## VANCOMYCIN RESISTANCE Inner membrane Und-MurNAc-(GlcNAc)-L-Ala-D-Glu-LL-dap-D-Ala-D-Lac Cell wall O Glycin K18354 UDP-MurNAc-L-Ala-D-Glu-LL-dap Und-PP-MurNAc-(GluNAc)-L-Ala-D-Glu-LL-dap-(Gly)-D-Ala-D-Lac Peptidoglycan biosynthesis Transglycosylation D-Ala-D-Ala Modified peptidoglycan ♥ with the D-Ala-D-Lac O terminus (S. coelicolor) OUDP-GlcNAc (VanA,B type) Elimination of pentapeptide UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala K01921 K02563 (S. coelicolor) K07260 PBPsUDP-MurNAc-L-Ala-D-Glu-LL-dap-D-Ala-D-Lac Transpeptidation Peptidoglycan biosynthesis L-Ala D-Ala 04 UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala-D-Ala D-Lac UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala-D-Lac Pyruvate D-Lac Peptidoglycan (D- Ala, Gly crosslink) (VanA, B, D type) တ D-Ala-D-Lac K18347 K18344.. K18345... UDP-GlcNAc V ancomycin UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala-D-Ala UDP-MurNAc-L-Ala-D-Glu-L-Lys D-Ala-D-Ala Peptidoglycan (D-Ala, L-Lys crosslink) Peptidoglycan biosynthesis **PO** K18866 D-Lac / D-Ser Elimination of pentapeptide UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala D-Ala L-Ala PBPsTeicoplanin (in VanA type) UDP-MurNAc-L-Ala-D-Glu-L-Lys K18856 Transpeptidation UDP-MurNAc-L-Ala-D-Glu-L-Lys-D-Ala-D-Ser (VanC, E, G type) **FO** K01929 D-Ala-D-Ser D-Ser Modified peptidoglycan with the D-Ala-D-Lac / D-Ala-D-Ser terminus K18348 UDP-GlcNAc OL-Ser Und-PP-MurNAc-(GlcNAc)-L-Ala-D-Glu-L-Lys-D-Ala-D-Ser Transglycosylation (Low-level resistance) Und-PP-MurNAc-(GlcNAc)-A-Ala-D-Glu-L-Lys-D-Ala-D-Lac (High level resistance) Vancomycin resistance operon types Resistance S. coelicolor. (chromosome) K18347 K18353 Regulation Resistance Regulation Resistance Accessory Accessory VanA cluster (Plasmid) VanD cluster (Chromosome) K18344.. VanZ Regulation Regulation Resistance Resistance Accessory VanB cluster (Plasmid chromosome) VanE cluster (Chromosome) K18344.. Resistance Resistance Regulation Regulation Accessory VanC cluster VanG cluster (Chromosome) (Chromosome) K18345... VanU VanG 01502 1/19/15 (c) Kanehisa Laboratories