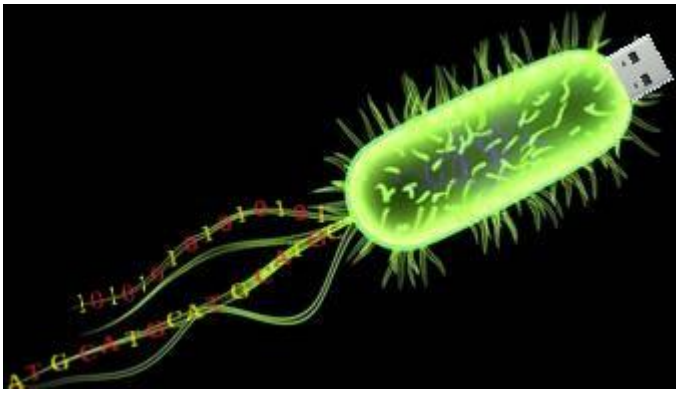
Laboratory of Natural Information Processing
DA-IICT Gandhinagar

User Manual



Bacteria Cloud : A Tool For Archival Data Storage

Bacteria Cloud : A Tool For Archival Data Storage

User Manual

Laboratory of Natural Information Processing
DA-IICT, Gandhinagar, Gujarat 382007
http://www.guptalab.org/bacteriacloud

Documentation version 1.0

Credits & Team

Principle Investigator: Dr. Manish K. Gupta
Graduate Mentor: Dixita Limbachiya
Developers: Amay Agrawal
Software Logo: Amay Agrawal

Acknowledgements

The author would like to thank Bruno Lowagie (http://itexpdf.com) whose free open source libraries have been used for generating bar codes and PDF. We thank GLYPHICONS free for providing us with icons. (http://glyphicons.com)

General Information

Introduction

Bacteria Cloud is a software that will be helpful to you for archiving data storage in bacteria. Using this software, you have to just import the text file which you want to archive and this automated software will do all the other works like Encoding Data, Cloning Data, Decloning Data and also Gel Electrophoresis simulation of the Experiment. Also, it allows to directly import the Encoded Data and it will correspondingly select MCS and Cloned Data into the bacterial plasmid.

Installing Bacteria Cloud

The software can be installed from the website **http://www.guptalab.org/bacteriacloud**

Getting Started

Once you have successfully installed the software, open Bacteria Cloud by double clicking on the application, you will be prompted with a welcome screen with different options on the menu bar.

