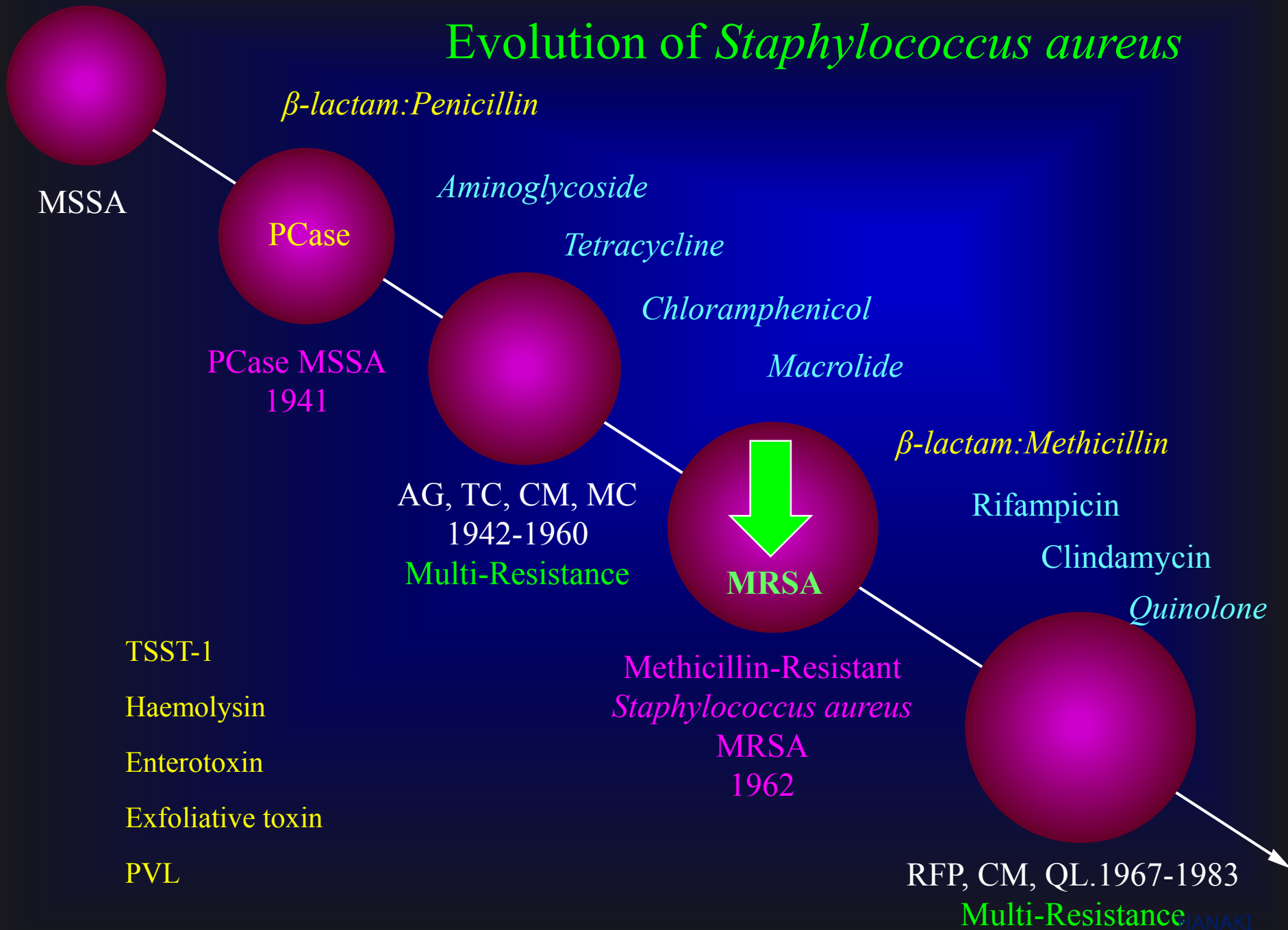
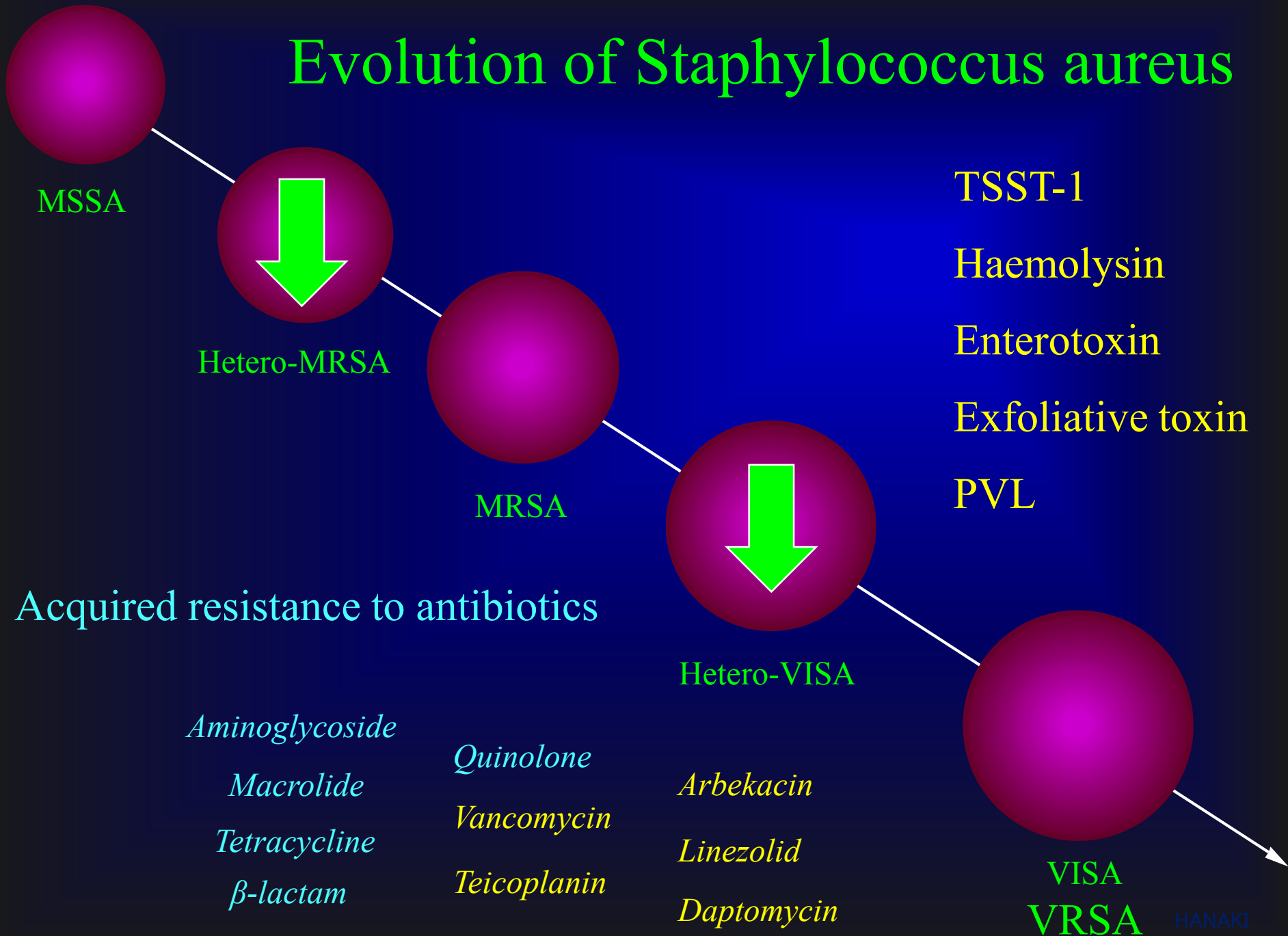


