



## A Nucleotide Element That Enhances Transcription from Bacterial Promoters

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a consensus sequence from the UP of *E. coli* that enhances transcription.**

### Overview

The main form of RNA polymerase in *E. coli* is  $E\sigma 70$ . One of the recognition elements within the promoter region for  $E\sigma 70$  is the UP element. This element is situated upstream of the RNA transcription start site and acts as a transcription enhancer by binding to the  $\alpha$  subunit of RNA polymerase.

### The Invention

UW-Madison researchers have obtained a series of 31 sequences for the UP element, each of which enhances transcription anywhere from 136- to 326-fold over the wild type sequence, and have derived a consensus sequence from these. The sequences were chosen based on how rapidly each bound to the bacterial RNA polymerase in a cell-free assay, assuming that the kinetics of the binding reaction determined sequence affinity for RNA polymerase.

### Applications

- These sequences could improve the study of polymerase activation in a variety of bacterial systems

### Key Benefits

- The C-terminal domain of the alpha subunit of RNA polymerase, which interacts with the UP element, is highly conserved across many bacterial species, allowing the consensus sequence to be widely applicable.
- The large number of enhancing sequences available provides for nucleotide preferences in a number of bacterial systems.
- May be combined with core promoter elements recognized by most eukaryotic bacterial RNA polymerases

### Additional Information

#### For More Information About the Inventors

- [Richard Gourse](#)

#### Tech Fields

- [Research Tools : Other research tools](#)

For current licensing status, please contact Jennifer Gottwald at [jennifer@warf.org](mailto:jennifer@warf.org) or 608-960-9854