1. Design Reporters unknown regulatory sites order oligo pool computationally design promoter variants GCTGGTATT... obtain sequence from database add primer pairs ACTGGAATT... ACGGGAATA... ACTTCAACT... 2. Library Cloning add random barcode add reporter gene integrate reporters into genome sequencing 3. Growth and Sequencing grow library in targeted sequencing on barcode mapping aDNA and RNA various growth conditions DOCUMENTO шишиши 4. Identify Binding Sites compute mutual information identify binding sites fit thermodynamic models for input/output functions information obtain information compute energy low mutual information high mutual information matrices footprint ATAG position in promoter mmramm ACAG ATTG mutation decreases expression

5. Identify Transcription Factors

mutation increases expression

in vitro binding assay

knockout strains

DNA chromotogrophy & mass spectrometry