耐性菌の誕生とは？

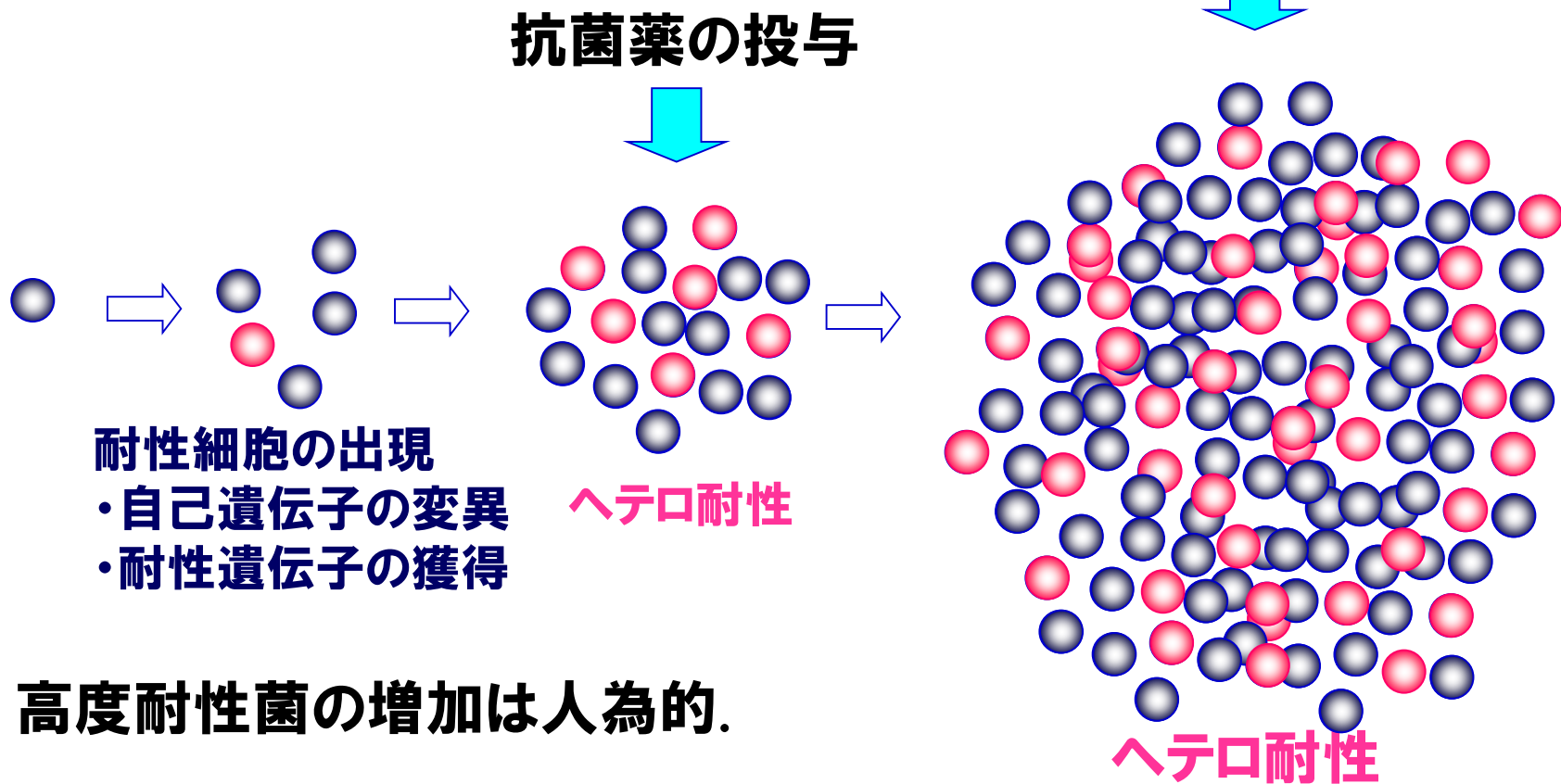
Evolution of *Staphylococcus aureus*



Evolution of Staphylococcus aureus



**耐性細胞は自然発生する。
抗菌薬は耐性細胞を選択し、
耐性細胞集団(耐性菌)のみとなる。**

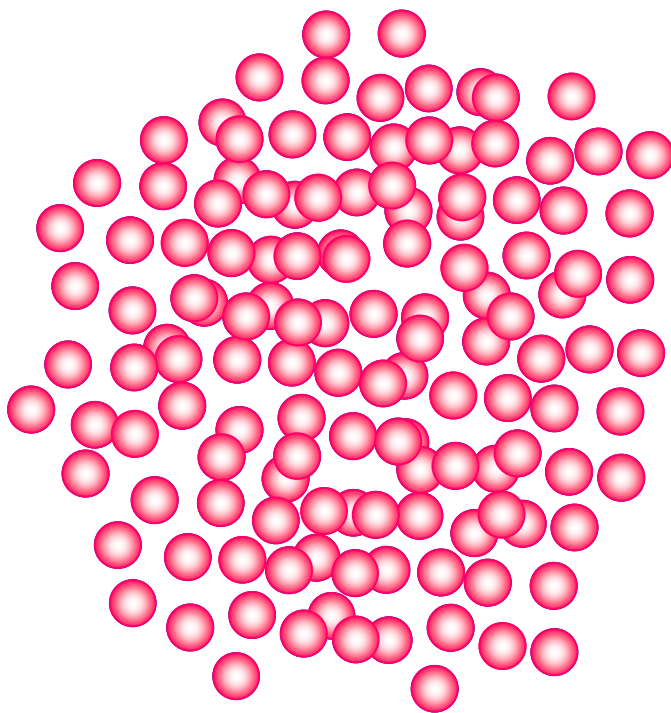
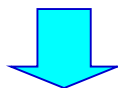