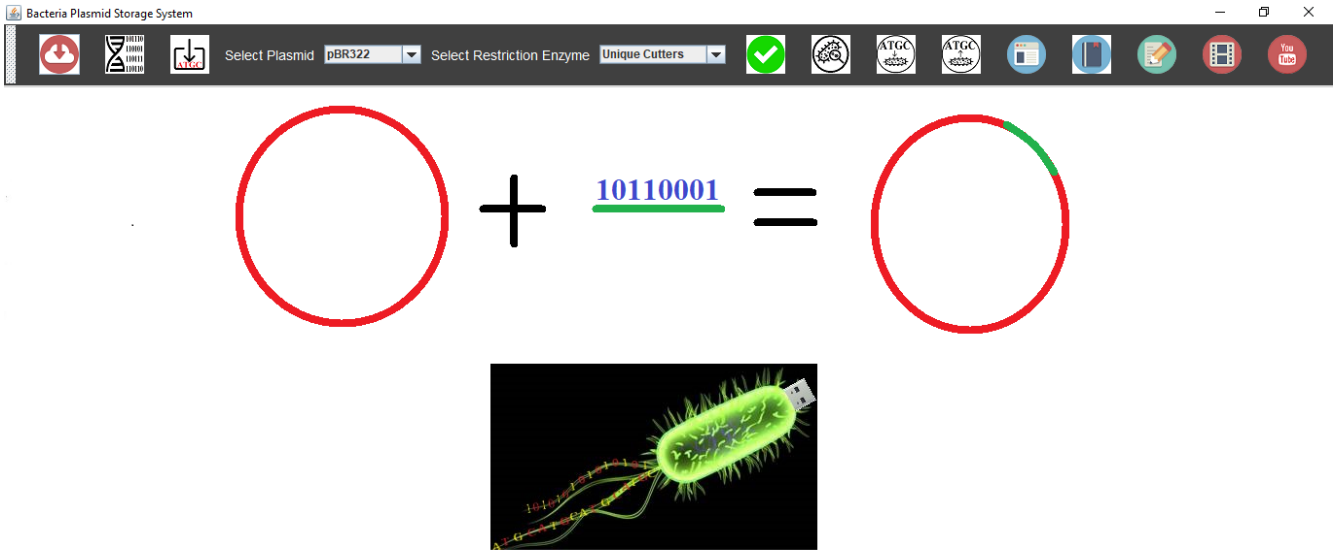


Figure 1: Bateria Cloud Welcome Screen

The main features that the software provides the user with and which are spanned across the menu bar are:-

- Importing text Data.
- Encoding text Data.
- Selecting "Plasmid" and "Restriction Enzyme Category".
- Display MCS and Restriction Enzymes.
- Clone Data.
- Declone Data.
- Import Encoded Data
- Social Media Options

Importing text Data

This option can be selected by clicking on the "Import text Data" button on the top left side of menubar which can be seen in figure below. After selecting the (.txt) extension file we can see that the data contained in the screen can be seen on the screen under the section "Imported Data from File". As an example here, my text file contained the text "Start-up India.Stand-up India."

