

The systematic identification and analysis of replication origins in *Drosophila*

Duke

David MacAlpine

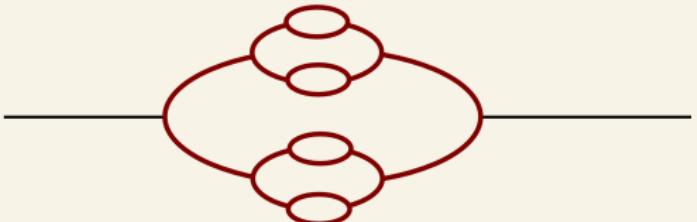
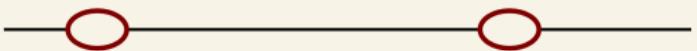
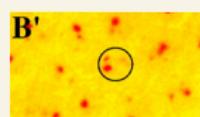
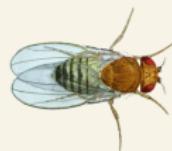
- Leyna Denapoli
- Matt Eaton
- Heather MacAlpine

Whitehead

Terry Orr-Weaver

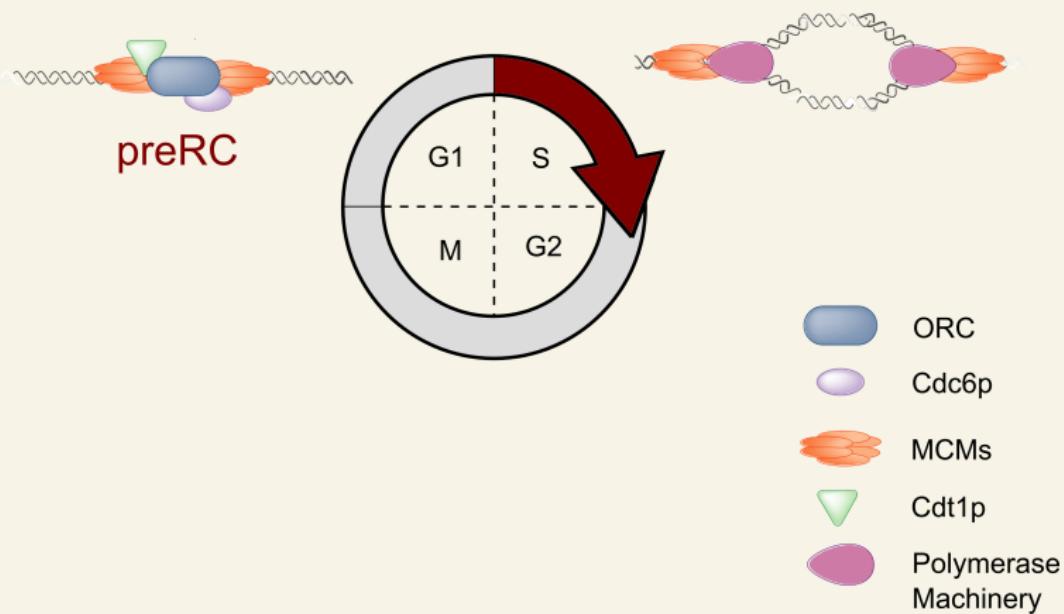
- Thomas Eng
- Helena Kashevsky
- Noa Sher