高度耐性菌の増加は人為的。

抗菌薬の投与中止 or 別系統の抗菌薬に変更すれば感性感化。

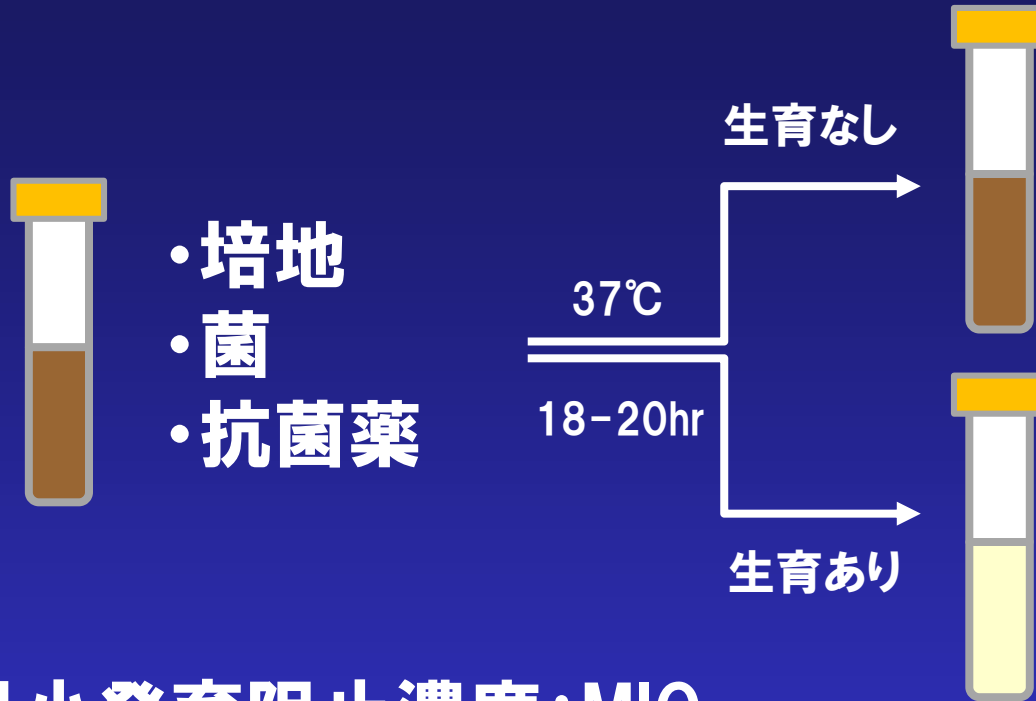
高度耐性菌の誕生：人為的

抗菌薬の投与

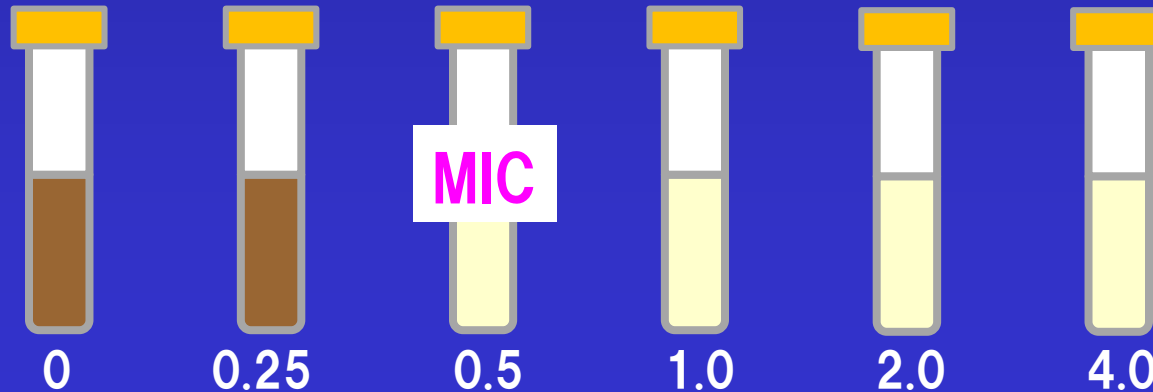


高度耐性

MICの測定方法

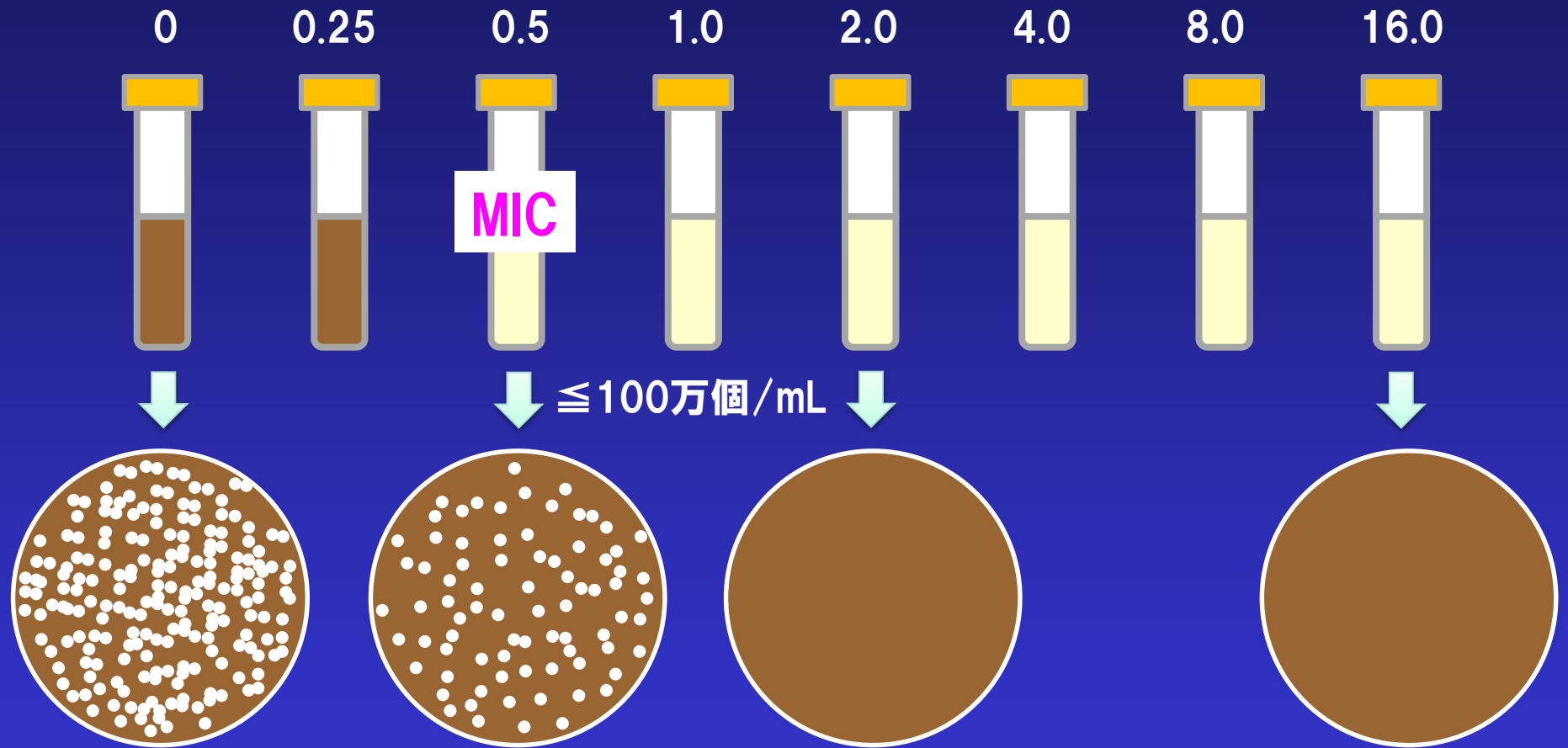


最小発育阻止濃度: MIC

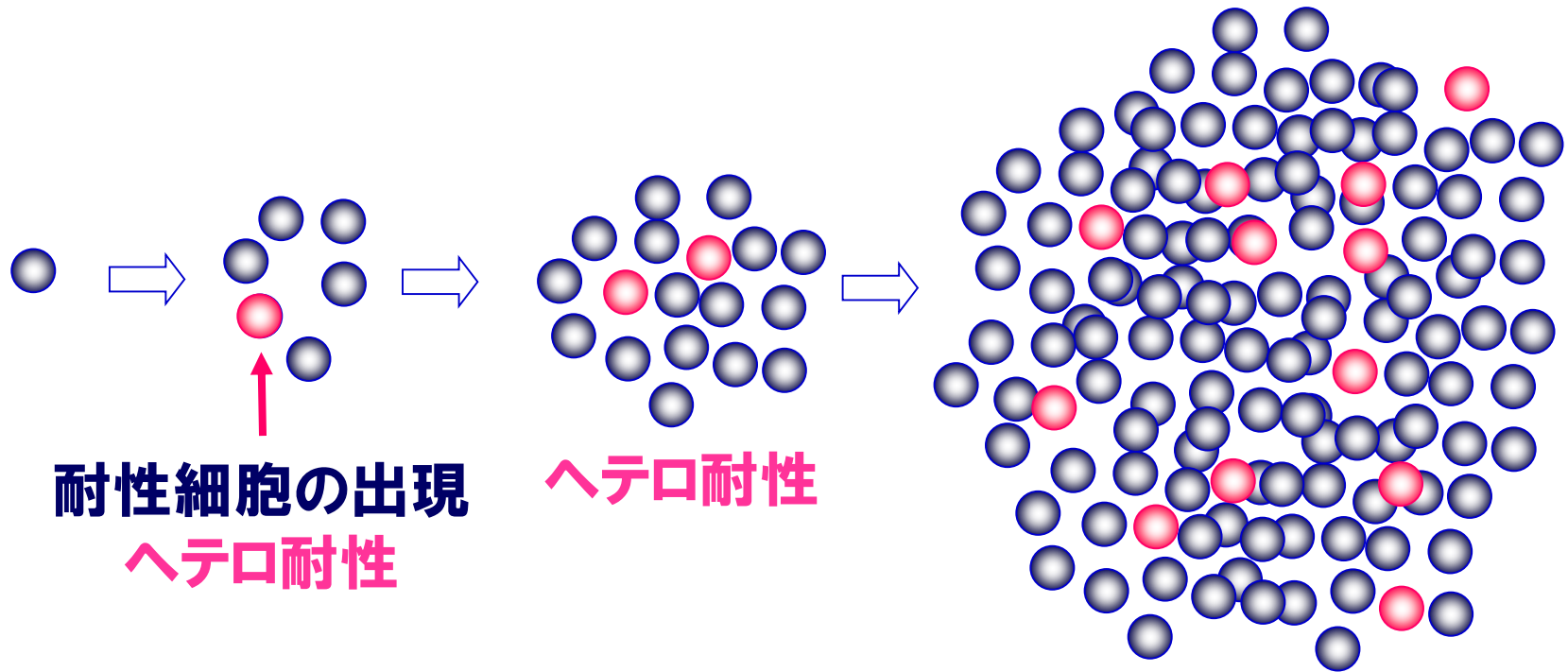


0.5

MICと残存菌数