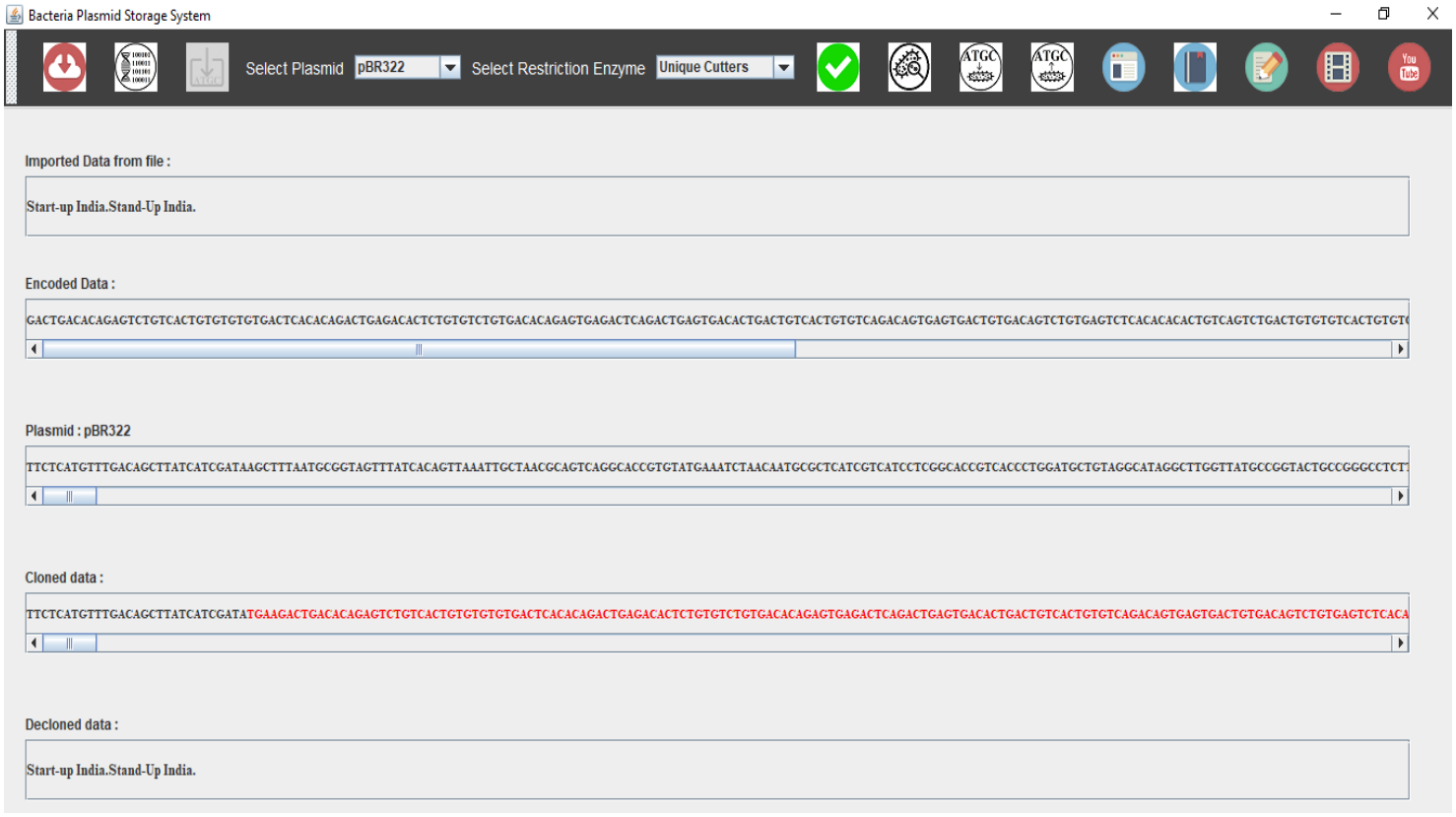


Figure 2: Importing text Data From File

Encoding Data

Using this option the text data imported before can be converted into the DNA Sequences. The DNA Sequences corresponding to the text data can be seen under the section “Encoded Data” in Figure 2. This encoded data can also be found in : Software_folder/Plasmid/encoded.txt.

Selecting Plasmid & Restriction Enzyme

As can be seen from above Figure 2 that after encoding, you have t select “Plasmid” and “Restriction Enzyme Category” which can be used for Cloning purposes. After selecting both just press the “OK” button and you can see the corresponding plasmid sequence under the section “Plasmid” as shown in Figure 2.

Display MCS & Restriction Enzyme

After selecting the plasmid & restriction enzyme, just click on “Display MCS & Restriction Enzyme” which will show you the various Restriction Enzymes available in the plasmid along with the Multiple Cloning Sites (MCS) as shown in the Figure 3. Along with this in Figure 4, you can see various elements like antibiotic resistance markers, gene, protein etc. present in plasmid.

