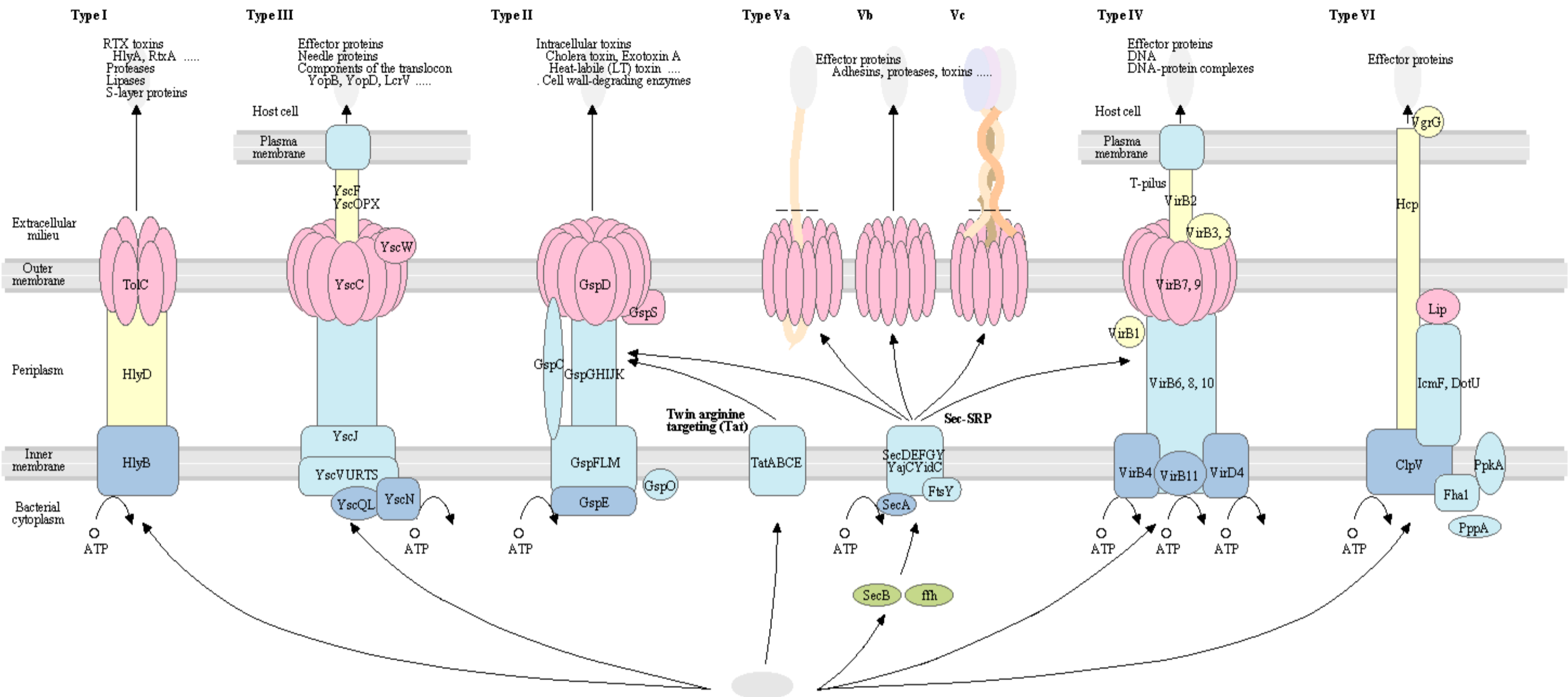


BACTERIAL SECRETION SYSTEM



Type I	Type III
Outer membrane protein (OMP)	Needle
TolC	YscF
Membrane fusion protein	YscO YscP YscX
HlyD	Secretin
ABC transporter	YscC
HlyB	OMP
	YscW
Inner membrane protein (IMP)	YscJ YscR YscS
	YscT YscU YscV
	ATPase
	YscN
	ATPase-associated protein
	YscQ YscL

Type II
Secretin
GspD
OMP
GspS
IMP
GspC GspF GspG
GspH GspI GspJ
GspK GspL GspM
ATPase
GspE
Leaderpeptidase
GspO

Sec-SRP
IMP
SecD/F SecE SecG
SecY YajC YidC
ATPase
SecA
Secretion monitor
SecM
SRP receptor
FtsY
Targeting protein
SecB ffh

Type Va Vb Vc
OMP
VacA ShlB YadA
ShlA YadB/C
Twin arginine targeting (Tat)
IMP
TatA TatB TatC TatE

Type IV
Periplasmic protein
VirB1
Surface/pilus protein
VirB2 VirB3 VirB5
OMP
VirB7 VirB9
IMP
VirB6 VirB8 VirB10
ATPase
VirB4 VirB11 VirD4

Type VI
Secreted substrate
VgrG
Hcp
OMP
Lip
IMP
IcmF DotU
ATPase
ClpV
Regulatory protein
PpkA Fha1 PppA

03070 4/12/10
(c) Kanehisa Laboratories

Upregulated
-Lime Green

Downregulated
-Single copy (Pink)
-Both copies (red)

Genes in the Salmonella Genome
-Mint Green

Genes not in the Salmonella genome (but found commonly in other bacterial export pathways)
-White