ヘテロ耐性：耐性細胞の出現



耐性細胞の出現
ヘテロ耐性

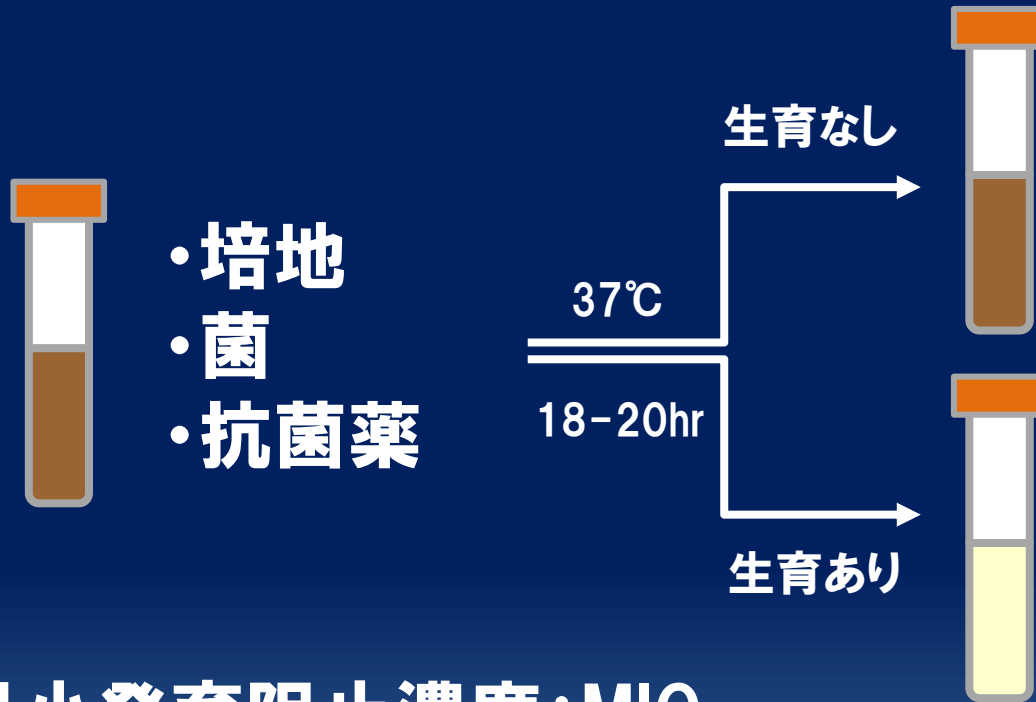
ヘテロ耐性

ヘテロ耐性

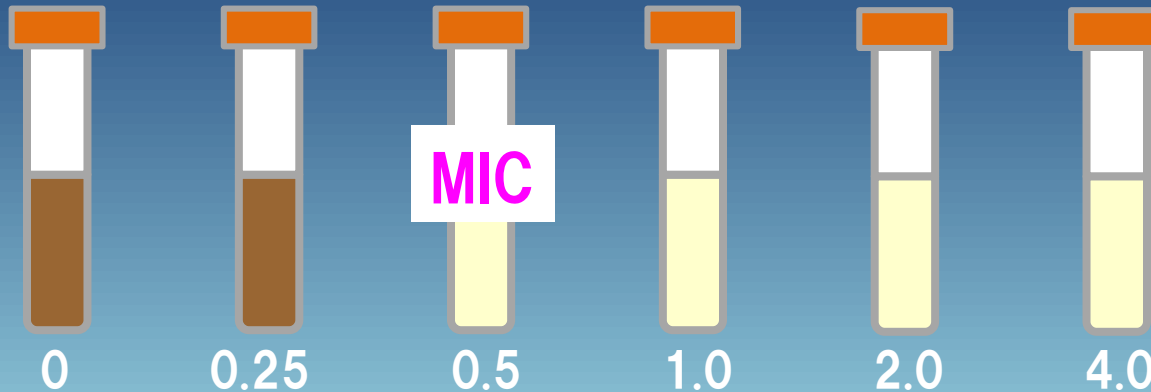
極少数の耐性細胞が存在する細胞集団

耐性化には必ずヘテロ耐性の段階がある。

MICの測定方法



最小発育阻止濃度: MIC



MICと残存菌数

0

0.25

0.5

1.0

2.0

4.0

8.0

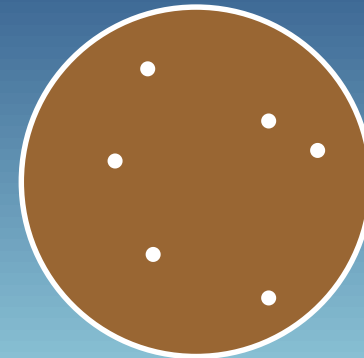