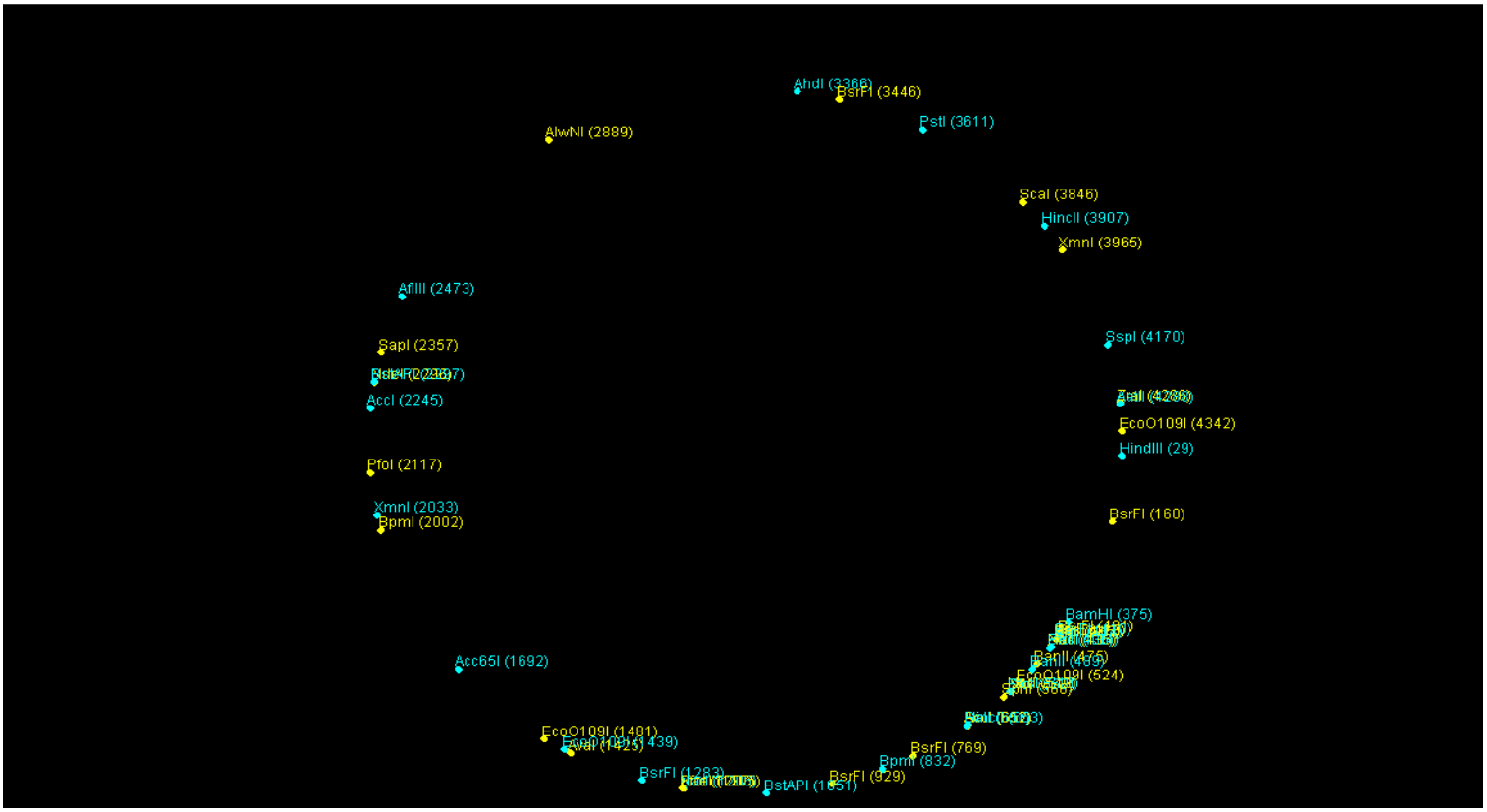


Figure 3 : Various Restriction Enzyme available in plasmid along with MCS

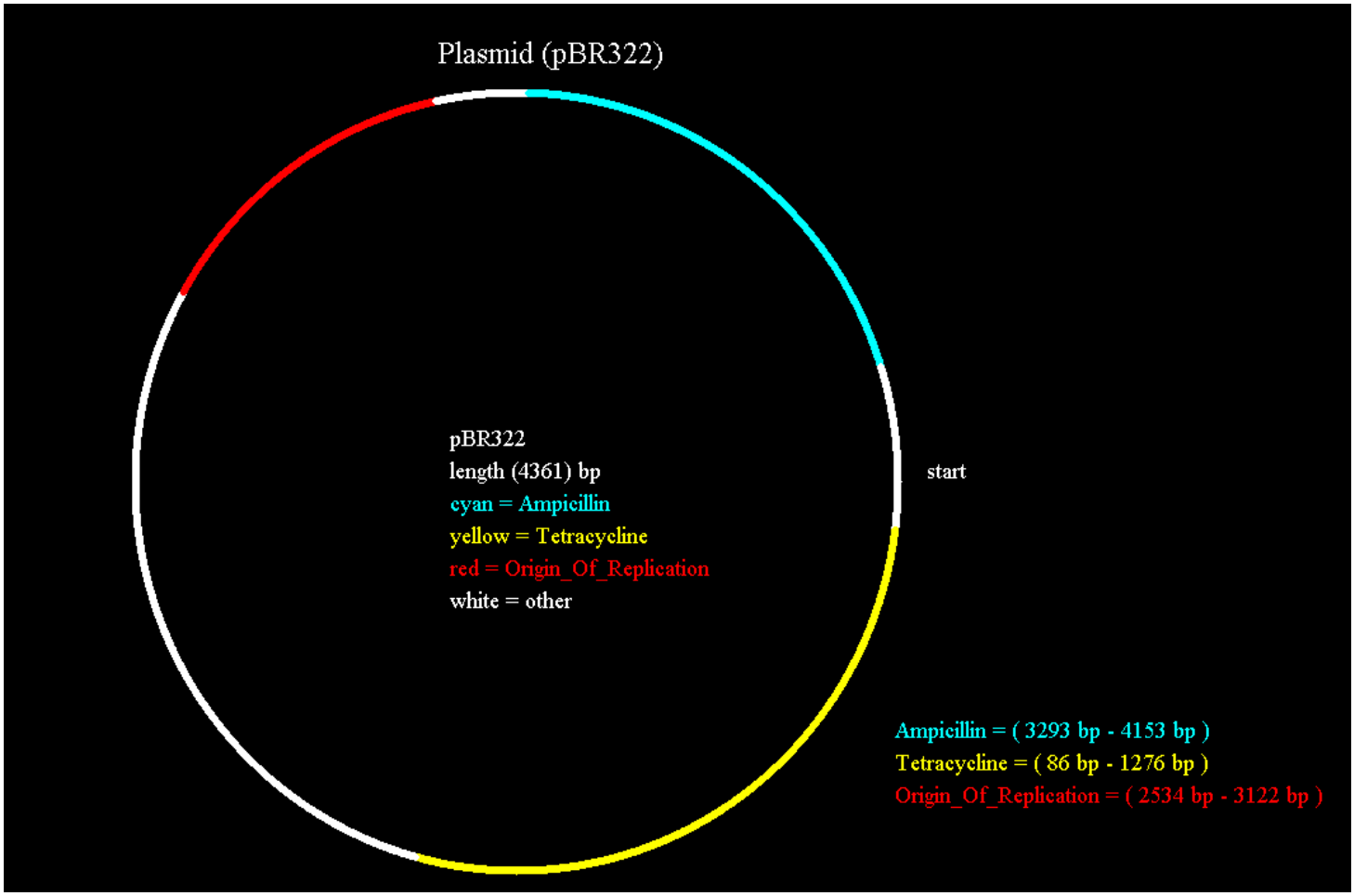


Figure 4 : Various elements like antibiotic resistance markers, gene, protein etc. Present in plasmid.

Clone Data

Now the data can be inserted into the plasmid by pressing “Clone Data”. It pop-up the window as shown in Figure 5, in which the highlighted text shows your data while the rest is plasmid. You can also see the plasmid simulation visually as shown in Figure 6, where in right side you can see various restriction enzyme chosen with their MCS. You can also view cloned data at : Software_folder/Plasmid/Cloned_data.txt.

