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# Cell Division: More Help in Forensic Medicine

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***Abstract:*** ***Cell Division is a extremely regulated process. Cell mechanism and its Division is a very important step in solving human health problem's. dismember the mechanisms of cell Division used classical genetics approaches to identify genes involved in mitosis and deployed biochemical approaches to isolate and identify proteins critical for cell Division. If it is my intent in this brief review to discuss the strategies in this genetics approaches of the new conclusions that have come to light***
***Keywords: Cell Division, extremely regulated, dismember, biochemical ,strategies proteins, genomics, classical genetics***

## I. INTRODUCTION

The main function cell Division is to produce two daughter cells from single mother cell so that repeated cell Division generate of cell from mother cell [parant cell] further new cells cannot arise from pre-existing cells without cell Division .cell Division divided into four major phases:- prophase, metaphase, anaphase, telophase. These cells are involved in the following :-(1) growth and development of somatic tissues of the organism (2) regeneration of damaged tissue (3)production of new organs and tissue (4)replacement of old organ and tissues (5)asexual reproduction and (6)sexual reproduction (7)cell division perform another vary important function of keeping the size of cells within a limited range.

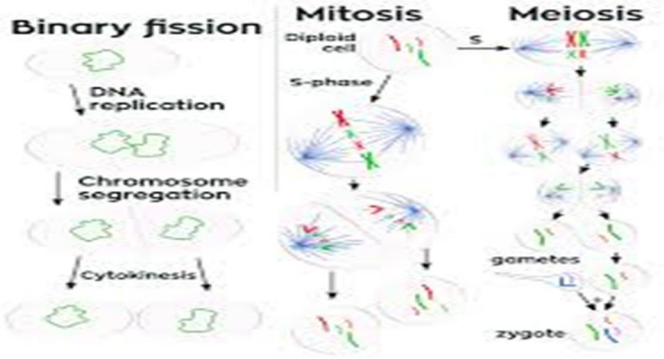
In prokaryotic cell division the bacterial division was termed as a fission. As the chromosome replication begins an progress. While un replicated terminus sequence remains at mid-cell position at the time of completion of chromosome replication, the two origin septum and separated at he cell ends, and the terminus sequences are at septum protein DNA A is the replication initator. Once replication initiated, inhibitors, prevent replication initiation second time till the cell cycle is completed.

## II. CLASSICAL DISMEMBER [DISSECTION]

Classical genetics is a phenotype- driven approach to the dissection of biological process using a appropriate transpons or T-DNA. It is possible to quickly connect. Common approach post transcriptional silencing by antisense RNA interference (RNA i) In a classical genetics approach the selection of mutants relies on a screen able phenotype. The example of classical genetics is the sceening with visible light for changes in the levels of anthoeyanim. Pigments more elaborate screens using high though put metabolite detection method are possible.

## III. STRUCTURAL DISSECTION OF CELL DIVISION

Structural studies is important to dissect a structural dissection we focused on Mad2, Mad2 function depends on its structure. The structural studies helped elucidate the means by which Mad2 functions within the mitotic checkpoint complex, the large structure like kinetochores is important for understanding the protein complexes formed during mitosis and for developing. Small molecule that can disrupt this interaction.



## IV. COMPUTATIONAL DISSECTION OF CELL DIVISION

Computational Techniques (Biochemical & Biological Techniques)to glean information from time-lapse imaging of cell division have also been developed this approaches have also been used to discover a novel substrate of mitotic protein kinasis.

## V. FUTURE PERSPECTIVE

Although much has been discovered about the mechanism that drive cell division, many novel factor that play role in cell division are still being discovered.

## VI. GRANT INFORMATION

We Thank the journal of National Library of Medicine for a artistic help in constructing and give a important information.

## VII. ACKNOWLEDGEMENTS

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The abbreviations used are:

*1)* CDK: Cyclin-dependent kinase
*2)* APC/C: Anaphase-promoting complex/cyclosome
*3)* MPF: Maturation-promoting factor
*4)* ROS: Reactive oxygen species.

