COMPILED *VSG* SWITCHED ISOLATE DATA

SWITCH MECHANISM DETERMINATION

Switch Type	Marker (R/S)	221 (+/-)	Marker (+/-)
IS	S	+	+
GC	R	-	+
ES GC	S	-	-
TE	R	+	+

KEY

OSF=	Observed *VSG* Switching Frequency
PSD=	Pseudogene
GC=	Duplicative Gene Conversion
IS=	In Situ/Transcriptional
TE=	Telomere Exchange
ES GC=	Expression Site GC
UD=	Undetermined
221=	VSG427-2

DATA SUMMARY

WT Telomere

NAME	NUMBER	PERCENT
Switchers	189	-
IS	63	33%
GC	40	21%
ES GC	5	3%
TE	69	37%
UD	12	6%
GC Total	45	24%
GC+ PSD-	26	58%
AVG OSF	1.38	-

Short Telomere

NAME	NUMBER	PERCENT
Switchers	188	-
IS	13	7%
GC	163	87%
ES GC	3	2%
TE	2	1%
UD	7	4%
GC Total	166	88%
GC+ PSD-	149	90%
AVG OSF	8.84	-

ANALYSIS OF SWITCH MECHANISM BY CLONE POPULATION

WT Telomere

Pop. Name	OSF (x10^-5)	# Switchers	IS	GC	ES GC	TE	UD	% IS	% GC	% ES GC	% TE	% UD
#1-1	0.84	1	0	1	0	0	0	0%	100%	0%	0%	0%
#1-2	0.81	14	1	7	1	3	2	7%	50%	7%	21%	14%
#1-4	1.06	10	4	4	0	2	0	40%	40%	0%	20%	0%
#1-6	2.72	16	7	0	0	8	1	44%	0%	0%	50%	6%
#1-7	0.51	2	0	0	0	2	0	0%	0%	0%	100%	0%
#2-2	2.10	9	3	6	0	0	0	33%	67%	0%	0%	0%
#2-3	1.76	18	9	4	3	0	2	50%	22%	17%	0%	11%
#2-4	1.87	39	22	7	1	7	2	56%	18%	3%	18%	5%
#2-5	1.63	34	1	4	0	26	3	3%	12%	0%	76%	9%
#2-6	1.27	25	3	1	0	20	1	12%	4%	0%	80%	4%
#2-7	1.06	3	3	0	0	0	0	100%	0%	0%	0%	0%
#2-8	0.98	18	10	6	0	1	1	56%	33%	0%	6%	6%
TOTALS		**189**	**63**	**40**	**5**	**69**	**12**					
PERCENT			**33.3%**	**21.2%**	**2.6%**	**36.5%**	**6.3%**					

Short Telomere

Pop. Name	OSF (x10^-5)	# Switchers	IS	GC	ES GC	TE	UD	% IS	% GC	% ES GC	% TE	% UD
#1	6.10	50	1	48	0	0	1	2%	96%	0%	0%	2%
#3	3.82	16	1	13	0	1	1	6%	81%	0%	6%	6%
#4	10.76	15	4	6	1	0	4	27%	40%	7%	0%	27%
#5	7.47	86	0	85	0	0	1	0%	99%	0%	0%	1%
#7	8.59	19	6	10	2	1	0	32%	53%	11%	5%	0%
#8	16.30	2	1	1	0	0	0	50%	50%	0%	0%	0%
TOTALS		**188**	**13**	**163**	**3**	**2**	**7**					
PERCENT			**6.9%**	**86.7%**	**1.6%**	**1.1%**	**3.7%**					

ANALYSIS OF SWITCH MECHANISM BY ISOLATION DAY

(Number of days post-MACs single cell cloning required for visible growth and isolation)

WT Telomere

Isolation Day	# Switchers	IS	GC	ES GC	TE	UD	% IS	% GC	% ES GC	% TE	% UD
7	130	38	33	5	45	9	29%	25%	4%	35%	7%
9	49	20	6	0	20	3	41%	12%	0%	41%	6%
11	10	5	1	0	4	0	50%	10%	0%	40%	0%