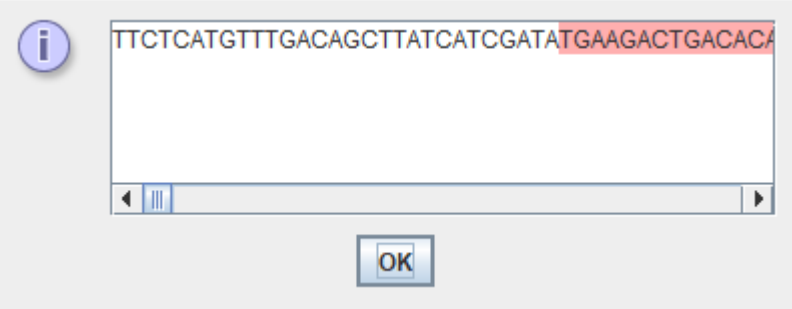


Figure 5 : Cloned Data, with data highlighted in pink represents original data

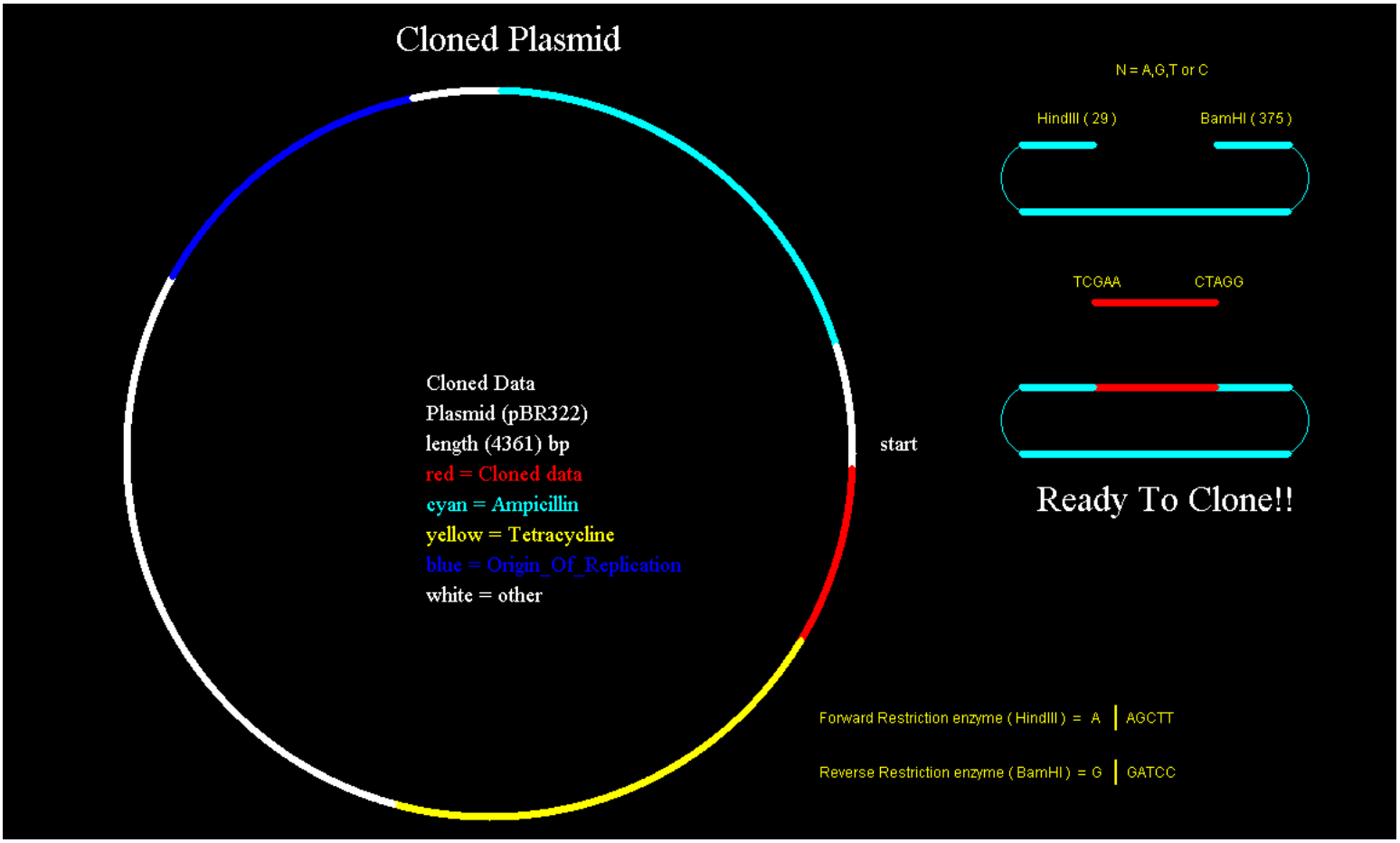


Figure 6 : Cloning explained visually here on right side. It shows the restriction enzymes selected along with MCS.

Declone Data

On pressing the "Declone Data" button, it will fetch the sequence back from plasmid, does some processing and decodes back to the original data as seen in the Figure 2 under the section "Decloned Data". Also you can find it at the following location : Software_folder/Plasmid/Decloned_data.txt. After this you can also see the "Gel Electrophoresis" simulation of the experiment as shown in Figure 7.