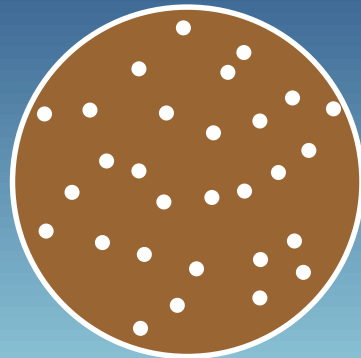
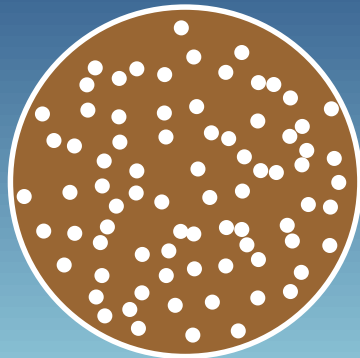
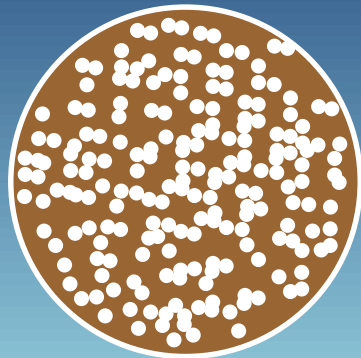
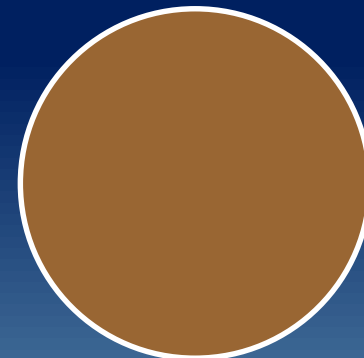
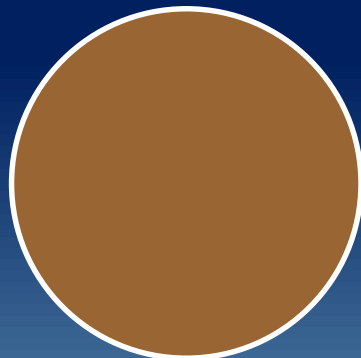
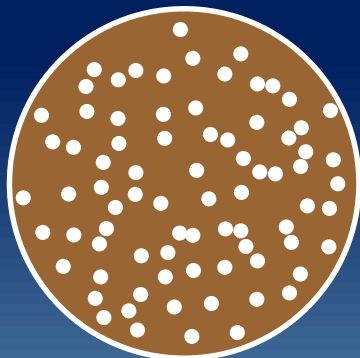
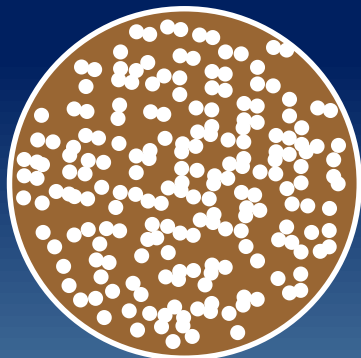
16.0



