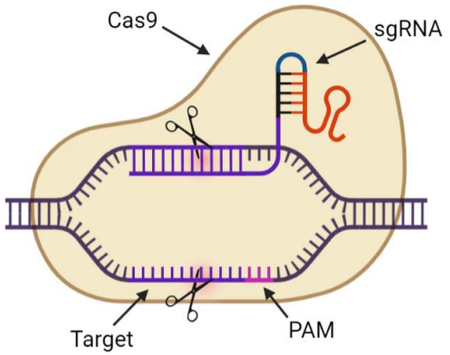
Identification of Novel Cas Proteins In Metagenomic Datasets of Microbiomes in Puerto Rican Ecosystems

RISE student: Gabriel Jiménez Pagán
RISE mentor: Dr. Carlos Ríos Velázquez
University of Puerto Rico – Mayagüez Campus

1. Significance



CRISPR/Cas9

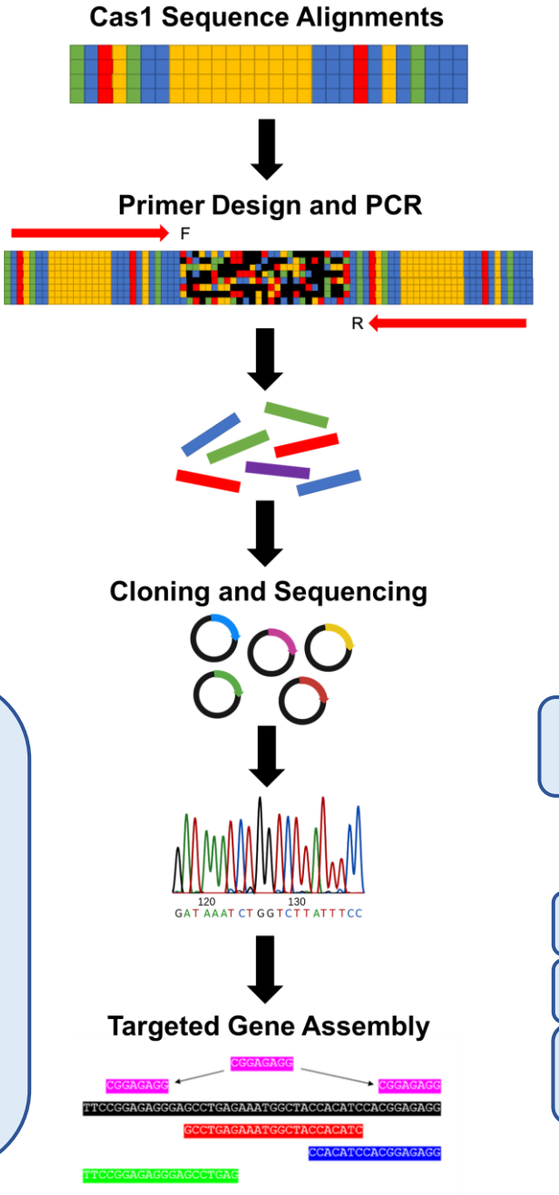
- Transcriptional activation and repression
- Epigenetic modifications
- Model neurological disorders
- Modify crops
- Many species and cell types

2. Innovation

- Simple procedure
- Local metagenomic libraries
- First Cas proteins isolated from Puerto Rican environments

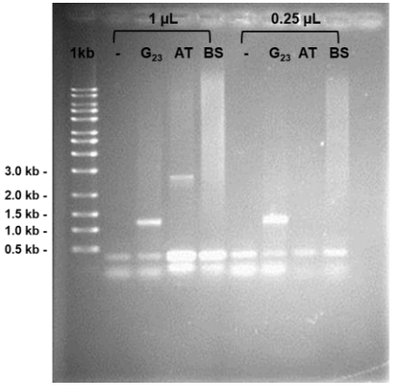
3. Approach

Hypothesis: If only 1% of microbes can be cultivated in lab conditions, then many new CRISPR-Cas systems can be found using methods independent of cultivation.



4. Results

- MSA
- Primer design
- PCR



5. Conclusions

- Successful procedure
- Amplifications could be new CRISPR-Cas systems

6. Future

- TA Cloning and Sequencing
- Targeted Gene Assembly
- Protein expression and purification