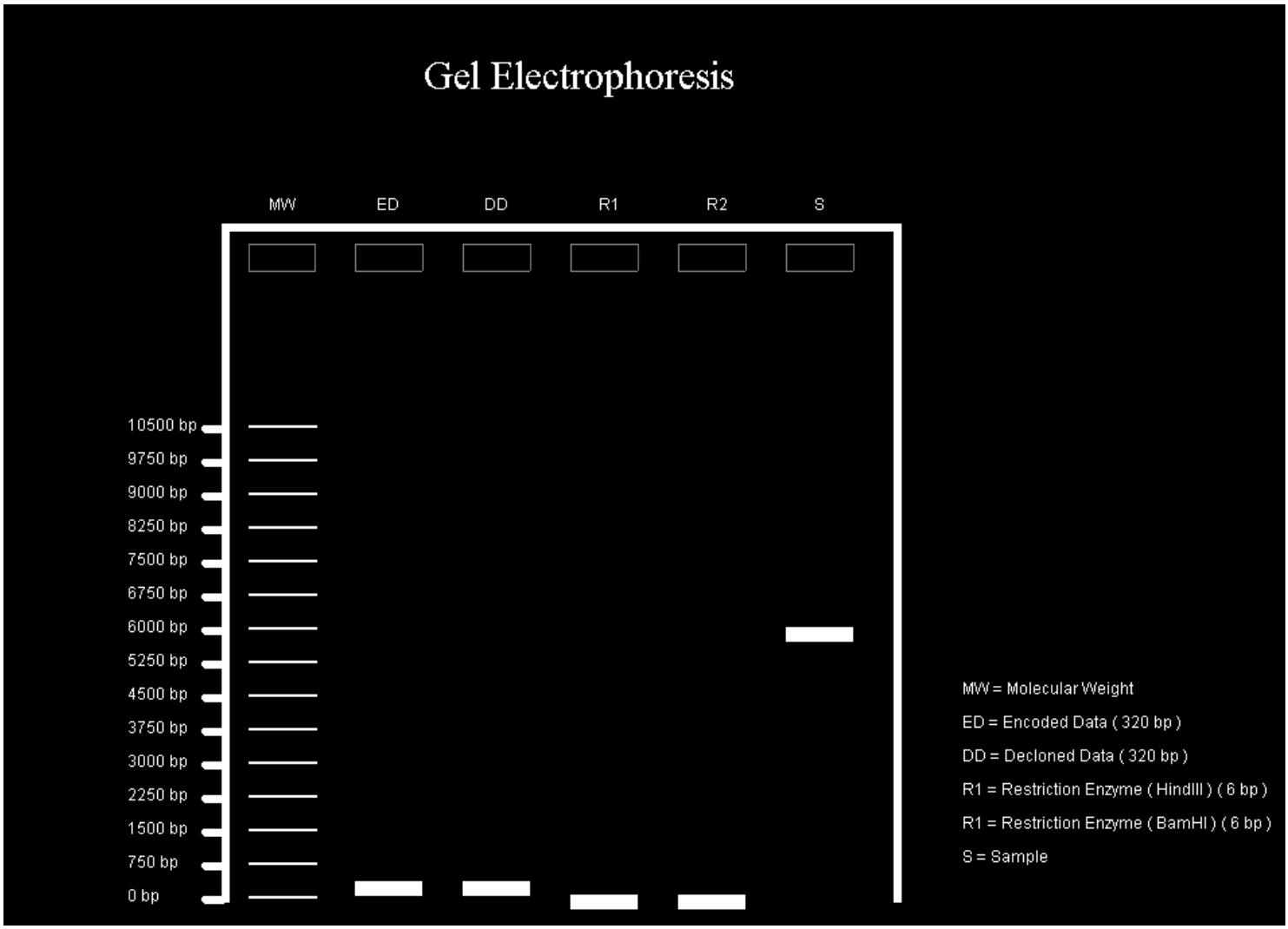


Figure 7 : Gel Electrophoresis simulation of the above experiment

Import Encoded Data

Using this option, instead of importing the text file, you can directly import the DNA Sequence File and after that all the operations can be done on it as above explained.

Support and Feedback

Users are requested to contact team at the feedback page on the website www.guptalab.org/bacteriacloud for any issue with the software. Only one platform specific installers (Windows) is available on the project home page .