LIST OF GMAC-APPROVED HOST/VECTOR SYSTEMS

BIOLOGICAL CONTAINMENT

	Host	**Vector**

Bacteria	*Escherichia coli* K12 or *E. coli* B derivatives which do not contain conjugative or generalized transducing phages	1. Non-conjugative plasmids
		2. Bacteriophage
		  - lambda
		  - lambdoid
		  - Fd or F1 (e.g.M13)

	Bacillus subtilis or *B. licheniformis* Asporogenic strains with a reversion frequency of less than 10^{-7}	Indigenous *Bacillus* plasmids and phages whose host range does not include *B. cereus* or *B. anthracis*
	Pseudomonas putida Strain KT 2440	Certified plasmids: pKT 262, pKT 263, pKT 264

	Streptomyces-specified species:
	S. coelicolor
	S. lividans
	S. parvulus
	S. griseus
		1. Certified plasmids:
		  SCP2, SLP1, SLP2
		  PIJ101 and derivatives
		2. Actinophage phi C31 and derivatives

Fungi	*Neurospora crassa*, laboratory strains	No restriction
	Saccharomyces cerevisiae	No restriction
	Pichia pastoris	No restriction

	Schizosaccharomyces pombe	No restriction
Slime moulds	*Dictyostelium* species	*Dictyostelium* shuttle vectors, including those based on the endogenous plasmids Ddp1 and Ddp2
Tissue Culture	Mammalian cells	1. Non-viral vectors 2. Replication defective viral vectors that cannot infect human cells 3. Advanced generation lentiviral vector[1] 4. Adeno-associated viral vectors
	Avian cells	1. Avipoxvirus vectors 2. Adeno-associated viral vectors
	Plant cell cultures	Non-tumorigenic disarmed Ti plasmid vectors in *Agrobacterium tumefaciens* and non-pathogenic viral vectors
	Insect cell cultures, such as *Spodoptera frugiperda*[2]	Baculovirus *(Autographa californica* nuclear polyhedrosis virus*)*

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[1] Please refer to Appendix 11 of the Singapore Biosafety Guidelines for Research on Genetically Modified Organisms for more details. For definition of 'Advanced generation lentiviral vector', please refer to the MOH Biosafety FAQs under Category 3. Possession "How do I know if a HIV lentiviral vector is considered as advanced generation?" – https://www.moh.gov.sg/biosafety/faqs#03

[2] Provided the recombinants are also inclusion-negative (e.g. polyhedrin minus)