



BC Cancer Agency

CARE & RESEARCH

An agency of the Provincial Health Services Authority

Genome Sciences Centre

Wednesday Seminar Series

‘*Arabidopsis thaliana* promoter architecture: *in silico* prediction of a novel class of motifs specific to plant and involved in the transcription regulation.’

By:

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1:15 pm.

Gordon & Leslie Diamond Family Theatre

BC Cancer Research Centre

675 West 10th Avenue

Abstract

The knowledge of promoter architecture is crucial to understand the regulation of gene expression. Taking advantages of the preferential position of some regulatory elements relative to the TSS, we carried out a systematic examination of preferentially located motifs in the core and proximal promoters of *Arabidopsis thaliana*. This work led to new insights about the plant promoter architecture giving prominence to four areas of the promoters containing regulatory elements with specific topological constraints. We focused our work on the core-promoter where a regulatory element involved in the transcription initiation, the TATA-box, is expected. Among promoters that do not contain this regulatory element, we identified motifs sharing the same constraints than the TATA-box and being conserved in *Arabidopsis thaliana* and *Oryza sativa*: the TATA-variants and a new class of motifs specifically observed in plant promoters: the TC-elements. The structural and functional features of TC-element-containing genes were distinct from those of other genes. Our observations suggest that the TC-elements might be a class of novel regulatory elements participating in the complex modulation of gene expression in plants.