

# UNIVERSITETET I OSLO

Det matematisk-naturvitenskapelige fakultet

Exam in: **MBV2010 Molecular Biology**

Day of exam: **June 4, 2004**

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.*

1. Which of the following proteins has a function in

- a) Transcription
- b) RNA processing
- c) Translation
- d) Protein processing
- e) Recombination
- f) Replication
- g) Transposition
- h) DNA repair

Telomerase

RNase H

DNA polymerase II

DnaB helicase

Rec A

DNA polymerase alpha

Rho

Release factor 1 (RF-1)

SR proteins

Hsp70

- 2. a) Describe the origin of replication in *E. coli* and the events during initiation of replication in bacteria.  
b) List the proteins involved in DNA replication in bacteria and describe their role in the replication process.
- 3. a) Outline the signal pathway by which steroid hormones affect the activity of genes in higher eukaryotes.

- b) What is the function of the catabolite activator protein (CAP) and how is its activity regulated?
4. a) List various types of mutations and DNA damage and their possible causes.  
b) Describe (in general, not in detail) the mechanisms that repair the changes in the DNA listed in the answer to 4. a).