Yuko Kitagawa.

Sommario/riassunto

Studies have shown that alterations of epigenetics and microRNAs (miRNAs) play critical roles in the initiation and progression of human cancer. Epigenetic silencing of tumor suppressor genes in cancer cells is generally mediated by DNA hypermethylation of CpG island promoter and histone modification such as methylation of histone H3 lysine 9 (H3K9) and tri-methylation of H3K27. MiRNAs are small non-coding RNAs that regulate expression of various target genes. Specific miRNAs are aberrantly expressed and play roles as tumor suppressors or oncogenes during carcinogenesis. Important tumor suppressor miRNAs are silenced by epigenetic alterations, resulting in activation of target oncogenes in human malignancies. Stem cells have the ability to perpetuate themselves through self-renewal and to generate mature cells of various tissues through differentiation. Accumulating evidence suggests that a subpopulation of cancer cells with distinct stem-like properties is responsible for tumor initiation, invasive growth, and metastasis formation, which is defined as cancer stem cells. Cancer stem cells are considered to be resistant to conventional chemotherapy and radiation therapy, suggesting that these cells are important targets of cancer therapy. DNA methylation, histone modification and miRNAs may be deeply involved in stem-like properties in cancer cells. Restoring the expression of tumor suppressor genes and miRNAs by chromatin modifying drugs may be a promising therapeutic approach for cancer stem cells. In this research topic, we discuss about alterations of epigenetics and miRNAs in cancer and cancer stem cell and understand the molecular mechanism underlying the formation of cancer stem cell, which may provide a novel insight for treatment of refractory cancer.
