

### 4.1.2

## The Endoplasmic Reticulum

As mentioned previously, the endoplasmic reticulum has a rough component and a smooth component. The rough endoplasmic reticulum is associated with ribosomes that constantly bind and unbind to the membrane. Ribosomes bind to the endoplasmic reticulum after they interact with an mRNA strand from the nucleus. The ribosomes "read" the mRNA strand and produce the specific protein associated with the code and secrete it into the lumen of the rough endoplasmic reticulum. The newly produced proteins are then folded and prepared for transport to the Golgi complex where they will complete processing prior to being utilized outside of the cell. The smooth endoplasmic reticulum synthesizes lipids, phospholipids, and steroids. In addition, it aids in the breakdown of carbohydrates and steroids. The membrane contains proteins that move  $\text{Ca}^{++}$  into the structure for storage and thus plays an important role in regulating cellular calcium ion concentrations.



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