## REFERENCES

[1] Tomkins D. J., and Sisken J. E. (1984) Abnormalities in the cell-division cycle in Roberts syndrome fibroblasts: a cellular basis for the phenotypic characteristics? Am. J. Hum. Genet. 36, 1332–1340 [PMC free article] [PubMed] [Google Scholar]
[2] Hung C. Y., Volkmar B., Baker J. D., Bauer J. W., Gussoni E., Hainzl S., Klausegger A., Lorenzo J., Mihalek I., Rittinger O., Tekin M., Dallman J. E., and Bodamer O. A. (2017) A defect in the inner kinetochore protein CENPT causes a new syndrome of severe growth failure. PLoS ONE 12, e0189324 10.1371/journal.pone.0189324 [DOI] [PMC free article] [PubMed] [Google Scholar]
[3] Hanahan D., and Weinberg R. A. (2011) Hallmarks of Cancer: the next generation. Cell 144, 646–674 10.1016/j.cell.2011.02.013 [DOI] [PubMed] [Google Scholar]
[4] Macedo J. C., Vaz S., Bakker B., Ribeiro R., Bakker P. L., Escandell J. M., Ferreira M. G., Medema R., Foijer F., and Logarinho E. (2018) FoxM1 repression during human aging leads to mitotic decline and aneuploidy-driven full senescence. Nat. Commun. 9, 2834 10.1038/s41467-018-05258-6 [DOI] [PMC free article] [PubMed] [Google Scholar]
[5] Yang Y., Varvel N. H., Lamb B. T., and Herrup K. (2006) Ectopic cell cycle events link human Alzheimer's disease and amyloid precursor protein transgenic mouse models. J. Neurosci. 26, 775–784 10.1523/JNEUROSCI.3707-05.2006 [DOI] [PMC free article] [PubMed] [Google Scholar]
[6] Peter M., Nakagawa J., Dorée M., Labbé J. C., and Nigg E. A. (1990) Identification of major nucleolar proteins as candidate mitotic substrates of cdc2 kinase. Cell 60, 791–801 10.1016/0092-8674(90)90093-T [DOI] [PubMed] [Google Scholar]
[7] Bischoff J. R., Friedman P. N., Marshak D. R., Prives C., and Beach D. (1990) Human p53 is phosphorylated by p60-cdc2 and cyclin B-cdc2. Proc. Natl. Acad. Sci. U.S.A. 87, 4766–4770 10.1073/pnas.87.12.4766 [DOI] [PMC free article] [PubMed] [Google Scholar]
[8] Fu Z., Malureanu L., Huang J., Wang W., Li H., van Deursen J. M., Tindall D. J., and Chen J. (2008) Plk1-dependent phosphorylation of FoxM1 regulates a transcriptional programme required for mitotic progression. Nat. Cell Biol. 10, 1076–1082 10.1038/ncb1767 [DOI] [PMC free article] [PubMed] [Google Scholar]
[9] Lammer C., Wagerer S., Saffrich R., Mertens D., Ansorge W., and Hoffmann I. (1998) The cdc25B phosphatase is essential for the $G_2$/M phase transition in human cells. J. Cell Sci. 111, 2445–2453 [DOI] [PubMed] [Google Scholar]
[10] Torres J. Z., Ban K. H., and Jackson P. K. (2010) A specific form of phosphoprotein phosphatase 2 regulates anaphase-promoting complex/cyclosome association with spindle poles. Mol. Biol. Cell. 21, 897–904 10.1091/mbc.e09-07-0598 [DOI] [PMC free article] [PubMed] [Google Scholar]
[11] Davey N. E., and Morgan D. O. (2016) Building a regulatory network with short linear sequence motifs: lessons from the Degrons of the anaphase-promoting complex. Mol. Cell 64, 12–23 10.1016/j.molcel.2016.09.006 [DOI] [PMC free article] [PubMed] [Google Scholar]
[12] Yu Z. K., Gervais J. L., and Zhang H. (1998) Human CUL-1 associates with the SKP1/SKP2 complex and regulates p21(CIP1/WAF1) and cyclin D proteins. Proc. Natl. Acad. Sci. U.S.A. 95, 11324–11329 10.1073/pnas.95.19.11324 [DOI] [PMC free article] [PubMed] [Google Scholar]
[13] Huang X., Summers M. K., Pham V., Lill J. R., Liu J., Lee G., Kirkpatrick D. S., Jackson P. K., Fang G., and Dixit V. M. (2011) Deubiquitinase USP37 is activated By CDK2 to antagonize APCCDH1 and promote S phase entry. Mol. Cell 42, 511–523 10.1016/j.molcel.2011.03.027 [DOI] [PubMed] [Google Scholar]