Short Telomere

Isolation Day	# Switchers	IS	GC	ES GC	TE	UD	% IS	% GC	% ES GC	% TE	% UD
7	181	10	159	3	2	7	6%	88%	2%	1%	4%
9	7	3	4	0	0	0	43%	57%	0%	0%	0%

GC ACCOUNTS FOR THE INCREASED OSF OF SHORT TELOMERE CLONES

If $\Sigma \mathbf{F}_{Short} \cong \Sigma \mathbf{F}_{WT} + \Delta \mathbf{F}_{GC}$, then GC accounts for the increase in Short telomere OSF

Where: **F**=Average OSF x % Mechanism & $\Delta \mathbf{F}_{GC} = \mathbf{F}_{GC,Short} - \mathbf{F}_{GC,WT}$

WT	F
$\mathbf{F}_{IS}$	0.46
$\mathbf{F}_{GC}$	0.33
$\mathbf{F}_{TE}$	0.50
$\mathbf{F}_{UD}$	0.09
$\Sigma \mathbf{F}_{WT}$	1.38

Short	F
$\mathbf{F}_{IS}$	0.61
$\mathbf{F}_{GC}$	7.81
$\mathbf{F}_{TE}$	0.09
$\mathbf{F}_{UD}$	0.33
$\Sigma \mathbf{F}_{Short}$	8.84

8.86

$\Delta \mathbf{F}_{GC}$= 7.48 $\Sigma \mathbf{F}_{WT} + \Delta \mathbf{F}_{GC}$= **8.86** , which is ≅ to $\Sigma \mathbf{F}_{Short}$

Therefore, the increase in OSF in short telomere clones can be accounted for by the percent increase in GC

INDEPENDENT SWITCH ISOLATE ANALYSIS

WT Telomere Pop.	Total	GC 224- PSD+	GC 224- PSD-	GC 224+ PSD+	GC 224+ PSD-	IS 224-	IS 224+	TE 224-	TE 224+	UD 224-	UD 224+	ESGC 224-	ESGC 224+	# switch types
#1-1	1	0	1	0	0	0	0	0	0	0	0	0	0	1
#1-2	14	6	1	0	0	1	0	3	0	2	0	1	0	6
#1-4	10	1	3	0	0	4	0	2	0	0	0	0	0	4
#1-6	16	0	0	0	0	7	1	8	0	0	0	0	0	3
#1-7	2	0	0	0	0	0	0	2	0	0	0	0	0	1
#2-2	9	1	5	0	0	2	1	0	0	0	0	0	0	4
#2-3	18	0	2	0	2	9	0	0	0	2	0	2	1	6
#2-4	39	0	0	7	0	21	1	7	0	2	0	1	0	6
#2-5	34	1	2	1	0	1	0	26	0	3	0	0	0	6
#2-6	25	0	1	0	0	0	3	20	0	1	0	0	0	4
#2-7	3	0	0	0	0	3	0	0	0	0	0	0	0	1
#2-8	18	0	0	1	5	10	0	1	0	1	0	0	0	5
	189													47

Short Telomere Pop.	Total	GC 224- PSD+	GC 224- PSD-	GC 224+ PSD+	GC 224+ PSD-	IS 224-	IS 224+	TE 224-	TE 224+	UD 224-	UD 224+	ESGC 224-	ESGC 224+	# switch types
#1	50	5	18	1	24	1	0	0	0	1	0	0	0	6
#3	16	0	13	0	0	1	0	1	0	1	0	0	0	4
#4	15	2	4	0	0	4	0	0	0	4	0	1	0	5
#5	86	0	82	0	3	0	0	0	0	1	0	0	0	3
#7	19	8	2	0	0	6	0	1	0	0	0	2	0	5
#8	2	0	1	0	0	1	0	0	0	0	0	0	0	2
	188													25

Highlighted wells count as a unique switch type within population