

江苏大学

硕士研究生入学考试样题

A 卷

科目代码: 861

科目名称: 细胞生物学

满分: 150 分

注意: ①认真阅读答题纸上的注意事项; ②所有答案必须写在答题纸上, 写在本试题纸或草稿纸上均无效; ③本试题纸须随答题纸一起装入试题袋中交回!

一 将下列英文名词译成中文, 10 分 (每个 1 分, 共 10 分):

1. telomere; 2. meiosis; 3. proteomics; 4. porin; 5. ubiquitin; 6. oncogene;
7. endoplasmic reticulum; 8. connexon; 9. lymphocyte; 10. nucleosome.

二 名词解释, 10 分 (每个 1 分, 共 10 分):

- 1、核酶; 2、干细胞; 3、细胞骨架; 4、抗原; 5、抑癌基因;
- 6、核孔复合体; 7、程序性细胞死亡; 8、离子泵; 9、中心体; 10、翻译。

三 填空题, 10 分 (每题 2 分, 共 10 分):

- 1、新合成的、没有分选信号的蛋白质将被保留在_____中。
- 2、导肽在进行蛋白质运送时, 先将被运送的蛋白质_____, 运送到预定区域后, 蛋白质再进行_____。
- 3、制备单克隆抗体是通过_____技术构建的。
- 4、真核生物中 rRNA 包括 28S、_____、_____和 5S 分子。
- 5、动物细胞有丝分裂器包括_____和_____。

四 简答题, 60 分 (共 6 题, 每题 10 分):

- 1、为什么说线粒体和叶绿体是半自主性细胞器?
- 2、核仁的结构和功能有那些?
- 3、简要说明核定位信号与前导肽的区别。
- 4、亲核蛋白进入细胞核的机制是什么?
- 5、简述酶联受体和 G 蛋白耦联受体的主要不同点。
- 6、克隆基因组 DNA 与克隆 cDNA 的目的是什么? 简要说明两者的区别。

五 问答题, 45 分 (共 3 题, 每题 15 分):

- 1、有丝分裂和减数分裂有什么异同?
- 2、比较原核细胞与真核细胞的异同。
- 3、你对动物体细胞克隆有什么看法?

六 英文译成中文, 15 分:

Among three major replicative DNA polymerases of the B-family, Pol α , Pol δ and Pol ϵ , Pol δ plays an essential role in chromosomal DNA replication and is also involved in various DNA repair processes in eukaryotes. Human Pol δ is commonly viewed as a heterotetrameric complex, consisting of the catalytic subunit p125 and second subunit p50, together with two additional accessory subunits, p68 and p12. A growing body of research has shown that the latter subunits play a critical role in the regulation of Pol δ functions. The formation of a new form of Pol δ , heterotrimer Pol δ 3, is found by virtue of the depletion of p12 through the ubiquitin–proteasome pathway in response to DNA damages that are triggered by UV irradiation, alkylating agents, oxidative and replication stresses. Pol δ 3 exhibits significant differences in properties to its progenitor with a major impact on cellular processes in genomic surveillance, DNA replication and DNA repair. Our recent studies indicate that there exists an alternative pathway for Pol δ 3 formation by calpain-mediated proteolysis of p12 in a calcium-triggered apoptosis in living cells. Here, we review and discuss the recent advances from our group and others in the studies of human Pol δ with an emphasis on the generation of its multiple forms by reconstitution and subsequent alternations in enzymatic properties, the multiple pathways of the Pol δ 3 formation in living cells, and the phylogenetic analysis of the evolutionary history on *POLD4* gene that is for the p12 subunit.