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Repair of the Molecular Machinery of the Cell at the Nanoscale

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Opinion

In a cellular environment, if any interruption happened due to the initiation of diseases or disorders in cellular events, it can immediately upset the cellular proceedings, and affect the normal life of the cells and tissues. Vital needs are there to repair the cells and tissues. To regain the normal functioning style of cells and associated cellular environment, an urgent necessity is there for the cell to recover from these fatal situations to save lives and stop apoptosis as soon as it can be possible [1]. To fulfil these needs, there is an imperative demand for architecting and tailoring of cell repair small tools and devices that will have the potential to deal with these conditions at a molecular and atomic level. Opposing environmental settings are also answerable for these reparations and can disturb the route of maintenance required for the healing of a cell because a deficient design can transpire more fatal situations and conditions in metabolic and anabolic pathways. These circumstances will force the cells toward apoptosis [2]. The membrane of the endoplasmic reticulum participates in normal transportation for a better processing effectively and transported the required molecules in all corners of the cell, and pores between the nucleus and cytoplasm (Figure 1). Accordingly, to infiltrate ER, which is a well-equipped component of the cells, there is a need to design better-shaped drug molecules, well-defined and exact healing therapeutics, which will have specific qualities that will work at the nanoscale.

Figure 1: Illustration of Architecting and tailoring of cell repair molecular machinery "Adapted and created with permission from [biorender.com] and acknowledged as per instructions".

For innovating a perfect drug molecule, capable of repairing at the nanoscale by applying plotted designs, a need is there to apply an exact strategy and fitting style [3]. This dream can be a reality soon and can be accomplished by applying the expertise of different fields i.e. nano-bio interface; computational nanotechnologies-interface; nanoinformatics strategies, nanotopographical tools and nanodevices and DNA nanotechnology; chemical transformations, molecular phenomenon of physiology alterations; interpretation and exploration of conformational changes, biotic-abiotic interfaces; molecular omics, DNA damages pathway, apoptosis, cell cleaning, proteostasis, proteolysis, signaling pathways of cell machinery, cellular perturbations, modeling of mechanical forces, cell shrinkage, and cytoskeletal pathologies; neurodegeneration, phenomenon of immunodominance, and immunotherapeutic; blood: brain barrier; neuropsychiatry; stimulating intracellular signaling pathways, multiscale mechanobiology, cellular mechanotransduction, regenerative therapies; arteriosclerosis, strokes, and heart attacks; molecular modeling, macromolecules, antibiotic drugs, spectroscopy, biomarkers strategically [4]. The nanoscale tools and devices will perform and can do repairs at the nanoscale. These molecular pieces of machinery will capable of arranging correct cellular events if these paths and routes are not performing properly and naturally. These physical and chemical features of these molecules will very helpful in designing, architecting, and tailoring molecular machines and can consider as smart materials [5]. By applying specific characterization tools and types of machinery, these small tolls will show an important role to discover the feasibility required for the architecting and tailoring of accentuated nanotools and nanodevices. Such efforts will enhance the possibilities to succeed in it.

Nanoscale cellular components existed in nature and have the potential to heal injured cells, tissues, and organelles that have potential to rebuild them, formed new cells, and reassembled them. A better strategy for natural schemes, the feasibility of nanoscale tools and devices can be tested that offered a better designing, novel architecting, and superb tailoring with a crucial determination [6]. These nanoscale tools will have higher capabilities, predominantly to heal cellular events by adopting repairing processes at nanoscale according to the needs of diseased cells or according to the requirements of repairing is essential or will perform it according to the necessity of exaggerated cells. Newly developed nanotools and nanodevices can perform as per the proposed strategies by exploiting all possessions [7]. Outputs will confirm that the architecting, tailoring, and manufacturing of these nanorobots will be appropriate. Proposed nanotools and nanodevices will have all proficiency required at the time of operation at the nanoscale, according to the needs of cellular events or, according to functioning cells perform [8]. Then, novel therapeutics will work decently at the nanoscale, and the same as the cell-repairing mechanism performs it will work in the same manner naturally. So it will be reasonable that this newly discovered approach will lead toward a breakthrough. These types of machinery will assume and capable of doing the required task by dealing with reactive molecules or atoms and bringing them up to a surface in a controlled manner for a performance [9]. This nanotechnology and nanodevices will add an option required for making a change in it, according to the needs. Because these pieces of machinery of molecular level will be able to sense at the molecular/atomic level and can alter its functioning according to cell needs [10]. These molecular types of machinery can repair at the nanoscale or do an operation with specific featured control or can fulfill clinical needs easily. These small tools can be controlled by a remote or magnetic regulator. Finally, these innovations will be a histrionic and remarkable innovation in the field of therapeutics and therapeutics.

Nanotechnology and nanodevices are key strategies and can be applied to repair and heal damaged cells. It is a necessity of the hour. The machinery will have the capacity to perform at the location of the disease or infection accurately without any repercussion [11]. Advanced nanotools and nanodevices will have a high-grade potential for cell repair and capabilities for regulating cellular events faultlessly, with exact control [12]. These nanoscale tools and devices will treat life-threatening diseases, repair cells and tissues, control cellular events, rheostat cellular perturbance, and repair defects or initiate transcriptional mechanisms with an in-built high grade of pinpointing ability [13]. These nanotools will diagnose in a better way and obtained results can be effectively implemented to treat or repair the exaggerated organ or a diseased cell. These suggested nanoscale tools and devices will perform and transform therapeutics to a novel stage at a cellular level. The author is very hopeful that these molecular types of machinery will become a reality soon.

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