

Genomic biomarkers for early detection of complex diseases**Basant K. Tiwary**

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**Abstract**

Complex diseases such as cancer and psychiatric diseases are heterogeneous diseases and thus diagnosis of a complex disease at an early stage is a puzzling task. The diagnosis of cancer and mental disorders using machine learning models is a major challenge for the translational bioinformatics. An effective genomic biomarker to identify the early stages of a disease progression is a valuable tool in cure and prevention of these diseases. Support vector machine is a widely applied machine learning method to discriminate different stages of cancer and mental disorders. It also gives us a measurable assessment of possible cardiovascular damage inflicted onto a cancer patient after chemotherapy. Moreover, the early stages of ovarian cancer can be identified using this approach. The symptoms of psychiatric disorders such as major depression, bipolar disorder and schizophrenia are overlapping. Thus, accurate discriminatory diagnosis of mental disorders is still a major challenge before a medical practitioner. We have recently developed successful models to classify these diseases successfully using SVM models. Thus, artificial intelligence has an enormous potential in developing molecular diagnostics for early identification of cancer and psychiatric diseases.

Key words: Cancer, Psychiatric disorders, Machine learning, Genomic biomarkers