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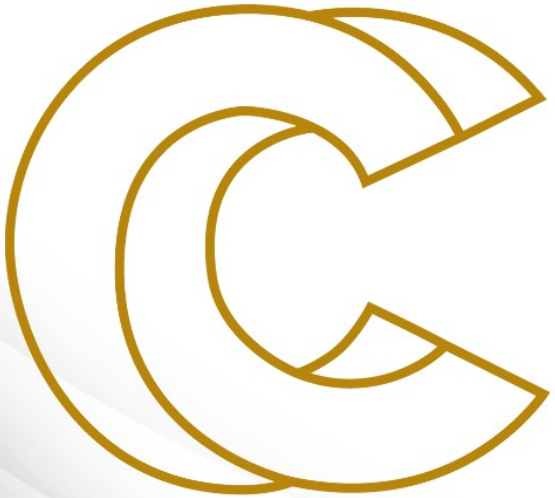
TÜBİTAK



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Generating Mutant Protein Structures Using Advanced Techniques

Tandac Furkan Guclu
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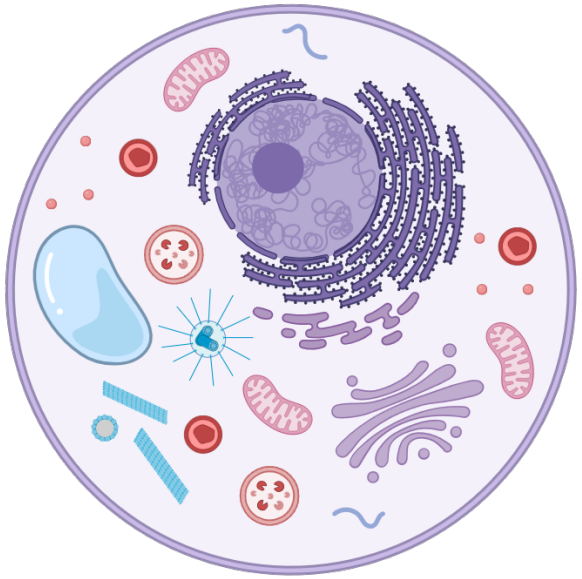
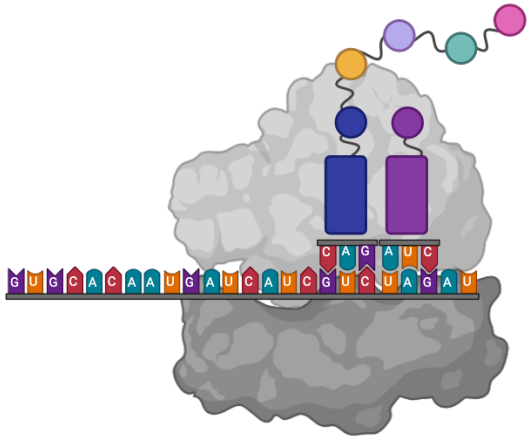
Proteins?



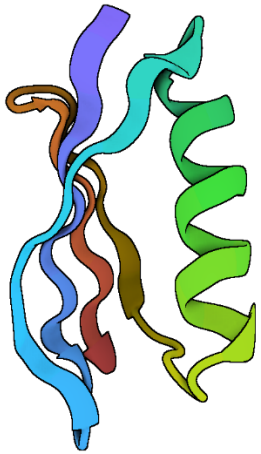
Cell

DNA

RNA



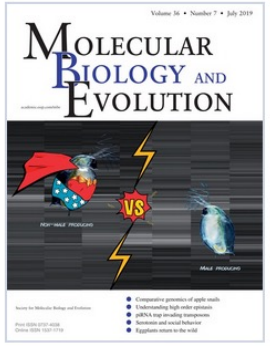
Protein
(Translation)



Protein
(Structure)

