Part 3

Evolution of Bicoid-based Patterning in the Diptera

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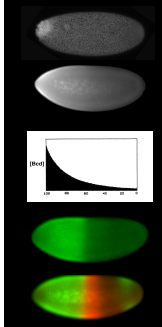
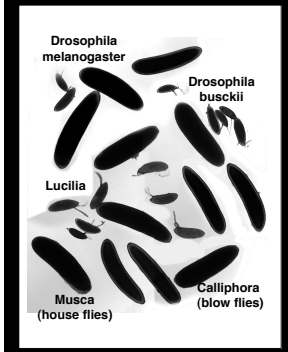
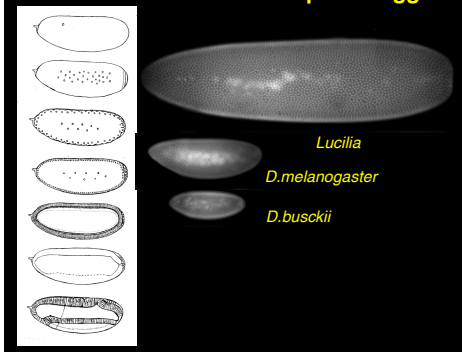


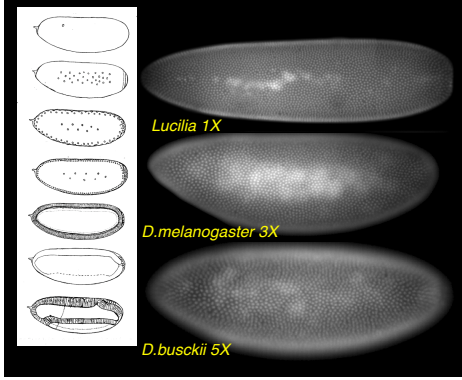
Insect eggs vary greatly in size



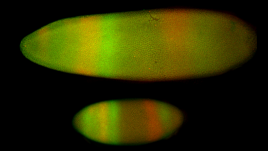
Early development is the same in all dipteran eggs



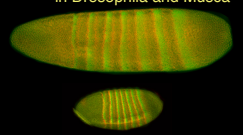
Early development is the



Segmental hierarchies are maintained in bigger eggs



Hunchback and Giant gap expression in Drosophila and Musca



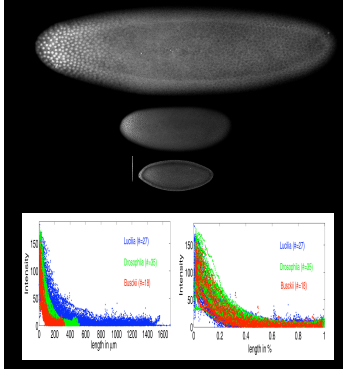
Paired and Evenskipped pair-rule expression in Drosophila and Musca

How is the scaling of transcriptional pattern achieved?

1) adjustments in cis-acting control region of target genes

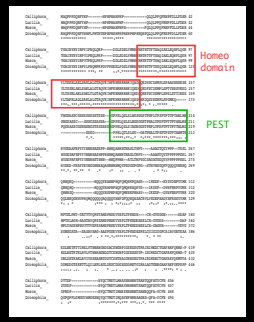
2) adjustment in distribution of Bcd (shape of gradient)

Bicoid Gradients in *Lucilia, D. melanogaster* and *D. busckii*

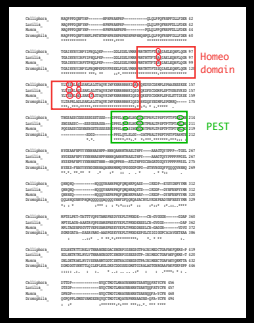


What properties/regions of Bcd have changed during evolution of Diptera?

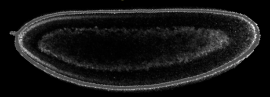
Dipteran Bicoid similar to Drosophila Bicoid



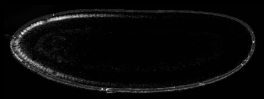
But some differences exist



Dipteran Bicoid expressed in Drosophila make Drosophila sized gradients

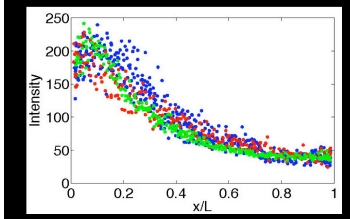


Calliphora Bcd-GFP in Drosophila
lambda = 0.169 +/- 0.005 EL (N=2).



Drosophila Bcd-GFP in Drosophila
lambda = 0.165 +/- 0.005 EL (N=3).

Dipteran Bicoid expressed in Drosophila make Drosophila sized gradients



Dipteran Bicoid expressed in Drosophila make Drosophila sized gradients

It is not Bicoid itself that is changing, but some property of the egg

What properties of the egg itself could influence Bicoid distribution and might have changed during evolution of Diptera?

How do those properties sync with the more obvious change in egg size?

How are changes in a patterning system coordinated during

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