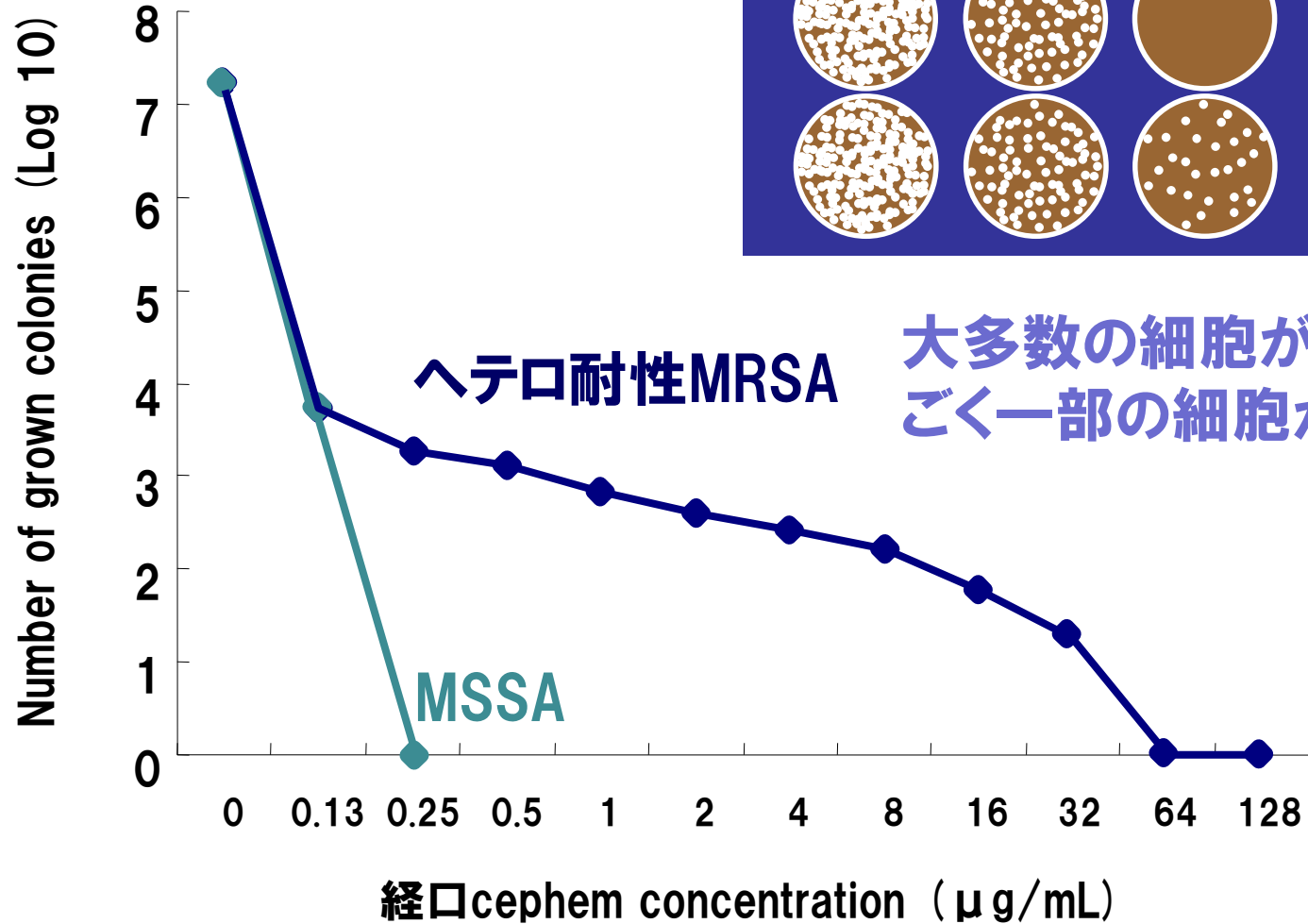
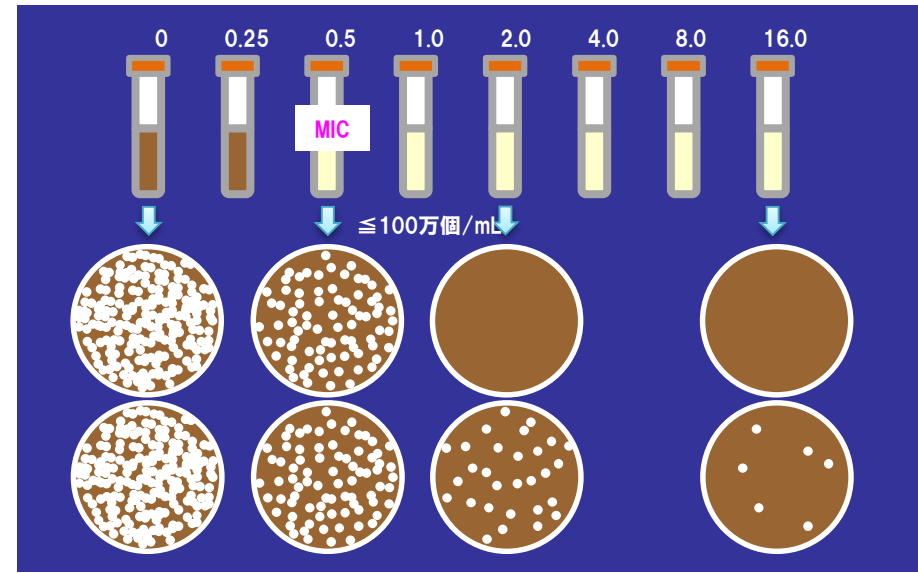
MIC



