

Tentamen GCA november 1 2012

- 1) Explain the differences and similarities between the two sub-pathways of NER, global genome repair (GGR) and transcription coupled repair (TCR). (10)
- 2) Describe two situations where TCR can occur without the help of the RAD26 protein and give a model how to explain this. (30)
- 3) Explain the fact that XP patients have a predisposition for cancer and give a possible explanation for the fact that Cockayne patients do not have such a predisposition. (15)

- 4) Mention the fundamental differences between the processes of transcription in eukaryotes and prokaryotes. (10)
- 5) Explain structure and function of the CTD tail in transcription. (30)

- 6) Explain the chemical nature and the function of the Histone code. (15)
- 7) Methylation of cytosine at the 5 position is an important signal in silencing but is also responsible for the relative low abundance of CG sequences in genomes. Explain this. (10)
- 8) Describe the experimental evidence (from at least two different organisms) that cytosine methylation in DNA is directed by histone methylation. (30)

- 9) Explain the relationship between gene silencing through SIR proteins (both in yeasts and mammalian cells) and the cellular metabolism. (15)
- 10) Explain the relationship between "normal" human ageing and alternative splicing in the LMNA gene. (35)