

# Custom piRNA Synthesis



## Gene Silencing

Piwi-interacting RNAs (piRNAs) are essential small RNAs involved in transposon silencing, germline development, and epigenetic regulation. By guiding PIWI proteins to form piRNA-induced silencing complexes (piRISCs) that mediate post-transcriptional cleavage of target RNAs and transcriptional silencing via epigenetic modifications.

Tsingke offers precision piRNA synthesis tailored for RNA-mediated gene regulation research, with a wide range of chemical modifications to enhance stability, target specificity, and delivery, supporting advanced studies in RNA biology.



## Transposon Control



## Epigenetic Modulation



## Genome Stability

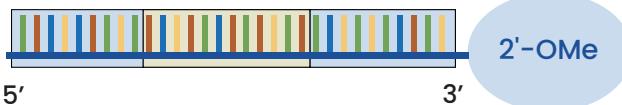
### Why Choose Tsingke

**Highly Customized:** Synthesized under strict RNase control, with a wide range of modification and packaging options.

**High Purity:** HPLC purification and mass spectrometry QC ensure consistency and data transparency.

**Reliable Reordering:** Batch consistency and sequence archiving for seamless project continuity.

**Scalable Delivery:** From nmol to mmol scale, supporting both pilot and expanded studies with fast turnaround.



## What We Offer

Tsingke offers highly refined single-stranded piRNAs with precise control over nucleotide length (30–40 nt) and end chemistry, tailored to mimic native piRNA function and ensure optimal PIWI loading efficiency.

Modifications	Function
2'-O-Methyl (2'-OMe)	Mimics endogenous piRNA 3'-end, stabilizes against exonucleases
2'-Fluoro (2'-F)	Increases duplex rigidity; enhances binding affinity
Phosphorothioate (PS)	Confers resistance to RNase H and plasma nucleases
Unlocked Nucleic Acids (UNA)	Reduces off-target effects by destabilizing non-specific interactions
Fluorescent Dye (FAM/Cy5/Cy3)	Real-time tracking of piRNA
Inverted dT	Prevents extension and degradation, locks structure for conformational studies
Biotin	For interaction studies, enables RNA pull-down, piRNA–protein interaction mapping

## Related Services

- Custom Antisense Oligonucleotides (ASOs) Synthesis
- Custom small Interfering RNA (siRNAs) Synthesis
- Custom Aptamer Synthesis
- Custom Single Guide RNA (sgRNA) Synthesis
- Custom Small Activating RNA (saRNA) Synthesis
- miRNA mimics/inhibitor

## Publication Data

- A Novel Splice Variant of the Masculinizing Gene Masc with piRNA-Cleavage-Site Defect Functions in Female External Genital Development in the Silkworm, *Bombyx mori* | Biomolecules  
DOI: 10.3390/biom9080318
- Seminal plasma piRNA array analysis and identification of possible biomarker piRNAs for the diagnosis of asthenozoospermia | Experimental and Therapeutic Medicine  
DOI: 10.3892/etm.2022.11275
- Identification and functional characterization of developmental-stage-dependent piRNAs in Tibetan sheep testes | JOURNAL OF ANIMAL SCIENCE  
DOI: 10.1093/jas/skad189

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