

### Slide (5)

- \* The cell tries to Adapt to the stimuli like Temperature <sup>→ rising</sup> until a certian limit.
- \* After that limit the cell can't adapt to the stimuli anymore and it becomes Injured

### Slide (7)

\* Ischemia :- an inadequate blood supply to an organ or tissue and It's the most common cause of hypoxia

\* ~~in~~ in anemia there is a deficiency in RBCs or hemoglobin in the blood. so the blood carries Insufficient amounts of  $O_2$  so hypoxia occurs.

\* In most lung diseases there is no sufficient amounts of  $O_2$  that enters the body

\* CO binds with higher affinity to the hemoglobin

### slide (8)

\* CO is toxic to cells, asbestos is a common disease for miners

\* any innocuous substance taken in abnormal amounts can be harmful to cells

\*  $O_2$  in hyperventilation can be toxic to some cells and it causes Alkalosis.

Slide (9)

\* Infectious Agents like Bacteria, viruses, parasites and other micro organisms can cause cell injury

Slide (10)

\* in Autoimmune reactions the body Attacks itself

\* sometimes like in Tuberculosis our body fights the microbes but the inflammation and cellular response is profound and destructive to our own cells

Slide (11) ≈ 25 min

\* substitution in one amino acid in the ~~peptide chain~~ <sup>amino acid sequence</sup> causes sickle cell anemia.

\* In down syndrome there is an addition to an extra chromosome (21)

\* both of these cases causes very profound illness

Slide (16)

\* Injury sequence for cells can be:

① normal cell → Reversible injury → Irreversible injury

② normal cell  $\xrightarrow{\text{directly}}$  Irreversible injury if the injury was profound and rapid.

Slide (22) 44 min ~ 48 min

\* Ultra structure features we can see with the Electron microscope.

\* blebbing and blunting is due to the degeneration of the cell membrane and due to the failure of the Na-K pump.

\* mitochondrial swelling due to the increased amount of fluid in the cytoplasm.

\* amorphous densities due to the failure of the oxidative phosphorylation mechanism (which makes ATP for the cell).

\* Dilatation of ER due to cellular swelling.

\* clumping of the nuclear chromatin which is due to the failure of protein folding because there is not enough ATP in the cell.

\* cytoplasmic Myelin figures which are degenerated phospholipid membrane.

slide (24) 48 min

\* we can't tell when we look on the cell under the light microscope specifically and sometimes with the electron microscope, whether this cell is going to recover or not. And that's what we call nebulous point (not clear)

slide (25)

\* cellular function It's the first thing lost after injury