ABSTRACT
The discovery of several novel Labial candidate downstream target genes indicates that this homeoprotein regulates a limited but distinct range of embryonally expressed Drosophila genes.

INTRODUCTION
The homeodomain transcription factor Labial is a member of the family of transcription factors known as transcription factor-gamma-linked kinases (TGF-Ks). These kinases are known to be important in the regulation of many cellular processes, such as the growth and development of cells, and the regulation of gene expression in response to environmental stimuli. The kinases are also involved in the regulation of the expression of many other cellular processes, such as protein synthesis and cell growth and differentiation. The homeodomain transcription factor Labial is also known as the 'labial' kinase.

The Labial kinase is a transcription factor that is expressed in several cell types including: Drosophila melanogaster (The homeotic/Hox genes encode a set of evolutionarily conserved homeodomain transcription factors that define segmental identity along the anterior-posterior body axis of animals as diverse as insects and vertebrates. In Drosophila, these genes are arranged in two gene clusters called the Antennapedia and Bithorax complexes. The relative position of Hox hosts within the cluster is closely related to their spatial and temporal expression pattern in the body, with genes located towards the 3' end expressed more anterior and earlier than the 5's location within this cluster. It has been suggested that homeoproteins are not responsible for specifying morphological differences but rather play a role in controlling cellular functions. Other strategies have been used to identify these subordinate genes, such as enhancer trapping, immunoprecipitation of chromatin fragments, subtractive hybridization, selection for binding sites in yeast, and heat-shock-induced overexpression. The lab gene, which is the most proximate gene within the Drosophila Antennapedia complex, encodes an Antheroid-like Q50 homeodomain transcription factor and is anteriorly expressed along the anterior-posterior body axis. This information is important for understanding the biology of lab and the conservation of Hox genes in animal development, as genetic studies have shown that it is essential for proper head formation and specification of cellular identity in the midgut and incertorial brain. The use of ubiquitous in vivo overexpression techniques and quantitative oligonucleotide imaging to investigate the number and quality of downstream genes is crucial.

CONCLUSION
Remarkable conclusions By examining genome-wide data from microarrays, we propose that there are many new candidate downstream genes for the homeodomain transcription factor Lab, including indirect targets of lab gene action. However, it is not known whether these genes fall under direct or indirect target classifications as they are regulated by Lab protein binding to DNA regulatory sequences.