Replication and development



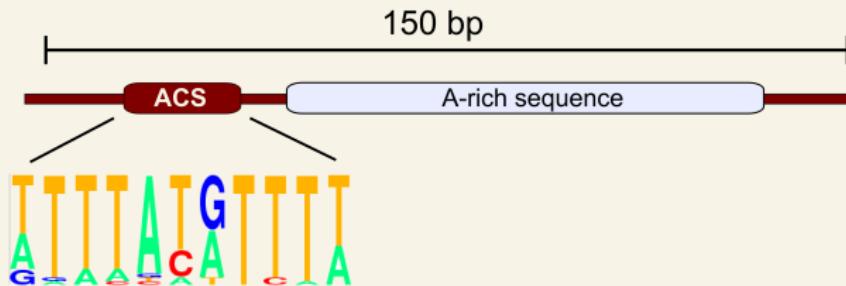
Pre-Replicative complex

preRC assembly in G1 defines origins

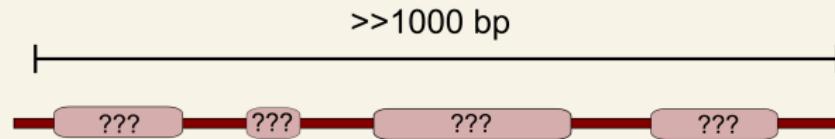


Sequence determinants of replication origins

Yeast



Metazoan



Characterizing the *Drosophila* replication program

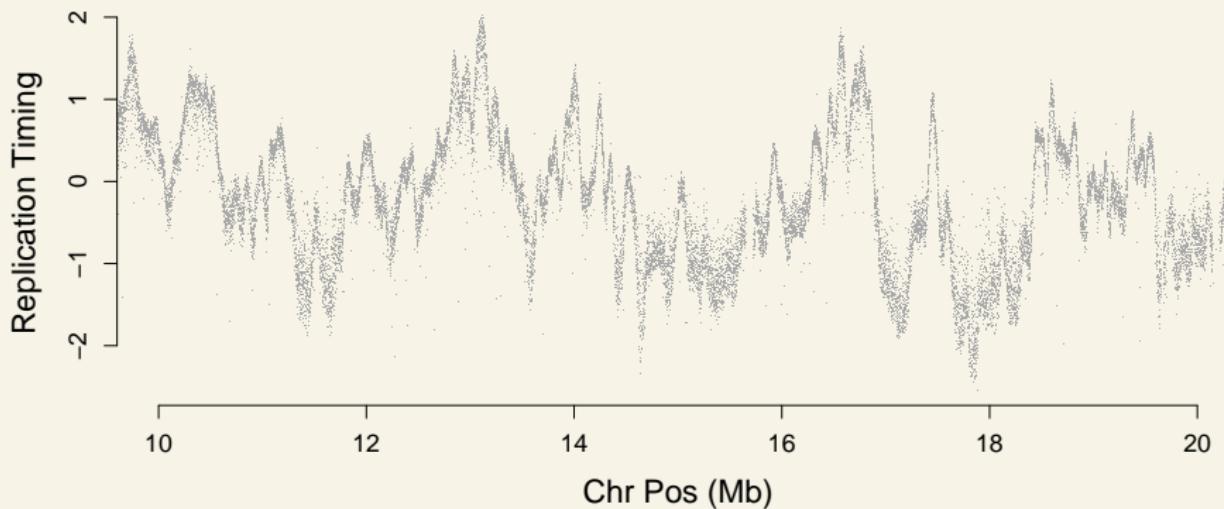
- Time of replication for all unique sequences
- Mapping origins of replication
- ChIP mapping of essential initiator proteins
- Differential replication of polytene chromosomes

