How the Structure of Sperm is Susceptible to Damage

Flagellum

- 1. Membrane damage due to oxidative stress leads to ion imbalances and loss of motility
- 2. Heat shock protein activation inactivates ion pumps resulting in loss of motility

Centrioles

- 1. Membrane damage due to oxidative stress may lead to abnormal separation of head from midpiece and loss of centrioles-thus issues with normal cell division post fertilization and potential aneuploidy
- 2. Potential role of heat shock proteins unclear

DNA

- Membrane damage due to oxidative stress leads to ion imbalances and exposure of DNA to reactive species
- 2. DNA fragmentation due to oxidation stress resulting in potential genetic issues

Mitochondria

- 1. Outer membrane damage due to oxidative stress leads to ion imbalances
- 2. Mitochondrial membrane breakdown due to excessive use and local damage due to reactive species resulting in loss of ATP production and loss of motility



- 1. Membrane damage due to oxidative stress leads to ion imbalance and leaking of the acrosome enzymes
- 2. Regulated heat shock proteins are part of normal acrosome. Unregulated reaction disrupts this pathway

