



Precise genome editing has arrived

GeneArt® Precision TALs provide custom DNA-binding proteins for accurate DNA targeting and precise genome editing. Other technologies limit your choice of targets, but with GeneArt® Precision TALs you can target any locus in the genome—and more accurate genome engineering allows you to develop better solutions.

Every gene locus is now within your reach

GeneArt® Precision TALs deliver outstanding performance:

- **Speed**—receive your clone typically within 2 weeks after order confirmation
- **Precision**—recognizes the DNA sequence you specify
- **Flexibility**—you choose the effectors and Gateway® vector that meets your needs
- **Reliability**—clone contains verified, optimized sequence for improved expression

GeneArt® Precision TALs are genome engineering tools for locus-specific modification of the genome

Precision TALs are produced in *Xanthomonas*, a genus of plant pathogen. The pathogen specifically recognizes the DNA of the host. Each nucleotide in the target DNA is recognized by one repeat. This one-to-one relationship can be exploited to specifically target any locus in the genome.



Scan here to see how it works.

Order your GeneArt® Precision TALs and start editing

Download the order form at lifetechnologies.com/talorderform, then send your completed form to geneartsupport@lifetech.com. Your shipment will include GeneArt® Precision TALs supplied as Gateway® entry clones (lyophilized DNA) for expression in your favorite vector.

Product	TAL
Native TAL Fok1	Native
Truncated TAL Fok1	Truncated
Native TAL vp16 activator	Native
Native TAL vp64 activator	Native
Native TAL MCS	Native
Truncated TAL MCS	Truncated
TAL repressor KRAB	Modified

Available effector domains

Double-stranded breaks can be created at a customer-specified locus in the genome using a pair of Precision TALs fused to Fok1 nuclease (Figure 1).

Gene activation is accomplished by specifically targeting a transcription activator to the gene of interest (Figure 2). The activator approach to gene overexpression has the advantage of expressing all the endogenous splice variants in the appropriate ratios.

GeneArt® Precision TALs can also be designed to act as repressors that will down-regulate the targeted gene, similar to the function of small interfering RNA (siRNA). Both gene activation and repression can serve to elucidate the role of the gene of interest in specific signaling pathways or other phenotypes.

If you're interested in an effector domain not currently available, we offer a multiple cloning site (MCS) vector that allows targeting of any domain (Figure 3). Additional gene synthesis services are available to generate any effector domains for which you don't have a template.

Sample application

In vitro cleavage of genomic target locus

An IL2RG TAL demonstrated cleavage of its specific target in genomic DNA (Figure 4). The starting DNA was a PCR-amplified fragment of genomic DNA containing the IL2RG target. The control was a TAL to a different target.

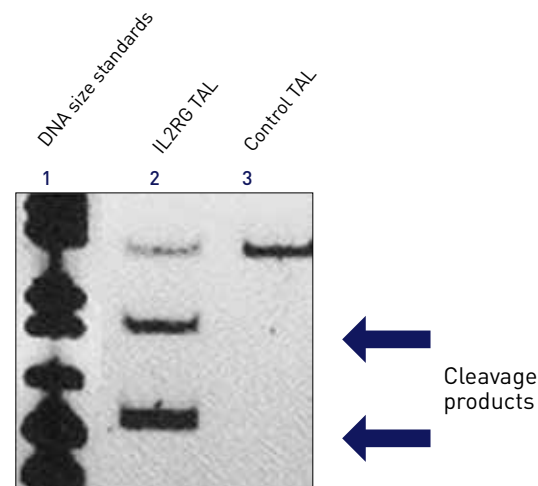


Figure 4. Cleavage of an *in vitro*-expressed TAL demonstrated on a PCR-amplified target. Specific cleavage is observed using a GeneArt® Precision TAL targeting IL2RG.

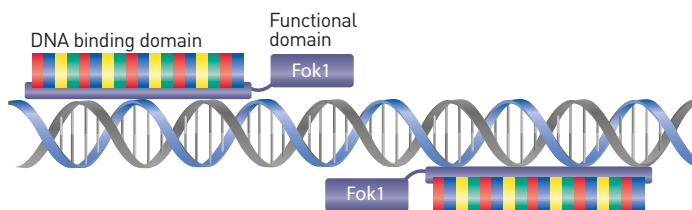


Figure 1. Precision TALs fused to Fok1 nuclease allow sequence-specific, double-stranded DNA breaks to be introduced.

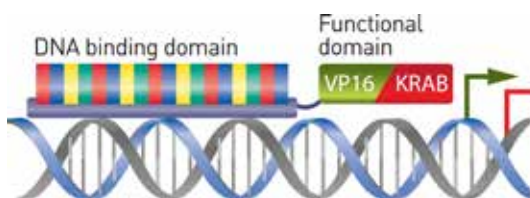


Figure 2. Precision TALs fused to a vp16/KRAB functional domain allows specific activation/repression of gene expression.

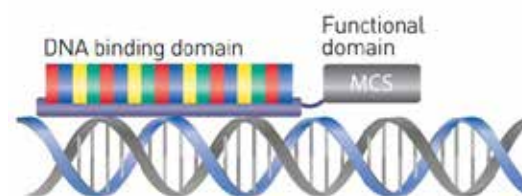


Figure 3. An MCS version of the GeneArt® Precision TAL vector allows you to customize the resulting TAL fusion protein with an effector domain of your choice.

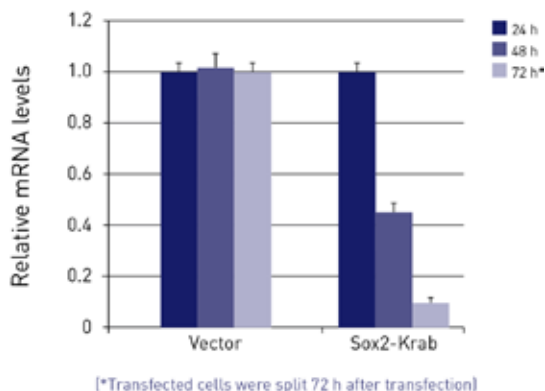


Figure 5. Time course of repression on endogenous genes Sox2 in 293FT cells. TAL repressors epigenetically repress genes in a heritable and persistent manner. 293FT cells were transfected with the indicated plasmids. Cells were harvested at different time points and mRNA levels of the target genes were quantitated by qRT-PCR and normalized to β -actin.

Download the order form at lifetechnologies.com/talorderform

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