transcription regulatory element of a target gene, and wherein the effector domain is a transcription modulator (*e.g.*, activator, suppressor).

47. The method of claim 46, wherein transcription of the target gene affects cell fate determination, cell differentiation, metabolic flux, or a biologically or biochemically determinable outcome.

48. A method of modulating transcription or epigenetic state, respectively, of a plurality of target genes in an isolated cell, the method comprising: introducing into the isolated cell the plurality of the vector of claim 24, a coding sequence for a dCas9 protein or a wt Cas9, respectively, and a coding sequence for one or more PUF domains, wherein each of said target genes comprises a target polynucleotide sequence that permits (1) the assembly, at the target polynucleotide sequence, of a tripartite complex of a polynucleotide encoded by one of said plurality of the vector, the dCas9 protein or the wt Cas9, and a PUF domain; and (2) transcription or epigenetic state modulation of the target gene comprising the target polynucleotide sequence.

49. The method of claim 48, wherein the transcription of at least one target gene is enhanced/stimulated, while the transcription of at least another target gene is inhibited.

50. A kit comprising:

(1) a polynucleotide of any one of claims 1-20, or a vector of any one of claims 21-23;

(2) a second vector encoding the Cas9 protein (*e.g.*, wt, nickase, or dCas9 protein); and

(3) a third vector encoding one or more PUF domains, each fused to an effector domain.

51. The kit of claim 50, further comprising transformation, transfection, or infection reagents to facilitate the introduction of said vectors into a cell.