

Long non-coding RNA (lncRNA) and micro-RNA (miRNA) in cancer management

Sofia Mubarika Haryana*

Department of Histology and Cell Biology, Faculty of Medicine, Gadjah Mada University, Yogyakarta

DOI: <http://dx.doi.org/10.19106/JMedScieSup004804201630>

ABSTRACT

The discovery of microRNA (miRNA), a small non-coding RNA (ncRNA), has shed light to the dark matters (98%) of the genome. This finding resulted in a Nobel Prize awarded to Fire and Mello in 2006. miRNA plays a very important role in regulating protein expression through 3'UTR or other binding places to mRNA target. miRNA have been considered as negative regulators of protein-coding gene expression affecting cell differentiation, proliferation, survival, and all fundamental cellular processes, also implicated in carcinogenesis. miRNA can be grouped into tumor suppressor miRNA (miRSuppressor) and oncogenic miRNA (oncomiR). miRSuppressor regulates protein expression through targeting oncogenic mRNA, meanwhile oncomiR target mRNA Tumor Suppressor. Evidence indicates that deregulation in genetic and epigenetic might cause overexpression of oncomiR and loss of miRSuppressor expression. Novel evidences also showed that cell-to-cell communication is conducted via exosome, which is released from every cell in physiological and pathological conditions and considered as fingerprints of cell and its status. This is a paramount biomarker discovery in cancer. In subsequent years, a lot of research was performed to develop new cancer therapy. Our team, GenomiR, presented the preliminary data on several miRNA in cancers aimed to develop minimally-invasive biomarkers in cancer. Recently, the long non-coding RNA (lncRNA), another class of non-coding RNA, has also attracted interest from many scientists in the world. lncRNA has emerged as an essential regulator in almost all aspect of biology including carcinogenesis. lncRNA is considered as emerging key player in non-coding world. This presentation discusses the roles of ncRNA (miRNA and lncRNA) in cancer management.

Keywords: miRNA, ncRNA, lncRNA, regulation, cancer management

Corresponding author: sofia.mubarika@gmail.com