CONTENTS

INTRODUCTION

BACKGROUND

TryTryp Genomes

tRNA identity classifier

SPECIFIC AIMS

tRNA identity classifier

1. Predict and annotate tRNA gene models from TriTryp genomes available on? TriTrypdb, a kinetoplastid genome database.
2. Create a tRNA identity classifier based on Bayesian Networks that accepts phylogenetically structured data as input and outputs posterior probabilities of functional identities for query tRNA sequences.
3. Investigate anticodon shift/functional conversion events in tRNA genes of TryTrypDB, fly, yeast, worm, etc.

reconstructing ancestral rearrangements of tRNA gene clusters in eukaryotic genomes

Develop algorithm(s) to reconstruct ancestral rearrangements of tRNA gene clusters in eukaryotic genomes, including functional conversions and genic sequence conversion events, and apply these to the above-named eukaryotic datasets to discover functionally converting genes in these datasets and predict boundaries of gene conversion events occurring in them. (I need to share with you the manuscript from Julie's thesis on what we discovered in Drosophila, for you to fully see the significance of this proposed project).

Developing a machine learning framework to model the evolution of tRNA genes on an input phylogenetic tree

Develop a machine learning framework to model the evolution of (either or both: consensus structure, structure-function map) tRNA genes on an input phylogenetic tree, and use this framework to improve alignment and gene-finding of evolutionarily diverse tRNA gene-sets.

APPROACH

tRNA identity classifier

WORK TO DATE

tRNA identity classifier

TIMELINE AND MILESTONES

FEASIBILITY AND POTENTIAL PITFALLS

SIGNIFICANCE

tRNA identity classifier