

GS351 Fall 2006

Preparatory Questions for Tuesday October 19th

October 19 Mechanism of the IFN β Enhanceosome

Assigned readings:

Agalioti et al. (2000) Ordered Recruitment of Chromatin Modifying and General Transcription Factors to the IFN- β Promoter. *Cell*, 103:667-678.

Munshi et al. (2001) Coordination of a Transcriptional Switch by HMGI (Y) Acetylation. *Science*, 293:1133-1136.

(Agalioti et al.)

1. What is a nucleosome? What are its components? What histone components usually serve as sites of posttranslational modification?
2. What are the following proteins and complexes? SWI/SNF, GCN5/PCAF, CBP/p300.
3. Describe the methods (Fig 1) used to map the enhanceosome and nucleosomes to the IFN β promoter.
4. How was it shown that histone acetylation (Fig 2) is insufficient for nucleosome remodeling at the IFN β promoter?
5. Describe the experiments (Fig 3) demonstrating that histone acetylation recruits SWI/SNF and TFIID to the IFN β promoter.
6. Describe the mechanistic differences in pre-initiation complex assembly between IFN β and a synthetic enhancer (Fig 4).
7. Describe the ordered recruitment of GCN5, SWI/SNF, PolIII, and TBP to the IFN β promoter (Fig 5) and present the model shown in Fig 6.
8. What are the possible functions for histone acetylation?
9. Enhanceosome stimulated transcription at the IFN β promoter causes a repositioning of nucleosome II prior to transcription initiation. What do you imagine is happening to nucleosome II during transcription?

(Munshi et al.)

9. Describe the data (Fig 1) showing that acetylation at lysine 71 on HMGI (Y) strengthens formation of the enhanceosome.

10. Describe the data (Fig 2A) showing the ordered recruitment of transcription factors to the IFN β enhanceosome. Describe how it was shown that GCN5/PCAF acetylates HMG I (Y) at K71, and that CBP/p300 acetylates HMG I(Y) at K65.

11. What do the authors infer about the function of K71 and K65 acetylation (Fig 3)

12. You have chosen a thesis lab that works on the IFN β enhanceosome. What is one question that you want to address?