Molting process

https://bugsandinsects.files.wordpress.com/2014/05/molting.jpg
Molting of the insect cuticle

Watch youtube at
https://www.bing.com/videos/search?q=Ecdysis+Process&&view=detail&mid=5447FF4E71ADBAEC1DA45447FF4E71ADBAEC1DA4&rvsmid=5447FF4E71ADBAEC1DA45447FF4E71ADBAEC1DA4&fsscr=0&FORM=VDMCNL
• Molting begins when the epidermal cells are stimulated by exposure to hormone 20-hydroxyecdysone.
• The hormone stimulates genes related to molting for the formation of new cuticle.
• The activated epidermal cells undergo mitosis.
• Formation of new cells.
• The existing cuticle structure is separated from the epidermal cells.
• Ecdysial space (between the old exoskeleton and epidermal cells) is filled with molting gel which contains inactive molting enzymes such as chitinase and protease.
• Cuticulin is secreted to protect the epidermal cells and newly cuticle from digestion by the enzymes in the molting gel.
• It is activated and becomes fluid.
• The chitinase and protease in the molting fluid begin to digest the old endocuticle.
• Almost 90% of the digested products are re-used to form procuticle.
• Digestion continues until it reaches the exocuticle.
• The existing exocuticle is resistant to enzyme digestion.
• The remaining molting fluid is re-absorbed
• The new endocuticle is formed.
Molting is also called ecdysis (shedding of the old exocuticle and epicuticle).

The shed cuticles are called exuvium.
Hormone bursicon is released to stimulate the new procuticle layer to undertake sclerotization (tanning of new exocuticle).
• Once sclerotization is completed, no further sclerotization occurs.
• During the time between the molts, new endocuticles are deposited continuously and the cycle starts again.