

SV40 Early & Late Gene Expression

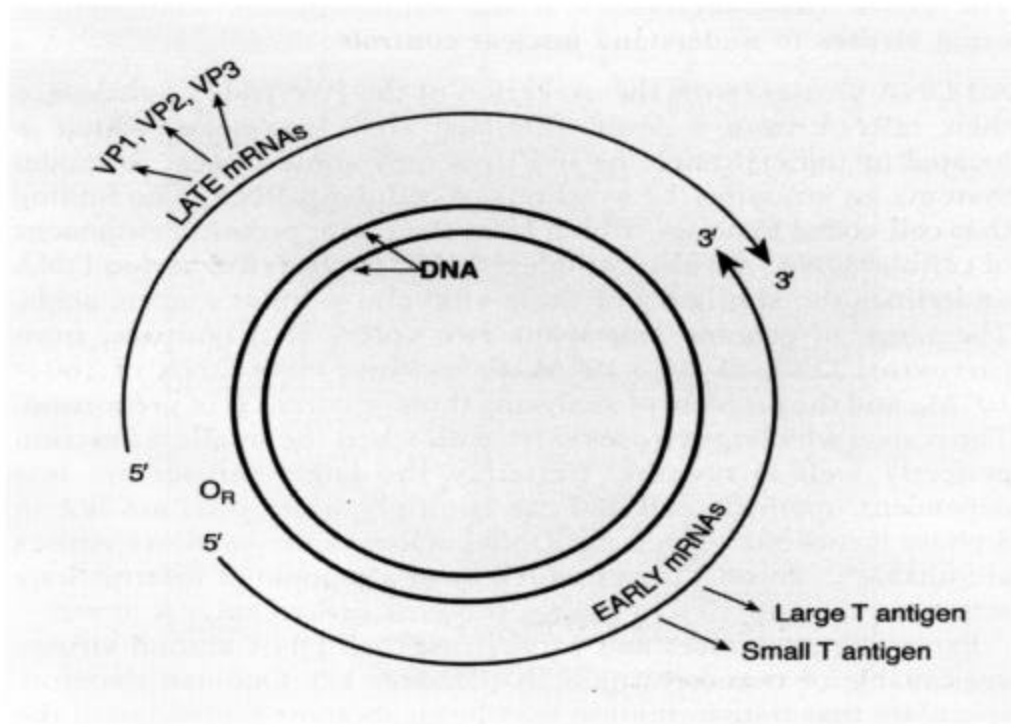


Fig. 10.14 Synthesis of early mRNAs for the T antigens of (A) SV40 and (B) polyoma virus. In SV40 splicing avoids the little t UAA termination codon and results in a frame shift. In polyoma all three reading frames are used. A solid block indicates the translated region of each mRNA, the dotted line is an intron and the single thin line is untranslated RNA. Note that the template translation initiation (AUG) and termination codons (UAA, UAG, UGA) are designated as they appear on mRNA.

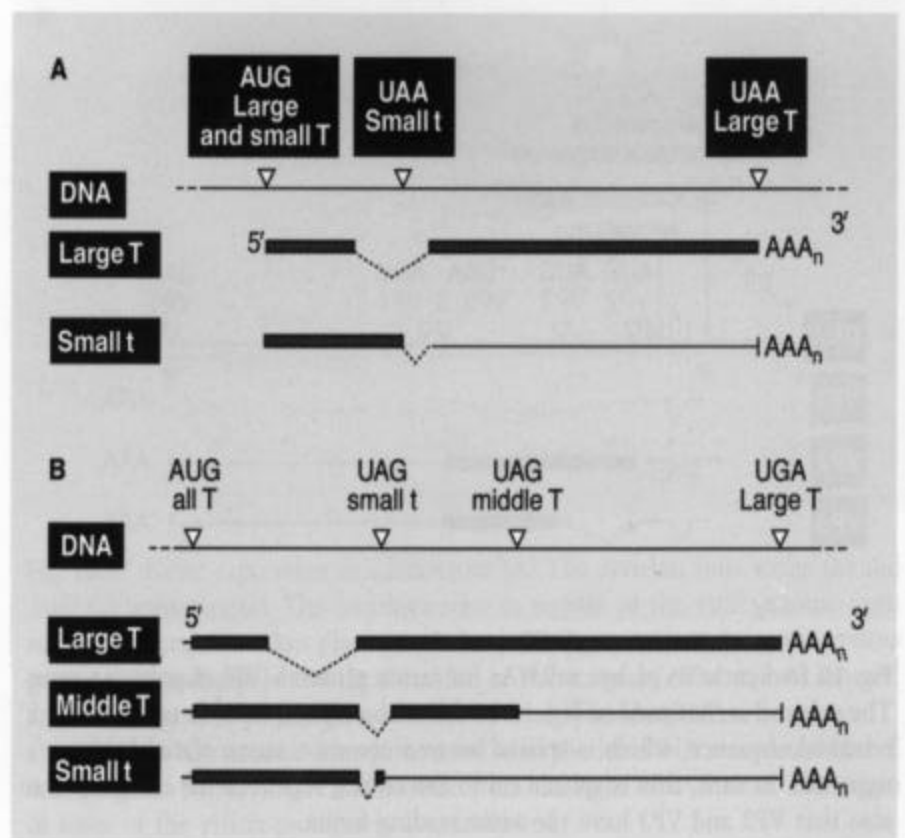


Table 10.1 Some properties of animal virus nucleic acid and protein synthesis. (Adapted from A. E. Smith (1975) in *Society for General Microbiology Symposium*, 25, 187.)

Class	Group	Example	Genome					Virion polymerase	Nucleus involved	Early/late phases	Poly-A in mRNA	Poly-cistronic mRNA	Host shut-off
			Nucleic acid	M _r × 10 ⁻⁶	No. segments	No. mRNAs							
I	Papova	Polyoma	DNA	ds	5	1	6	-	+	+	+	-	-
I	Adeno	Adeno	DNA	ds	20-30	1	Several	-	+	+	+	-	+
I	Herpes	Herpes simplex	DNA	ds	80-150	1	Several	-	+	+	+	-	+
III	Reo	Reo	RNA	ds	15	10	10	+	-	+	-	-	+
IV	Picorna	Polio	RNA	ss	2.5	1	1	-	-	-	+	+	+
IV	Toga	Semliki Forest	RNA	ss	4	1	2	-	-	-	+	+	+
V	Rhabdo	VSV	RNA	ss	3.8	1	5	+	-	-	+	-	+
V	Paramyxo	NDV	RNA	ss	5-7	1	6	+	-	-	+	-	+ & -
V	Orthomyxo	Influenza	RNA	ss	4	8	10	+	+	+	+	-	+
VI	Retro	RSV	RNA	ss	1-3	2*	3	+	+	-	+	(+)	-

* 2 identical molecules of RNA.

poly-A, poly-adenosine; ds, double-stranded; ss, single-stranded; VSV, vesicular stomatitis virus; NDV, Newcastle disease virus; RSV, Rous sarcoma virus.