

# USP Reference Standards/ARMS to support various vaccine platforms

Vaccine type	Vaccine platform	Carrier protein	Identity	Molar mass and sizing standards			Formulation assessment	Impurities	
		CRM197 <sup>1</sup>	PS NMR SS <sup>2</sup>	Thyroglobulin	BSA	Pullulan	Squalene	Octoxynol-9	gDNA
Viral	Inactivated			x	x		x	x	x
	Attenuated virus			x	x				x
Nucleic acid	Viral vector			x	x			x	x
	mRNA		x						x
	DNA		x						
Isolated antigen presentation	Subunit	x	x	x	x	x		x	x
	VLP			x	x	x			

<sup>1</sup> CRM: Cross-Reacting Material 197

<sup>2</sup> PS NMR SS: Polysaccharide Nuclear Magnetic Resonance System Suitability

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		CRM197 <sup>1</sup> <a href="#">↗</a>	PS NMR SS <sup>2</sup> <a href="#">↗</a>	Thyroglobulin <a href="#">↗</a>	BSA <a href="#">↗</a>	Pullulan	Squalene <a href="#">↗</a>	Octoxynol-9 <a href="#">↗</a>	gDNA <a href="#">↗</a>
Viral	Inactivated			X	X		X	X	X
	Attenuated virus			X	X				X
Nucleic acid	Viral vector			X	X			X	X
	mRNA		X						X
	DNA		X						
Isolated antigen presentation	Subunit	X	X	X	X	X		X	X
	VLP			X	X	X			

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[↗](#) External link for additional information