

Selection Antibiotics

During transfection, the experimental DNA enters the cell nucleus, where it interacts with the cell's transcription machinery. In most cells, "transient" expression of the gene follows for the first 2–24 hours after transfection but then declines as the transfected DNA is degraded by cellular nucleases. In a small number of transfected cells, DNA recombination events integrate the foreign DNA into the cell's chromosomal DNA, leading to long-lasting or "stable" gene expression. Within 3–7 days, these stably transfected cells express the foreign gene at detectable levels.

Because the DNA recombination events leading to stable transfection are rare, a large number of cells must be transfected in order to obtain a manageable number of stably transfected cells. By transfecting cells with cloning vectors that carry antibiotic-resistance genes, researchers can easily select stably transfected cells by simply adding selection antibiotics to the culture media. Under these conditions, those cells containing an integrated antibiotic-resistance gene (and containing the foreign DNA) will grow while non-transfected cells die.

Boehringer Mannheim carries two commonly used selection antibiotics. Use Geneticin® (G418) or Hygromycin B antibiotics to determine which colonies have been stably transfected. Also use them to eliminate revertant cells that have lost antibiotic resistance.



Figure 11. Selection antibiotics available from Boehringer Mannheim.

Selection Antibiotic	Select for cells transfected with constructs carrying	Cat. No.	Pack Size
Geneticin® (G418)	a neomycin-resistance gene	1 464 973	250 mg
		1 464 981	1 g
		1 464 990	5 g
Hygromycin B	a hygromycin-resistance gene	843 555	1 g