Replication timing profiles

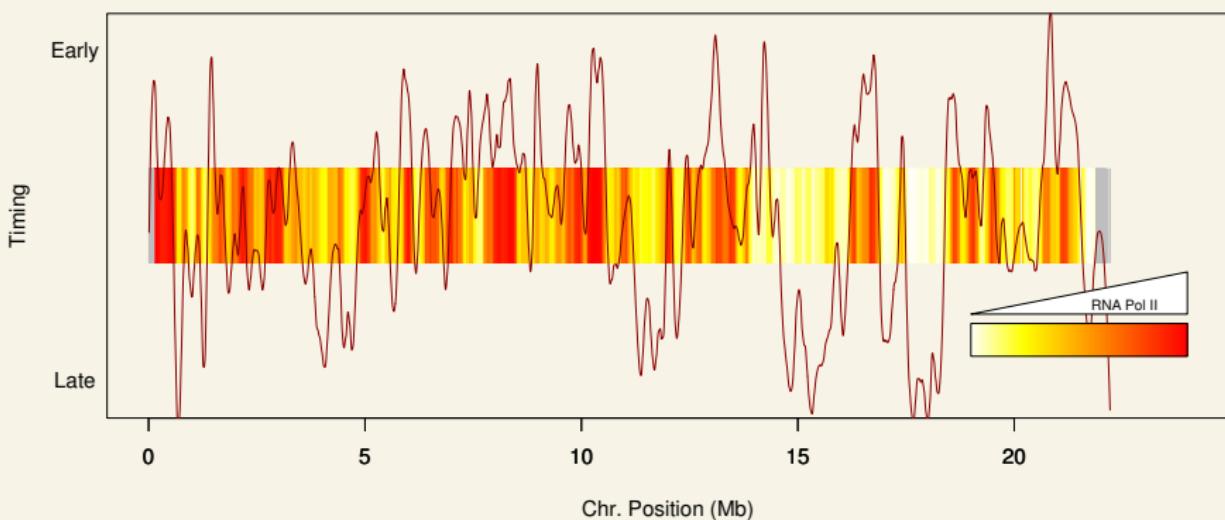


Replication timing

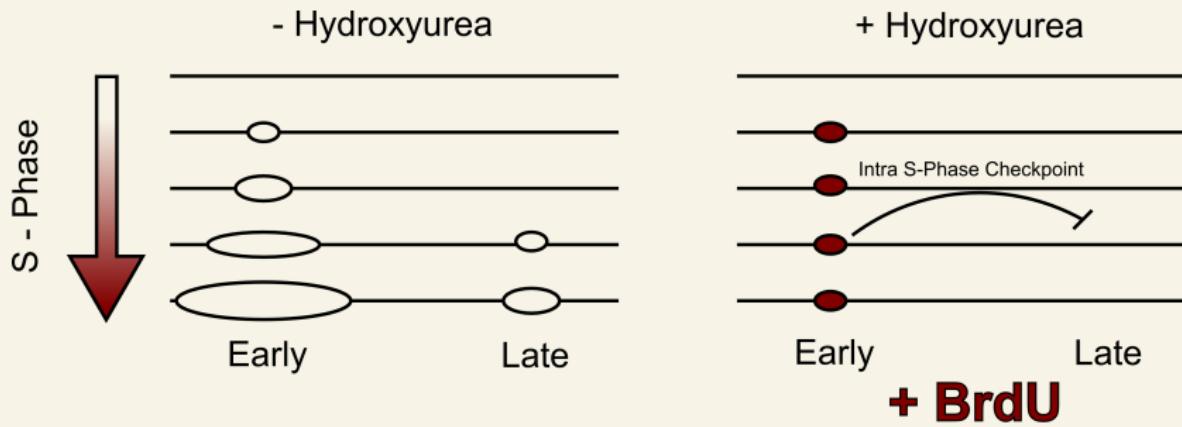
Kc - embryonic, CL8+ - imaginal disc, -DmBG3 - CNS



