Keywords and Definition

Keywords: Antimicrobial peptide, broad-spectrum antibiotics, interfacial activity, host defense, carpet model, barrel-stave, toroidal pore

Definitions:

Antimicrobial peptide (AMP): A peptide of less than 50 residues that has microbicidal activity at micromolar concentrations;

Broad-spectrum activity: Microbicidal activity against multiple classes of microbes;

Interfacial activity: The ability of an imperfectly amphipathic peptide to perturb the organization of lipids in a membrane by partitioning into the interfacial zone;

Carpet model: A commonly cited descriptive model of antimicrobial peptide action that is used to describe the fact that antimicrobial peptides only permeabilize membranes when the membranes are carpeted with peptide;

Toroidal pore: A membrane-spanning pore formed by peptides that alter the bilayer curvature such that a toroidal shaped pore through the membrane forms, lined by lipids and peptides.

Barrel-stave pore: A membrane-spanning pore formed by peptides that interact laterally to form a pore lined by peptides.

Large unilamellar vesicle: A single bilayer vesicle of 0.1 μm diameter containing 100,000 lipids. LUVs are “large” relative to the smallest vesicles made by sonication.

Giant Unilamellar vesicle: A very large single-bilayer vesicle usually around 5-20 μm diameter containing about 1,000,000,000 lipids each.

All-or-none release: Release of entrapped markers from vesicles during which a portion of the vesicles release all of their contents and the remainder of the vesicles release none.

Graded release: Release of entrapped markers from vesicles during which all vesicles simultaneously release a similar proportion if their entrapped contents.