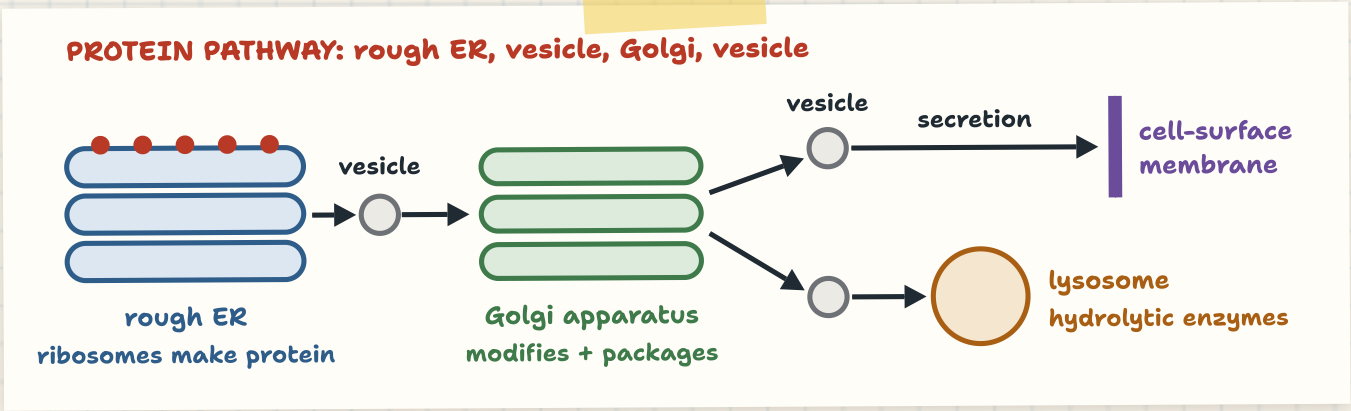
Rough ER, Golgi and Lysosomes Explained

Rough ER makes proteins, the Golgi modifies and packages them, and lysosomes break things down.



Key terms

rough endoplasmic reticulum	flattened, membrane-bound sacs with ribosomes on the outer surface that make proteins, which are folded inside.
smooth endoplasmic reticulum	the same folded membrane but no ribosomes, so it makes lipids, not proteins.
vesicle	a tiny bubble of membrane that carries the protein from one organelle to the next.
Golgi apparatus	a stack of flattened, membrane-bound sacs that modifies proteins and packages them into Golgi vesicles.
secretion	a Golgi vesicle fuses with the cell-surface membrane and releases the protein outside the cell.
lysosome	a membrane-bound sac full of hydrolytic enzymes that break down worn-out organelles and material taken into the cell.

I can...

- [ ] Structure and function of rough ER and smooth ER
- [ ] Golgi apparatus and Golgi vesicles
- [ ] Lysosomes: membrane-bound organelle releasing hydrolytic enzymes

EXAM TRAP

The Golgi does not make proteins: it modifies and packages them. For lysosomes always say hydrolytic enzymes, and keep ribosomes on the rough ER, not the smooth.

4 marks: what earns them

1. Rough endoplasmic reticulum has ribosomes (on its surface) that make proteins, which are folded / transported inside it
   Not: smooth ER has ribosomes / RER makes lipids / ribosomes are made in the RER
2. Golgi apparatus receives vesicles (of proteins) from the rough endoplasmic reticulum and modifies the proteins
   Not: Golgi makes proteins / makes ribosomes
3. Golgi packages the proteins into (Golgi) vesicles, for secretion / to become lysosomes
   Not: stores proteins forever / Golgi vesicles are made by the nucleus
4. Lysosome is a membrane-bound organelle containing hydrolytic enzymes that break down worn-out organelles / material taken into the cell (e.g. bacteria)
   Not: lysosomes get rid of waste (alone) / contain acid (alone) / make energy

Remember

Rough for proteins, smooth for lipids.

RER, vesicle, Golgi, vesicle, cell-surface membrane.

Golgi modifies; it never makes.

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