Timing correlates with active transcription

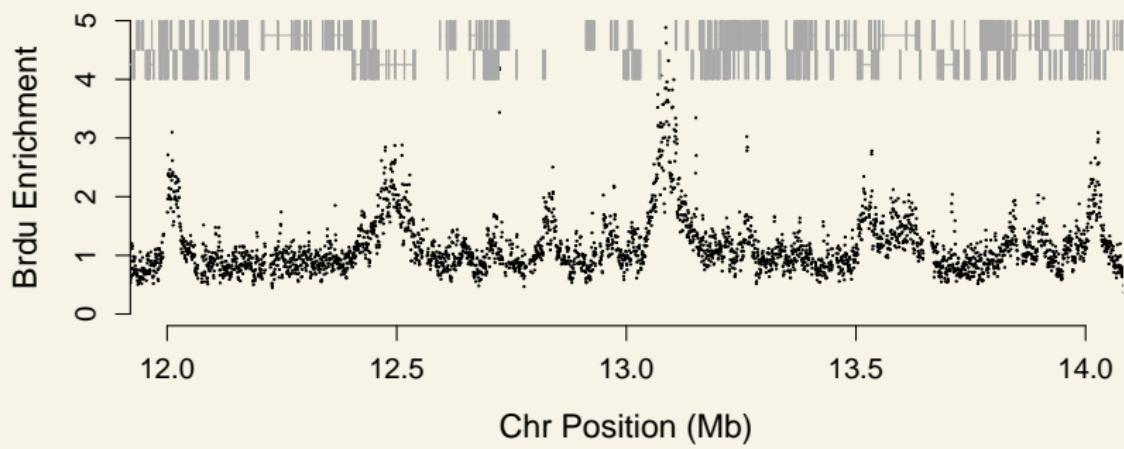


Mapping early origins of replication



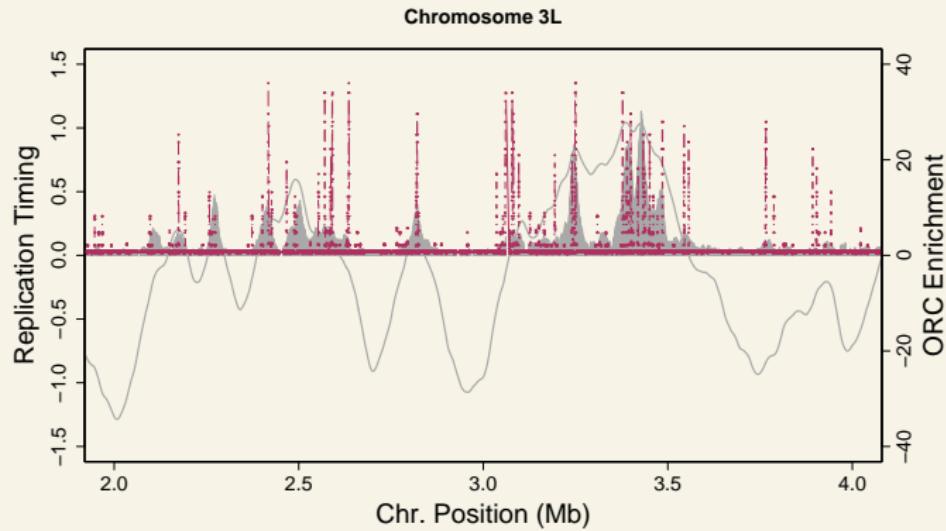
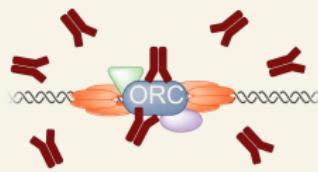
Origin mapping

