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**SAMPLE SECTION COVER
WHAT'S NEW IN
LAB TECHNOLOGY**



Transmembrane protein characterisation

Transmembrane proteins are key determinants of the pharmacokinetics of drugs and their characterisation is of increasing importance for the pharmaceutical industry.

Transmembrane proteins are a class of integral proteins that span the lipid bilayer from the outside to the inside of the cell. Transmembrane proteins account for more than 25% of proteins in complete genomes and are the target for 75% of pharmaceuticals.

The protein has three regions or domains that can be defined: the domain in the bilayer, the domain outside the cell (called the extracellular domain), and the domain inside the cell (called the intercellular domain). Even though a cell membrane is somewhat fluid, the orientation of transmembrane proteins does not change. The proteins are so large that the rate for them to change orientation is extremely small. Thus, the extracellular part of the transmembrane protein is always outside the cell and the intercellular portion is always inside.

The lipid molecules of the membrane bilayer are predominantly hydrophobic and so the portion of the transmembrane protein that is embedded in the bilayer must have residues that are not polar. Commonly, these residues form a helix that is hydrophobic and therefore stable within the bilayer.

Transmembrane proteins play several roles in the functioning of cells. Communication is one of the most important roles: The proteins are useful for signalling to the cell what the external environment contains. Receptors are capable of interacting with specific substrate molecules on the

Sample SECTION technology

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