

UNIVERSITY OF OSLO

Faculty of Mathematics and Natural Sciences

Exam in: **MBV2010 Molecular Biology**

Day of exam: **August 17, 2006**

Exam hours: **14:30-17:30 (3 hours)**

This examination paper consists of **2** pages.

Appendices: **None**

Permitted materials: **None**

Make sure that your copy of this examination paper is complete before answering.

Numbers in brackets indicate the maximum number of points for each question. The maximum number of points for the entire exam is 55.

1. In which molecular processes are the following proteins involved

RNA polymerase II
DNA polymerase II
Release factor 3 (RF-3)
RuvC
DnaB
Hsp70
Cleavage stimulation factor (CstF)
TATA-binding protein
Histone deacetylase (HDAC)
Catabolite activator protein (CAP)

(10)

2.
 - a) What are the mechanisms by which mutations arise in a genome? (5)
 - b) How can mutations in non-coding regions affect the expression of a genome? (5)
 - c) Describe the process by which double-strand breaks in DNA are repaired. (5)

3.
 - a) Describe the process of Rho-dependent termination of transcript synthesis in *E. coli*? (5)
 - b) What are the common modifications made to transcripts of protein-coding genes in eukaryotes? (5)
 - c) Describe the role of small nucleolar RNA (snoRNA) molecules in the modification of eukaryotic pre-rRNA molecules. (5)

4. a) What is the “histone code”? (5)
- b) What are insulator sequences and what unique properties do they possess? (5)
- c) What is the difference between constitutive heterochromatin and facultative heterochromatin? (5)