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(54) **Title:** THERMOSTABLE BLUNT-END LIGASE AND METHODS OF USE

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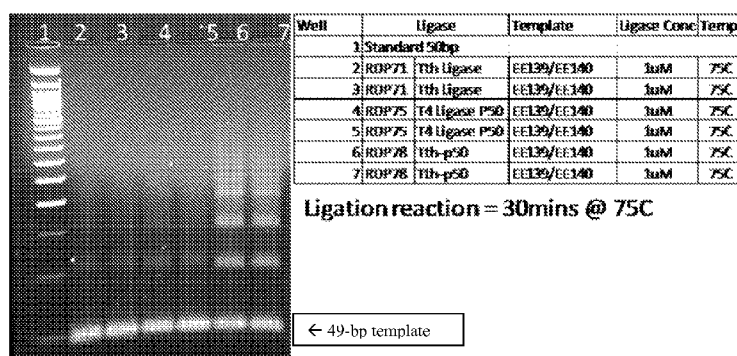


Fig. 1

(57) **Abstract:** Thermostable blunt-end ligases suitable for use in nucleic acid ligation reactions at elevated temperatures are provided. The ligases comprise fusion proteins including a DNA ligase and a DNA binding protein, e.g., a T4 DNA ligase with an N-terminal p50 fusion. The fusion proteins may include peptide linkers, peptide mimetics, terminal additions, tag peptides, D-amino acids, sugars, non-amino acid organic moieties, and polymers. The ligases are suitable for use in ligation reactions, including uniform-temperature ligation reactions, performed at about 60 °C or higher, e.g., at about 75 °C. The ligases are suitable for use in nucleic acid amplification schemes with temperature cycling, e.g., temperature cycles to about 60 °C or higher, or temperature cycles from about 94 °C to about 60 °C. Such nucleic acid amplification schemes may include one, two, three, or more temperature cycles. Methods of using the ligases, and articles of manufacture comprising the ligases are provided.