Kc - embryonic, Cl8+ - imaginal disc, DmMBG3 - CNS



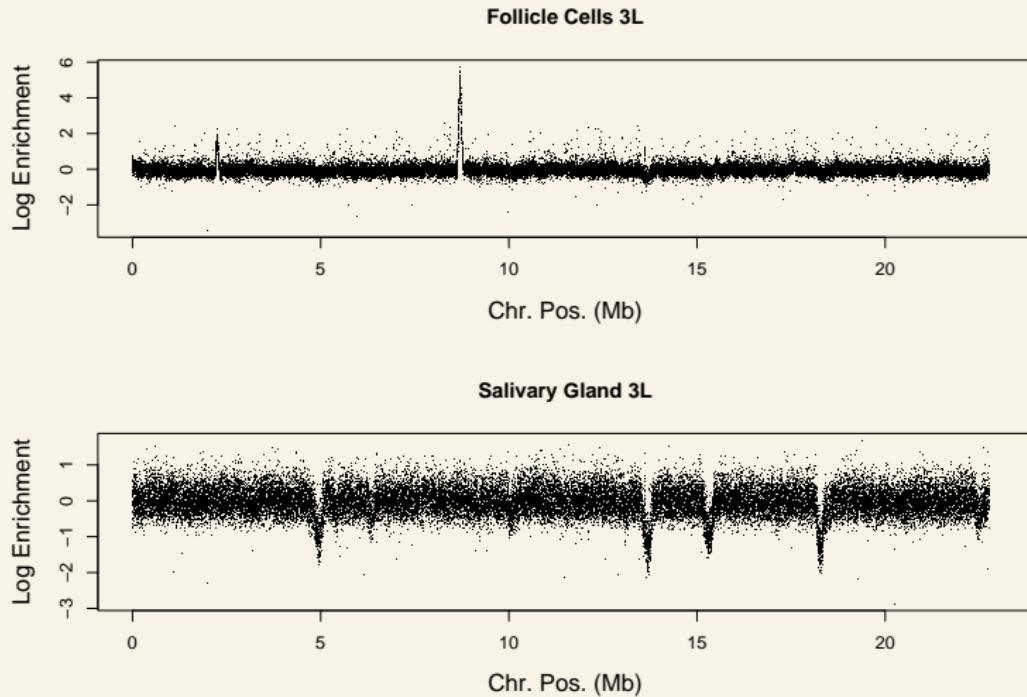
ChIP mapping of preRC components

Kc, Cl8+, DmBG3, staged embryos, salivary glands



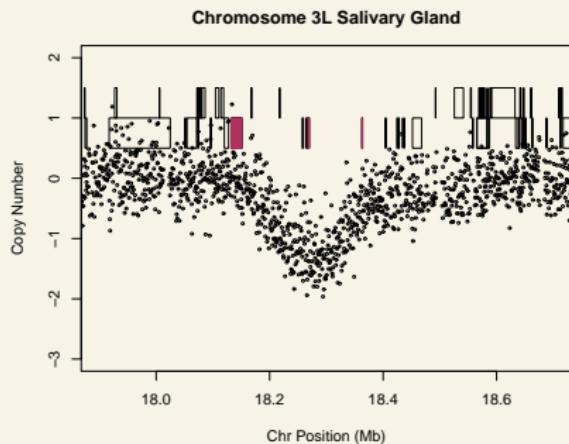
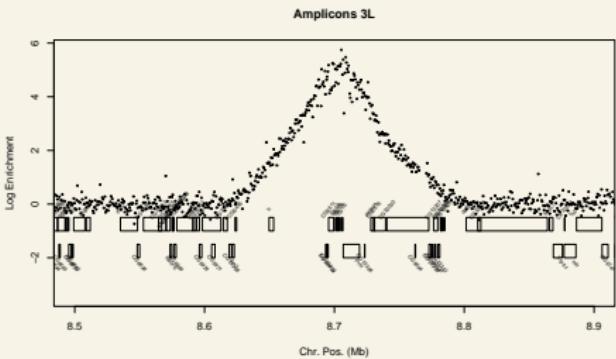
Differential replication of polytene tissues

Follicle, Salivary Gland, Nurse, Fatbody, Midgut



Amplification is essential for elevated transcription of chorion genes

Role of underreplication?



How are origins selected and regulated?

- Specific DNA sequences?
- Local chromatin structure?
- Function of adjacent sequences?
- Additional specificity factors?



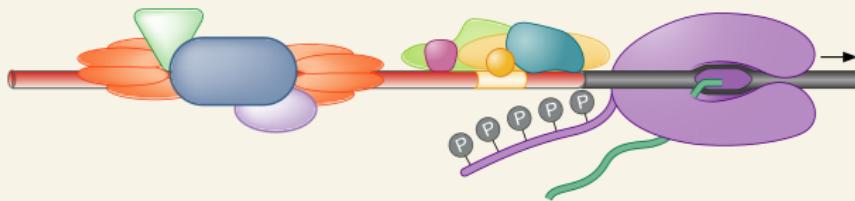
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