

Cell, Volume 170

Supplemental Information

**Life-Long Genetic and Functional Access
to Neural Circuits Using Self-Inactivating
Rabies Virus**

Ernesto Ciabatti, Ana González-Rueda, Letizia Mariotti, Fabio Morgese, and Marco Tripodi

Rabies	N-terTAGs	C-terPEST
pSAD-F3-mCherry	-	-
pSAD-F3-N-terTAGs-mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	-
pSAD-F3-N-terTAGs-N ^{PEST} -mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	N ^{PEST}
pSAD-F3-N-terTAGs-M ^{PEST} -mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	M ^{PEST}
pSAD-F3-N-terTAGs-P ^{PEST} -mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	P ^{PEST}
pSAD-F3-N-terTAGs-L ^{PEST} -mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	L ^{PEST}
pSAD-F3-N ^{PEST} -mCherry (SiR ^{mCherry})	-	N ^{PEST}
pSAD-F3-N-terTAGs-(P+L) ^{PEST} -mCherry	N ^{Myc} -P ^{FLAG} -M ^{V5}	P ^{PEST} L ^{PEST}
pSAD-F3-(P+L+N) ^{PEST} -mCherry	-	P ^{PEST} L ^{PEST} N ^{PEST}
pSAD-F3-N ^{PEST} -iCRE-2A-mCherryPEST (SiR ^{CRE-mCherry})	-	N ^{PEST}
pSAD-F3-N ^{PEST} -cTEVp-FKBP-2A-FRB-NTEVp-iCRE	-	N ^{PEST}
pSAD-F3-N ^{PEST} -FLP _o (SiR ^{FLP})	-	N ^{PEST}
Lentiviruses	Gene A	Gene B
pLenti-H2BGFP-2A-GlySAD	H2BGFP	GlySAD
pLenti-puro-2A-TEVp	Puromycin N-Acetyl-Transferase (PAC)	TEVp
pLenti-GFP	GFP	-
pLenti-H2BGFP-2A-oG	H2BGFP	oG
AAVs	Gene A	Gene B
AAV-CMV-TVAmCherry-2A-G	TVAmCherry	G
AAV-TRE _{tight} -TEVp-CMV-rtTA	TEVp (doxy dependent)	rtTA
AAV-CAG-GCaMP6s	GCaMP6s	-
AAV-CAG-FRT-H2BGFP	H2BGFP (FLP dependent)	-
AAV-CMV-FLEX-TVAmCherry-2A-oG	TVAmCherry (CRE dependent)	oG (CRE dependent)

Table S1.

List of viral constructs generated for the study, Related to Figure 1

	<i>Rosa-LoxP-STOP-LoxP-tdTomato</i> mice				<i>Rosa-LoxP-STOP-LoxP-ChR2YFP</i> mice			
	1 week p.i.		5 months p.i.		1 week p.i.		2 months p.i.	
	SiR+ tdTom+	CTR	SiR+ tdTom+	CTR	SiR + ChR2 +	CTR	SiR + ChR2 +	CTR
	n = 14	n = 14	n = 10	n = 9	n = 17	n = 15	n = 19	n = 17
RMP (mV)	-60.4 ± 0.9	-58.4 ± 1.0	-61.8 ± 1.5	-62.8 ± 1.1	-57.8 ± 0.6	-59.1 ± 1.1	-57.0 ± 1.0	-57.2 ± 0.9
Input Resistance (MΩ)	274 ± 28	267 ± 24	250 ± 26	260 ± 43	249 ± 15	249 ± 23	274 ± 24	290 ± 24
AP amplitude (mV)	102.9 ± 3.0	99.4 ± 3.2	99.8 ± 3.3	99.7 ± 3.0	98.6 ± 1.9	101.5 ± 1.7	97.8 ± 2.6	99.7 ± 3.0
AP half- width (ms)	2.0 ± 0.1	2.0 ± 0.1	2.0 ± 0.1	2.0 ± 0.1	2.3 ± 0.1	2.1 ± 0.1	2.3 ± 0.1	2.2 ± 0.1
AP threshold (mV)	-45.3 ± 1.6	-45.7 ± 0.9	-45.9 ± 1.1	-46.1 ± 1.0	-45.3 ± 0.8	-45.8 ± 1.1	-43.9 ± 1.4	-43.6 ± 1.7

Table S2

Electrophysiological properties of SiR infected neurons compared to neighboring non-infected neurons recorded in *Rosa-LoxP-STOP-LoxP-tdTomato* and *Rosa-LoxP-STOP-LoxP-ChR2YFP* mice, Related to Figure 5