

Jonathan Kuhn

- can't know evolutionary history
- so inferences are only guesses

DOUBLE DATA BASE

- lab & nature

MECHANISM OF EVOLUTION

MUTATION

RECOMBINATION

SELECTION

- cost of selection

- genetic load

ISOLATION

- genetic drift (

SPECIES-CONCEPT

- does it apply to bacteria

AMINO ACIDS

ESSENTIAL

- when changed no/virtually no activity

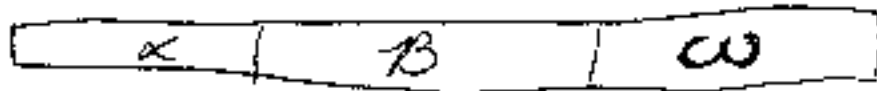
SEMI-ESSENTIAL

- any changes possible

NON-ESSENTIAL

IN LAB

B-gal



1021 aa. total

- $\alpha$  complementation -

- can complement B-gal mutants w/ small piece of  $\alpha$

- cassette mutagenesis

Extract from wild strains

NO AA VARIABILITY  
- BUT NO ONE EITHER

Two possibilities

① aa constrained

② recent divergence

- periodic selection (w/ recombination)

Comments

③ recombination

④ selection is also at DNA level

- 2.9 promoters/operators (CNA)

- 0.5 RNA

- 2ary structure

(but would expect compensatory changes)

- codon bias

(isnt doesn't think likely)

what about other species?