

Isolation of deletion alleles by G4 DNA-induced mutagenesis

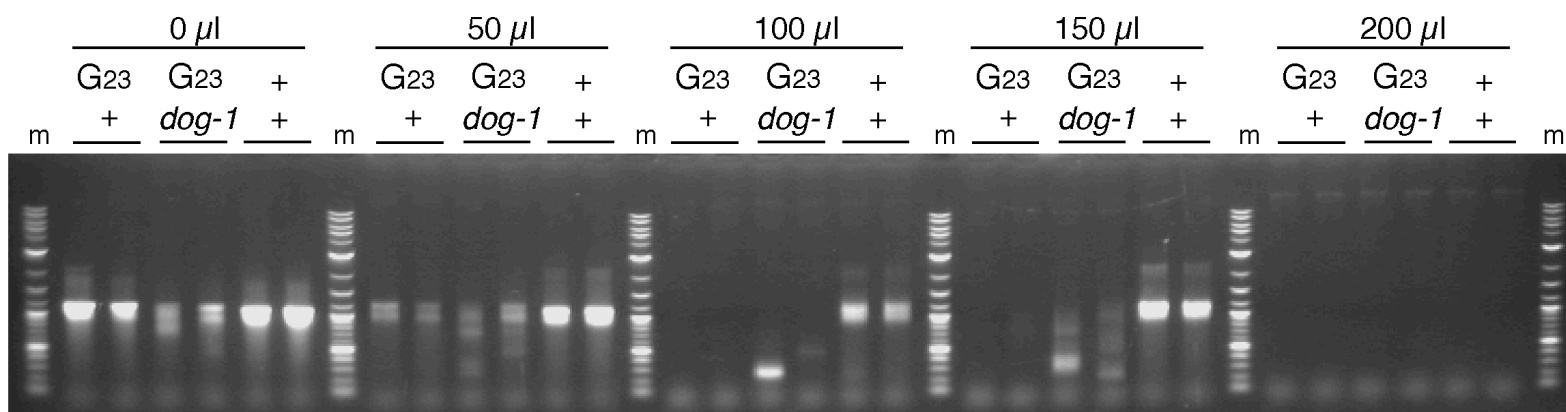
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Supplementary figures and text:

Supplementary Figure 1	KCl stabilizes G4 DNA structures <i>in vitro</i>
Supplementary Figure 2	Deletions of larger size
Supplementary Table 1	G4 DNA-induced deletion alleles

Note: Supplementary Table 2 is available on the Nature Methods website.

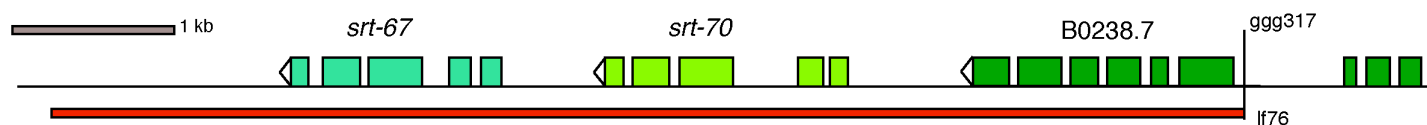
Supplementary Figure 1. KCl stabilizes G4 DNA structures *in vitro*



Supplementary Figure 1. KCl stabilizes G4 DNA structures *in vitro*: increasing concentrations of KCl in the PCR reaction preferentially inhibit the amplification of G4 DNA containing amplicons. This allows for a better detection of deletion products that lost the G4 DNA sequence. The gel image displays PCR analysis with indicated concentration of KCl on DNA isolated from 100 wildtype (+) or *dog-1* deficient (*dog-1*) animals. The amplicon is a \sim 1.3 kb segment of the endogenous *unc-22* locus, which we manipulated to harbor an in frame mononucleotide repeat (strain construction will be described in detail elsewhere). G₂₃ indicate the presence of a mononucleotide tract consisting of 23 G residues in the amplicon. Its absence is indicated by a + because here the amplicon is the wild type (+) *unc-22* locus.

Supplementary Figure 2. Deletions of larger size

a



b

Target	Size (nt)	5'-flank	Deletion	3'-flank	Comments
<i>dys-1</i>	2918	tttttcagcatatttta	[gctttaaaaattaaata...agaggtggggggggggggg]	ggggggggatttaaatt	
<i>dys-1</i>	3131	tgccgagaccgtagaa	[aatggaaagaaaagtgg...gtggggggggggggggggg]	gggggatttaaatttaa	
<i>dys-1</i>	2956	tcgatatttttggttaa	[ttttttgatttttcagc...ggggggggggggggattta]	aatttaaattgcttaaa	
<i>dys-1</i>	3070	tgagaaatagaagagac	[gcagagggccagagaaa...gtggggggggggggggggg]	ggggatttaaatttaa	Insertion AT
<i>dys-1</i>	3044	cagagaaaaccgttttt	[ctcccatcccttcttct...gtggggggggggggggggg]	ggggatttaaatttaa	

Supplementary Figure 2. (a) Schematic illustration of an 7.3 kb *C. elegans* deletion allele generated by G4 DNA-mediated mutagenesis that disrupts 3 ORFs. The deletions (in red) are according to the scale depicted in the upper left panel. (b) Example of deletions that were identified with a screen where the 5' primers were located 5 kb upstream of G4 DNA fragile site ggg81.

Supplementary Table 1. G4 DNA-induced deletion alleles

LG	Fragile site	5'-junction [deleted sequence] 3'-junction	ins	del. size	affected ORF
I	ggg81	taaattttaa[tccccccccc-// -ttttgctgaa] acaggaaaa	-	589	<i>dys-1</i>
I	ggg253	tcccccaata[catacccccc-// -ttatgagcat] acaacaaact	-	751	<i>eat-18</i>
III	ggg211	ggatttcgaa[cccccccccc-// -ccaaagcaag] cttggttctg	tttttt	678	<i>cls-2</i>
IV	ggg262	tccgtttccc[agtccccccc-// -gagtctccga] atgttagacc	-	251	<i>amt-2</i>
IV	ggg295	ttttctgtat[ttcgcccccc-// -ctggttttta] ccggaaaaac	-	653	B0513.4
IV	ggg295	tatttcgccc[cccccccccc-// -aaccgagttt] tctgtgcact	-	830	B0513.4
V	ggg376	atcccccccc[cccccccccc-// -aatcaataaa] tttccagaaa	atTTTTTTTT	533	Y43F8B.3
V	qua1332	cgtgagttcc[cccccccccc-// -cctgcacgtc] aggatgtgcc	-	161	Y69H2.10A
X	qua1442	tcaaattcac[cccccctcc-// -agaagggcgg] ttatcggaaa	t	443	M60.6
X	qua1446	aagcctcgca[cccccccccc-// -caagttacca] tcaacttttt	-	714	H03E18.1
X	qua1630	agaaccccc[cccccctcc-// -tttcccggat] tgcagtttat	-	839	<i>ggr-2</i>