≤ 100 万個/mL



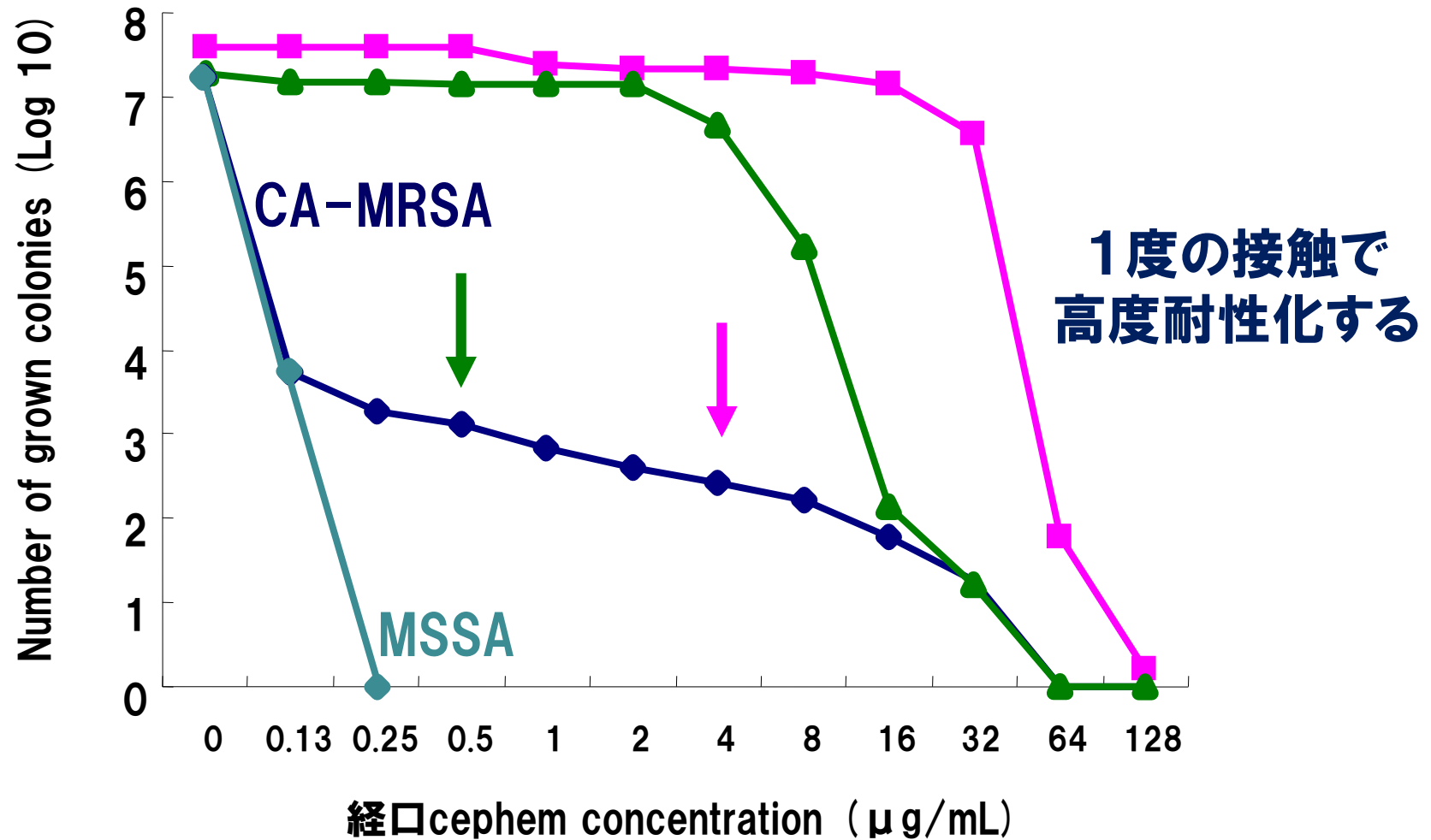
Population analysis



大多数の細胞が感性
ごく一部の細胞が耐性

Population analysis of parent- and resistant colonies

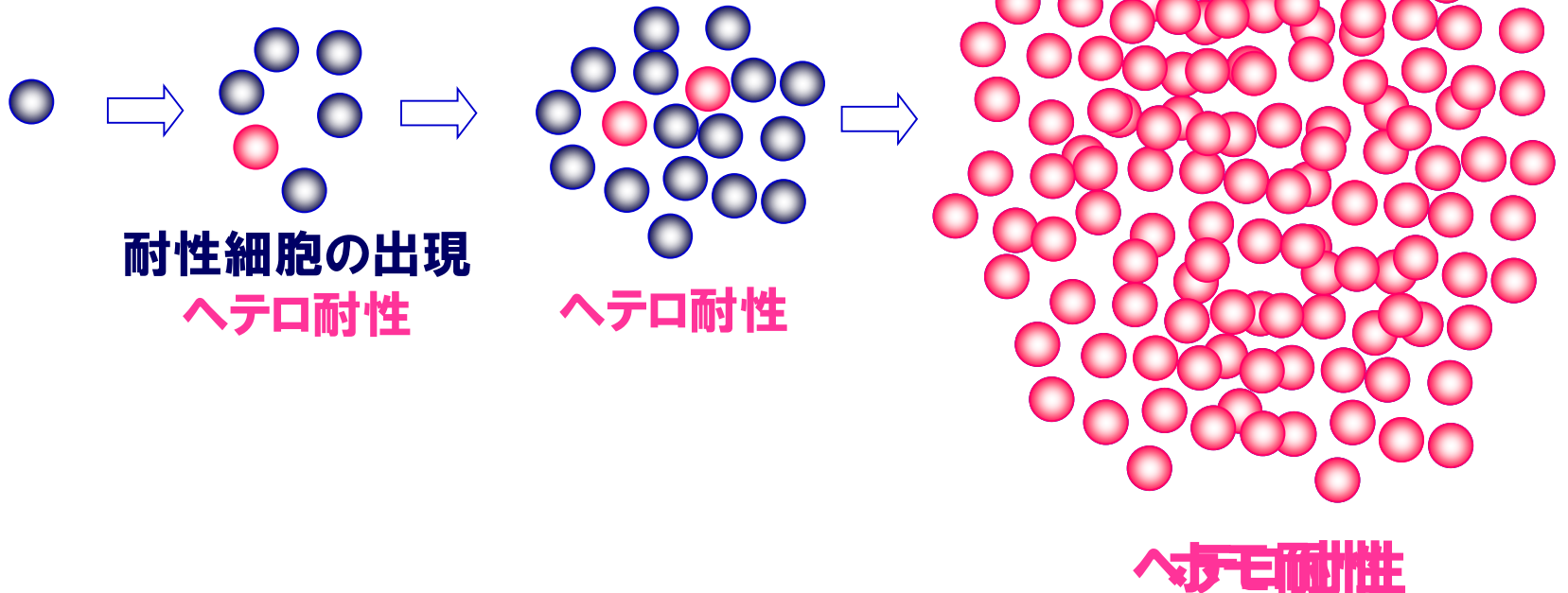
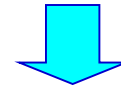
経口Cephem



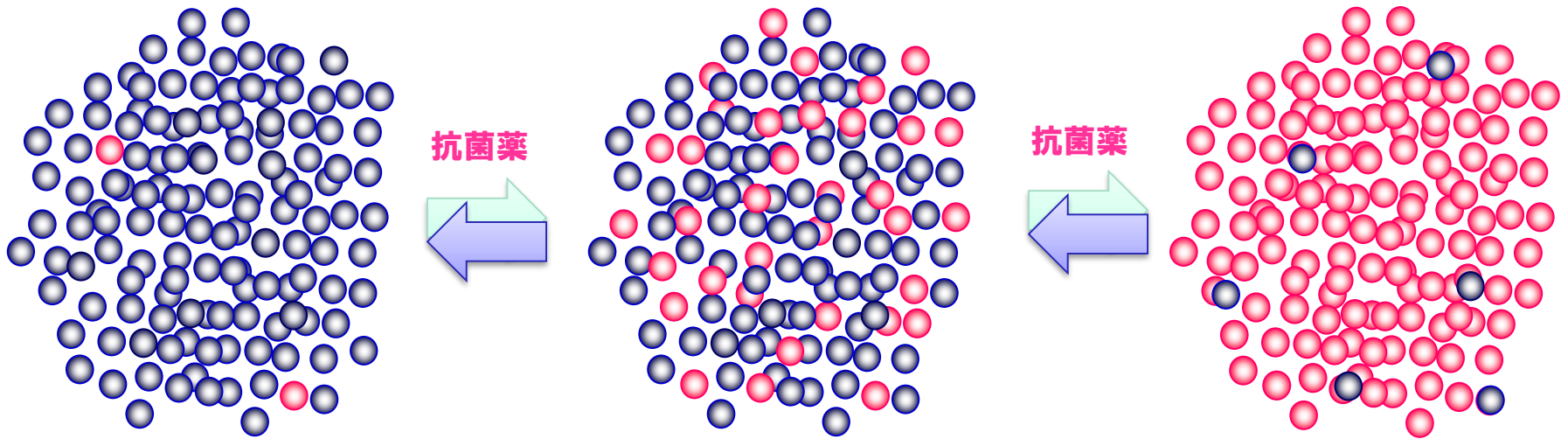
ヘテロ耐性から高度耐性へ

高度耐性菌の
増加は人為的.

