

Achieve ligation-free, efficient DNA/RNA 5'-adenylation without unwanted byproducts

Adenylator™ DNA/RNA 5'-Adenylation Kit

Product Intro

The Adenylator™ DNA/RNA 5'-Adenylation Kit is a versatile chemistry that enables efficient 5'-adenylation of 5'-monophosphorylated DNA or RNA oligonucleotides, providing a powerful and robust alternative to current 5'-adenylation methods. 5'-adenylated oligos are integral substrates for a range of scientific applications including next-generation sequencing and RNA circularization. Ligation-based adenylation methods can result in unwanted oligo self-ligation byproducts while purchasing pre-adenylated oligos is costly and requires a long lead time. The Adenylator™ Kit provides a simple, cost-effective and efficient solution for adenylation of both DNA and RNA providing triple the output of competitor kits.

Benefits

- **Efficient adenylation:** Produce 3 nmol of 5'-adenylated DNA or RNA oligos, triple the output of competitor kits.
- **No unwanted byproducts:** Avoid off-target effects like concatemerization and circularization seen in ligase-based adenylation methods.
- **Streamlined workflow:** Adenylate oligos in a one-step, one-hour reaction instead of waiting weeks for purchased adenylated oligos.
- **Scalable:** Scale up reactions as desired with no impact on adenylation efficiency.

Product Description

The [Adenylator™ DNA/RNA 5'-Adenylation Kit](#) enables efficient 5'-end adenylation of 5'-monophosphorylated DNA or RNA oligonucleotides. The kit provides a powerful, catalytic and low-temperature alternative to 5'-adenylation methods that use traditional thermostable RNA ligase. Unlike Mth RNA Ligase, which relies on high temperature (65°C) to minimize oligo circularization and concatamerization events, Adenylator™ Enzyme performs robustly at 37°C and cannot catalyze unwanted oligo self-ligation.

Each 10-reaction kit adenylates 3 nmol of DNA or RNA oligos in a one-step, one-hour, scalable workflow. The resulting 5'-adenylated oligos are compatible with T4 RNA Ligase 2 truncated or truncated/K227Q-based reactions for ligation to the 3'-end of RNA. Adenylator™ adenylated DNA oligos can be used in next-generation sequencing workflows (e.g., small RNA library prep and Native elongating transcript sequencing [NET-seq]) and adenylated RNA oligos can be used as an input into RNA circularization workflows or in a variety of RNA studies.

Product Performance

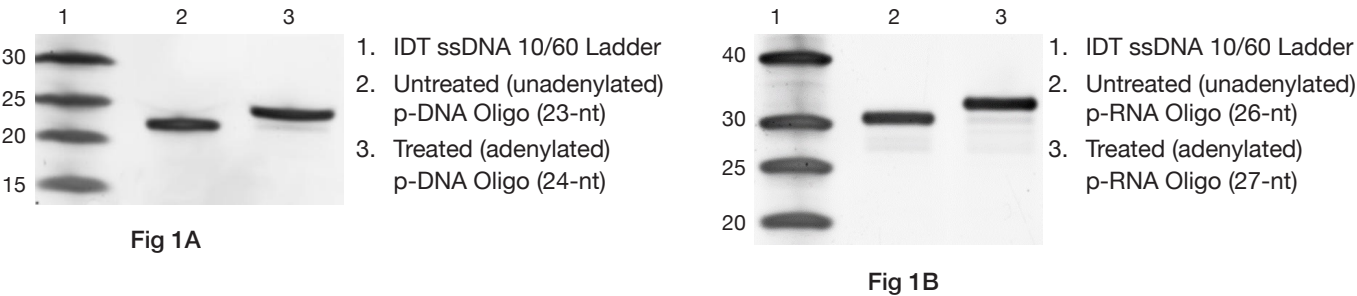


Figure 1. DNA and RNA oligonucleotides are efficiently adenylated using the Adenylator™ DNA/RNA 5'-Adenylation Kit. Phosphorylated DNA (Fig 1A) and RNA (Fig 1B) oligonucleotides were adenylated using Adenylator™ Enzyme and visualized on polyacrylamide gels (20% acrylamide, 8 M urea, 1X TBE, stained with SYBR® Gold). The untreated oligos (lane 2) were efficiently adenylated (lane 3) as evidenced by the band shift.

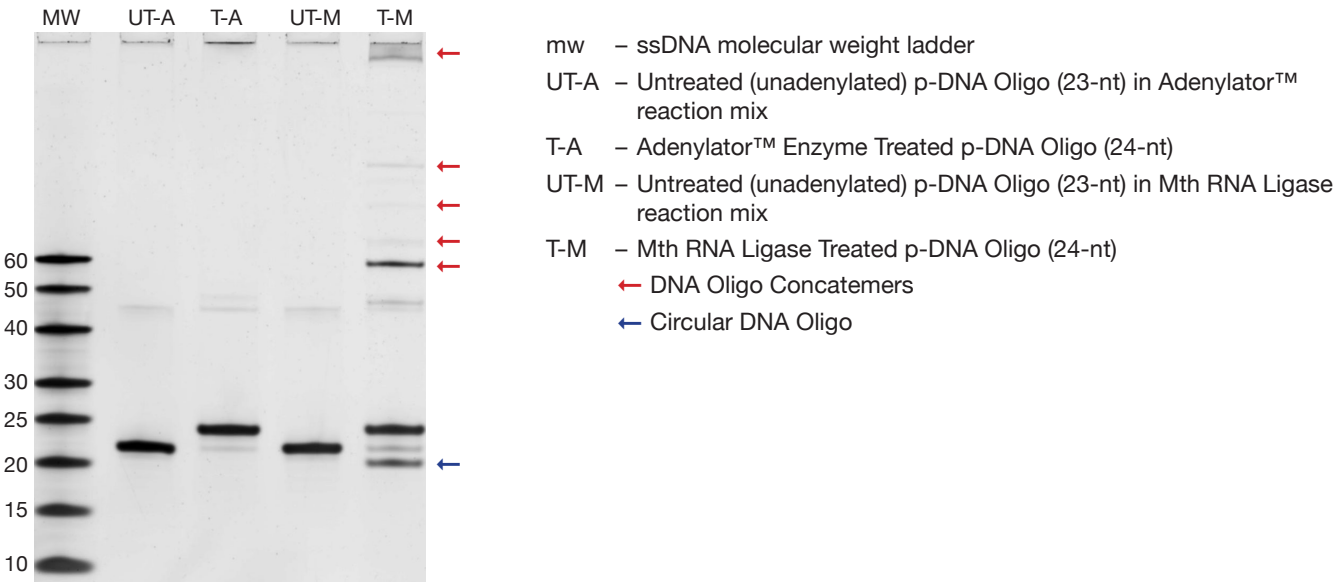


Figure 2. Adenylator™ Enzyme does not catalyze unwanted oligo self-ligation. A 23-nt phosphorylated DNA oligo was adenylated using Adenylator™ Enzyme and Mth RNA Ligase and visualized on a polyacrylamide gel (20% acrylamide, 8 M urea, 1X TBE, stained with SYBR® Gold). The Mth RNA Ligase adenylated DNA oligo (T-M) contains oligo concatemer (red arrows) and circularized oligo (blue arrow) ligation byproducts. Adenylation using Adenylator™ Enzyme (T-A) cannot form substrate concatemers or circularize oligo substrates, resulting in adenylated oligos without byproducts.

Ordering information

Catalog Number	Description
ADR250610	Adenylator™ DNA/RNA 5'-Adenylation Kit (10 reactions)

