

Title: A new method for identification of cyclic circadian genes using circular isotonic regression.

Abstract

Identification of periodic patterns in gene expression data is important for studying the regulation mechanism of the circadian system. The information available is often given only by one or two cycles. Consequently, the number of observations is not enough to fit certain models, such as Fourier's models, properly. Some authors have already developed procedures or algorithms among which the JTK_Cycle algorithm is the most popular one.

We propose a new method to identify cyclic gene expressions based on circular order restricted inference. Validation of the method is made through real data sets and simulations. Moreover, we compare the results obtained by the method with other detecting methods developed in the literature.

Key Words: Circadian Cycle, Isotonic Regression, Circular Data.