グラム陽性菌に強力な
 β -ラクタム薬の投与



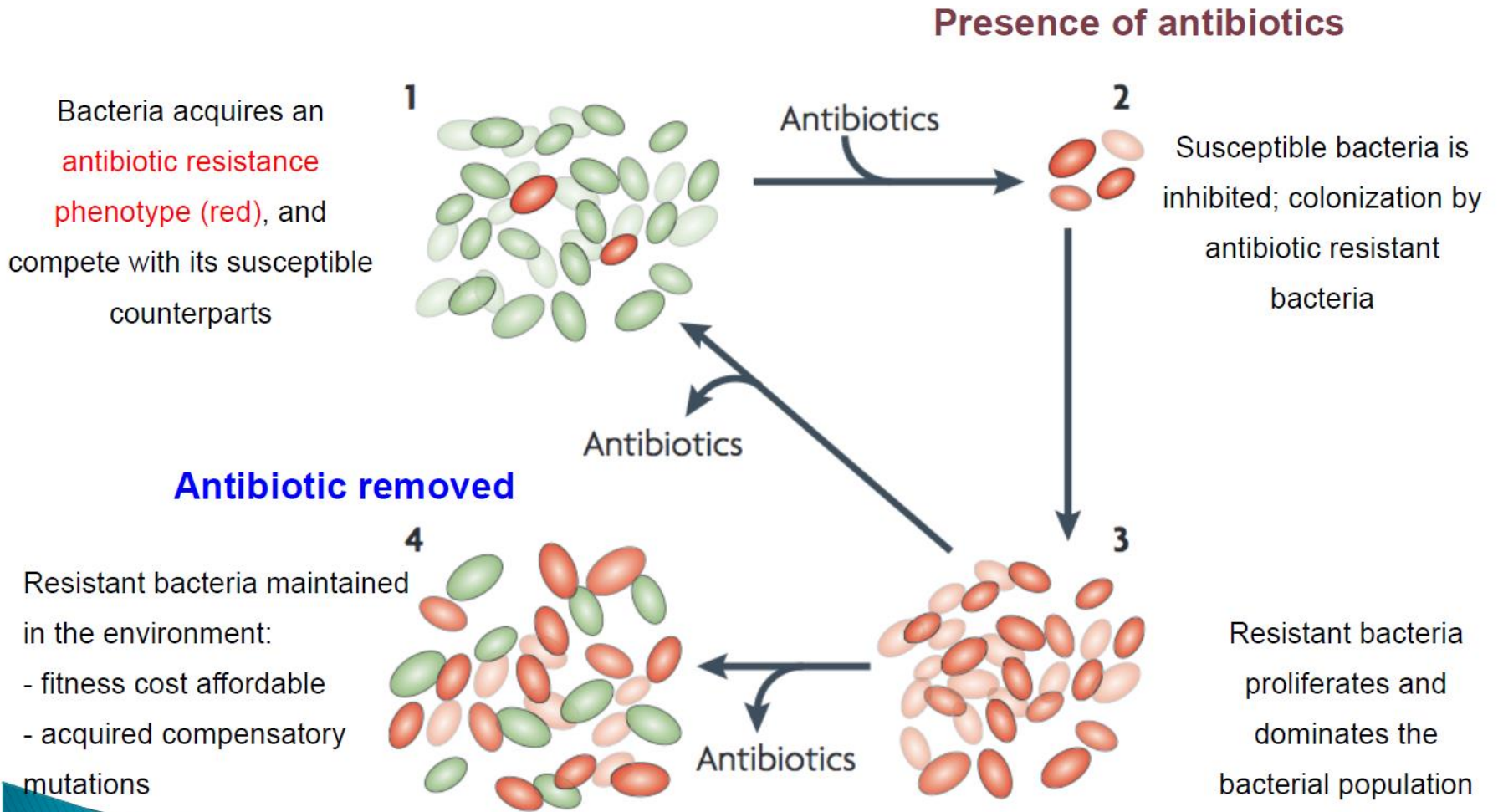
感性菌から耐性菌へ、耐性菌から感性菌へ



● 感性菌：増殖スピードが速い

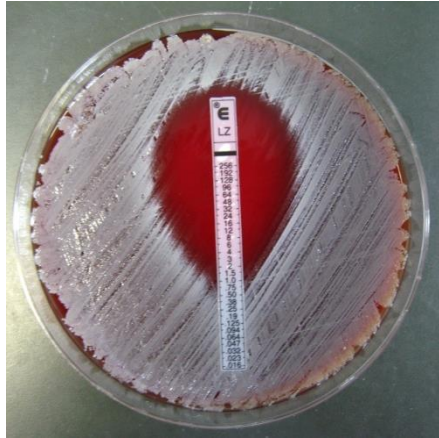
● 耐性菌：増殖スピードが遅い

How antimicrobial resistance can develop



Linezolid耐性MRSAのE-test

HM429



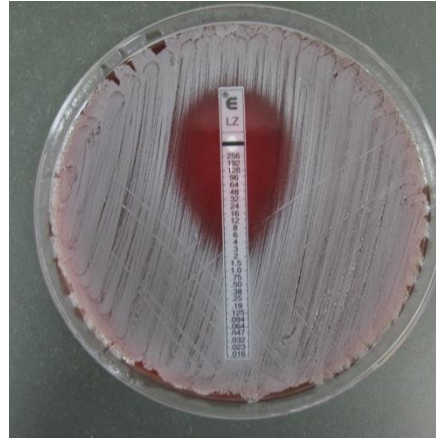
MIC 2 µg/ml

HM457



2 µg/ml

HM471



32 µg/ml

HM044



2 µg/ml

感性



耐性



感性

LZD15日間

LZD2ヶ月間休薬
(他の抗MRSA薬)

