

REPO

CONTINGENCY.
ENTRENCHMENT. }

ENUMERATE UPHILL TRAS: 5! FORWARD
19 ALLOWED.

X NOW

THE
SER SPACE METAPHOR DIRECTLY TO EVOLUTION VS. BIOCHEM

IS EVOLUTION CONTINGENT ON CHANCE EVENTS?

REWIND TAPE...

DOES DISTRIBUTION OF FUNCTION IN SEQUENCE SPACE LEAD US TO
EXPECT CHANCE EVENTS?

EPISTASIS.

SEE INTUITIVELY PERMISSIVE → EPISTASIS.



SEEN BEFORE...

WHAT IF WE EXPAND SEQUENCE SPACE? → MORE POSSIBLE PATHS → MORE
POSSIBLE OUTCOMES.

EPISTASIS COULD (IN THEORY, KEEP GOING)

WHAT IS NATURE OF HIGH ORDER EPISTASIS? THIS COULD MEAN A MUTATION
WOULD "KNOW" IF IT WAS FIRST, SECOND, OR THIRD...

PEOPLE HAVE HINTED, BUT ANALYSIS REMAINS ANECDOTAL

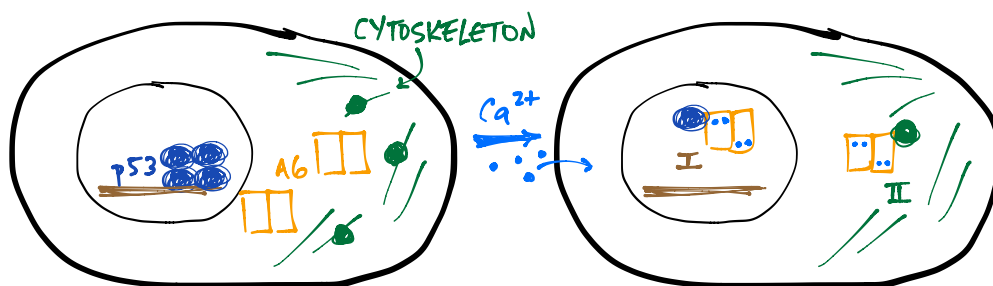
DOES HUE EXIST?

DOES IT MATTER?

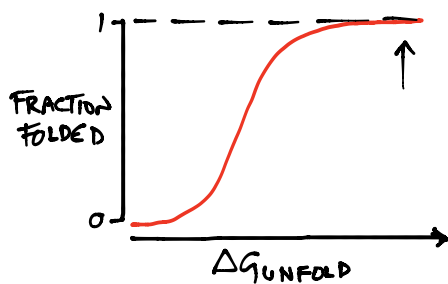
WHERE DOES IT COME FROM?

CONCL:

→ UBIQUITOUS



I: PROMOTES CELL DIVISION (p53)
 II: PROMOTES CELL MOTILITY (Hsp, CAP, SIP, ANNEXINS)



$$f_x = \frac{e^{-\Delta G/RT}}{1 + e^{-\Delta G/RT}}$$