[14] Bonacci T., Suzuki A., Grant G. D., Stanley N., Cook J. G., Brown N. G., and Emanuele M. J. (2018) Cezanne/OTUD7B is a cell cycle-regulated deubiquitinase that antagonizes the degradation of APC/C substrates. EMBO J. 37, e98701 10.15252/embj.201798701 [DOI] [PMC free article] [PubMed] [Google Scholar]
[15] Hartwell L. H., Mortimer R. K., Culotti J., and Culotti M. (1973) Genetic control of the cell division cycle in yeast: V. genetic analysis of cdc mutants. Genetics 74, 267–286 [DOI] [PMC free article] [PubMed] [Google Scholar]
[16] Nurse P. (1975) Genetic control of cell size at cell division in yeast. Nature 256, 547–551 10.1038/256547a0 [DOI] [PubMed] [Google Scholar]

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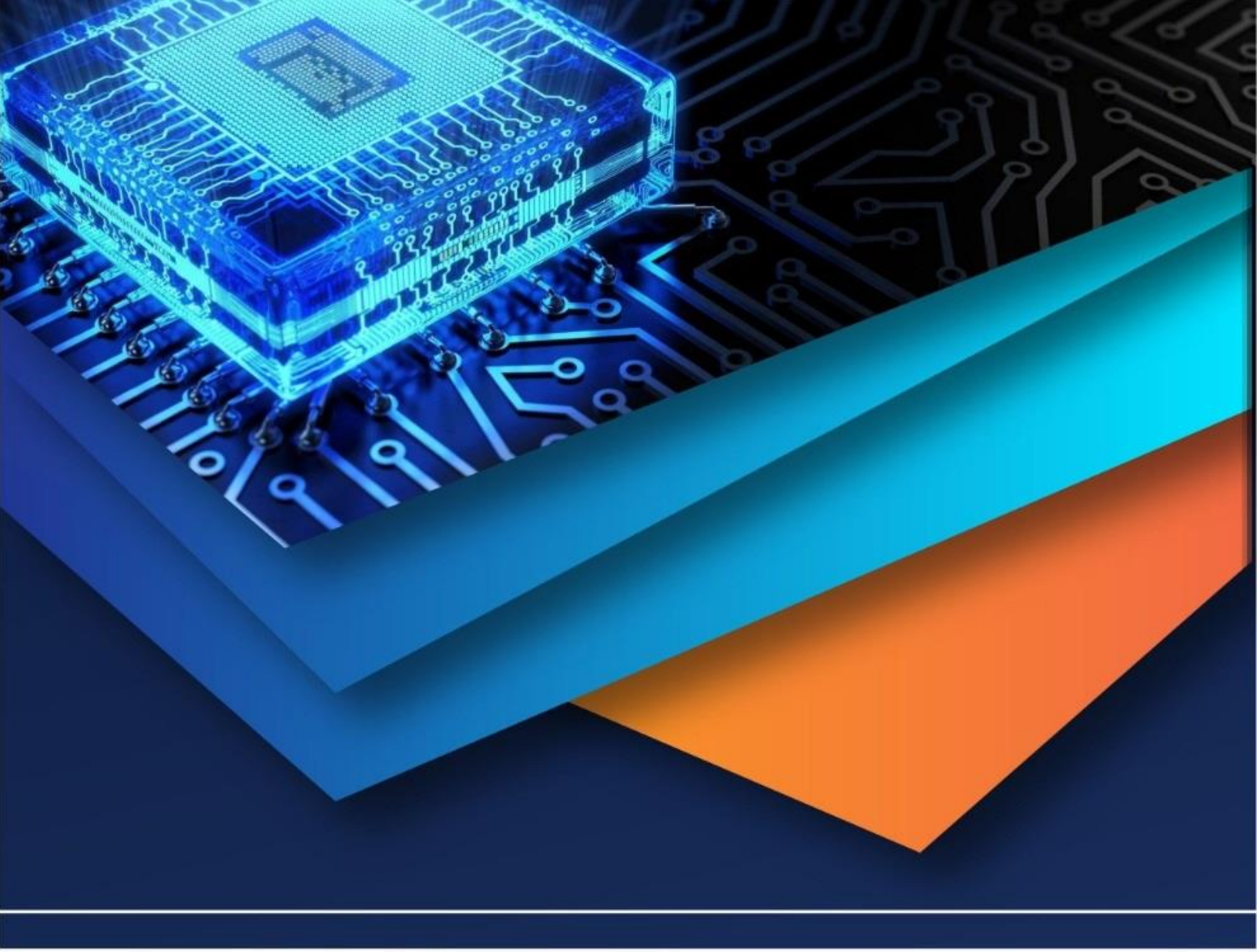

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