Slide 1:

Good afternoon my name is Yaseen Arab I am a sinor undergrade at Baylor at today I will be presenting my project with dr.benton about building a bioinformatics web tool called GeneRegulate.

Slide 2:

So before we start take bout the tool let us give a background on what is the gene regulatory elements which is the main focuses of our tool

so first what is a gene regulatory element: it is a non-coding region that control the transcription of neighboring gene as they can turn them off or on and choose how much to be turn on beased on an external or internal signal.

Slide 3:

Now why are they important first: they can control the amount of exprition of every gene for example the can limit the use of a certun gene to make a sertun proten which will lead to a decrease in the amount produce of that proton.

Second: they are the reson why we have multible tissue is our human body, as we all know the dna is in every cell but what diffretion the use of that dna is these regulatory element and this is the man reson why we do not a hart tissue in our liver for example.

They are not only important for internal use but also they could be use for medical advative as using them we can make a personalized medicine that can go and enhance or stop the use of a sertun gene or even as a cancer treatment where we can use it to restor or kill the cancer cell.

Slide 4 :

now not all gene redulatory elements do the same jop as we. Have type and each type is responsple of some thing, like the most common type is enhancer : diffen it

and the other type that I find interesting my self is the silencer: diffen them.

slide 5:

with all these great uses of these elemest there are some challenges that come for studing them as first these elements can inflouns gene that are hundrudes of base pair a way and this can be super hard in identifying the land scap for each gene as you can not directly tell which enhancer is infulnsing which gene.

Now even if you could figure it out for one tissue you can not apply the same rule for all the tissue in the muilty cellular organis as each tissue have different landscap,

Lastly if you can solve all these issues you will end up with a huge load of data that will be almost impossible to proses.

Slide 6:

And here where GeneRegulate come in handy

Slide 7:

As first gene regulate is capapile of helping in the

Slide 8:

Slide 1:

Good afternoon, my name is Yaseen Arab, and I am a senior undergraduate student at Baylor University. Today, I am excited to present our collaborative project with Dr. Benton, where we built a bioinformatics web tool called GeneRegulate.

Slide 2:

Before delving into the details of our tool, let's provide some background on gene regulatory elements, which form the core focus of GeneRegulate. Gene regulatory elements are non-coding regions that control the transcription of neighboring genes. They can turn genes on or off and determine their level of expression based on internal or external signals.

Slide 3:

The significance of gene regulatory elements lies in their ability to control the expression levels of genes. For instance, they can limit the production of specific proteins, resulting in varying gene expression patterns across different tissues. This regulation is the reason why we have diverse tissues in our human body, each performing distinct functions. Furthermore, these elements hold promising potential for personalized medicine, where they can be utilized to enhance or suppress the expression of particular genes, making them crucial for medical advancements, such as cancer treatments.

Slide 4:

Not all gene regulatory elements serve the same purpose. They can be categorized into different types, with the most common type being enhancers, which increase gene expression. On the other hand, silencers are intriguing as they decrease or block gene expression.

Slide 5:

While gene regulatory elements offer great potential, they also present challenges in their study. For instance, they can influence genes located hundreds of base pairs away, making it challenging to identify which enhancer corresponds to which gene. Additionally, each tissue in a multicellular organism possesses a unique regulatory landscape, complicating the application of standardized rules. Furthermore, successfully tackling these challenges may lead to vast amounts of data that require complex processing.