

## 2024年高一project: Cell division portfolio

1. 截止日期:25/3/2024 (星期一)
2. 要求:
  - (a) 单页
  - (b) 主要页面要彩色纸
  - (c) Chromosome设定:  $2n=6$  (以长中短, 黑白/彩色显示)
  - (d) Cell size要维持一样, 佔A4页面的一半, 并且不能用圆规画圈(不符合实际情形)
  - (e) 画图原则(要加分就彩色):
    - i. 铅笔画, 原子笔label
    - ii. Label在图的左右
  - (f) Organelle画法:
    - i. Plasma membrane 单线
    - ii. Nuclear membrane 单线, 不需画nuclear pore
    - iii. Nucleolus涂黑
    - iv. Centrioles (要一对+几条aster)
  - (g) 每阶段要画图及以point form描述该阶段的特征及chromosomal behavior.
3. 封面:
  - (a) Title :Cell division
  - (b) 姓名, 班级, 班号
4. 页面分配

Title	Page number
1. The cell cycle (图+definition)	
2. Interphase (彩色纸+definition)	
i. G1 phase (强调: 6 chromatin)	
ii. S phase (强调: 2 pairs centrioles)	
iii. G2 phase (和S图, 但特征有差)	
3. Mitosis (彩色纸+definition)	
i. Prophase (强调: 开始有spindle fibres, nucleolus+nuclear membrane消失, centrioles往两边移动, chromosomes+centromere, sister chromatids)	
ii. Metaphase (强调: spindle fibres attached 到centromere, equatorial plane)	
iii. Anaphase (强调: spindle fibres attached 到centromere, daughter chromosomes+ < shape)	
iv. Telophase (强调: spindle fibres 离开centromere, 2 nuclear membrane+nucleolus reformed, aster, 单条chromosome)	
4. Cytokinesis (彩色纸+ definition)	
i. Animal cell (强调: cleavage furrow)	
ii. Plant cell (强调: cell plate)	
5. Meiosis (彩色纸+definition)	
i. Prophase I (强调: synapsis, crossing over: 一换末端+一换中间段+	

一不换, tetrad+bivalent, chiasma) 注明:exchange of genetic material between non-identical chromatids of <u>homologous chromosomes</u> , new combination of genes in a chromosome <u>which lead to genetic variation</u>	
ii. Metaphase I (强调: homologous chromosomes aligned at equatorial plane)	
iii. Anaphase I (强调: K shape, homologous chromosomes separate)	
iv. Telophase I+Cytokinesis (强调: 3条不同长度的K shape chromosome, nuclear membrane+nucleolus reformed, cleavage furrow)	
v. Prophase II (强调: 2 daughter cells, chromosome按照之前crossing over result)	
vi. Metaphase II (强调: chromosomes randomly aligned at equatorial plane)	
vii. Anaphase II (强调: cell 变长, spindle fibres still attached 到 centromere, < shape)	
viii. Telophase II (强调: spindle fibres 离开centromere, 2 nuclear membrane+nucleolus reformed, aster, 单条chromosome)	
ix. Cytokinesis (强调: 4 daughter cells, chromatin:不用强调crossing over result)	
6. Compare and contrast between Meiosis I and Meiosis II (用table, similarities and differences)	
7. Compare and contrast between Mitosis and Meiosis (用table, similarities and differences)	

5. 评分标准：

	3	2	1
图	21图都完整	1~5错误	6~21错误
Label	16个都对	1~5错误	6~21错误
Description (point form)	25页都正确	1~10错误	11~25错误
Creativity	彩色+有创意+顺序完全正确	符合少于1项	符合少于2项
准时	准时	迟交1~2天	迟交3~5天

6. 图(21个):

- (a) Cell cycle x 1
- (b) Interphase x 3
- (c) Mitosis + cytokinesis x 6
- (d) Meiosis + cytokinesis x 9
- (e) Comparison table x 2

7. Label(16个):

- (a) Plasma membrane
- (b) Centrioles
- (c) Aster
- (d) Spindle fibre

- (e) Nuclear membrane
- (f) Nucleolus
- (g) Chromosome
- (h) Chromatin
- (i) Daughter chromosome
- (j) Centromere
- (k) Sister chromatids
- (l) Equatorial plane
- (m) Cleavage furrow
- (n) Cell plate
- (o) Chiasma
- (p) Homologous chromosome