Antibotic Resistance

MOLECULAR BIOLOGY AND EVOLUTION



Volume 36, Issue 7
July 2019

Article Contents

JOURNAL ARTICLE

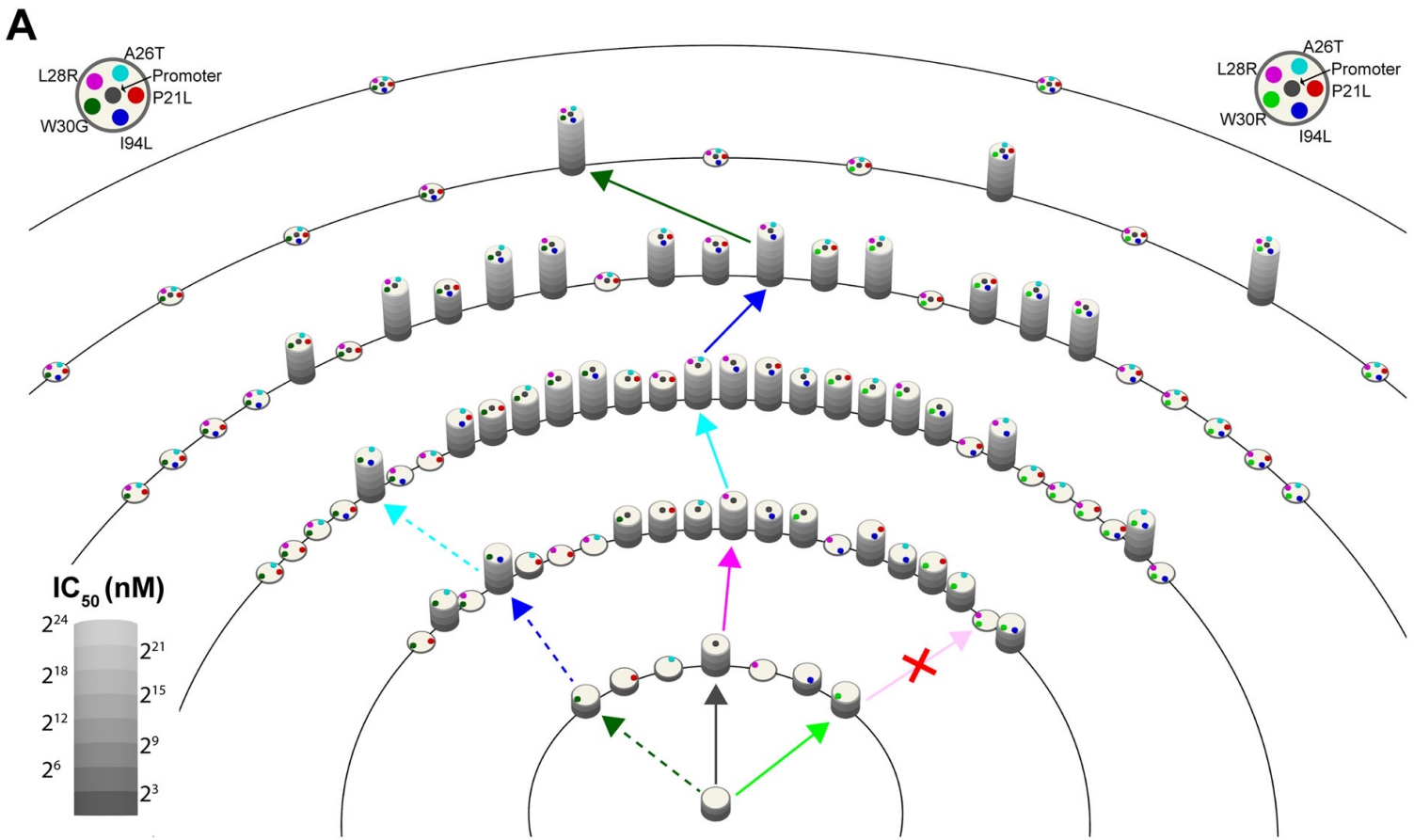
High-Order Epistasis in Catalytic Power of Dihydrofolate Reductase Gives Rise to a Rugged Fitness Landscape in the Presence of Trimethoprim Selection

Yusuf Talha Tamer, Ilona K Gaszek, Haleh Abdizadeh, Tugce Altinusak Batur, Kimberly A Reynolds, Ali Rana Atilgan, Canan Atilgan, Erdal Toprak ✉

Molecular Biology and Evolution, Volume 36, Issue 7, July 2019, Pages 1533–1550, https://doi.org/10.1093/molbev/msz086

Published: 15 April 2019

Antibotic Resistance



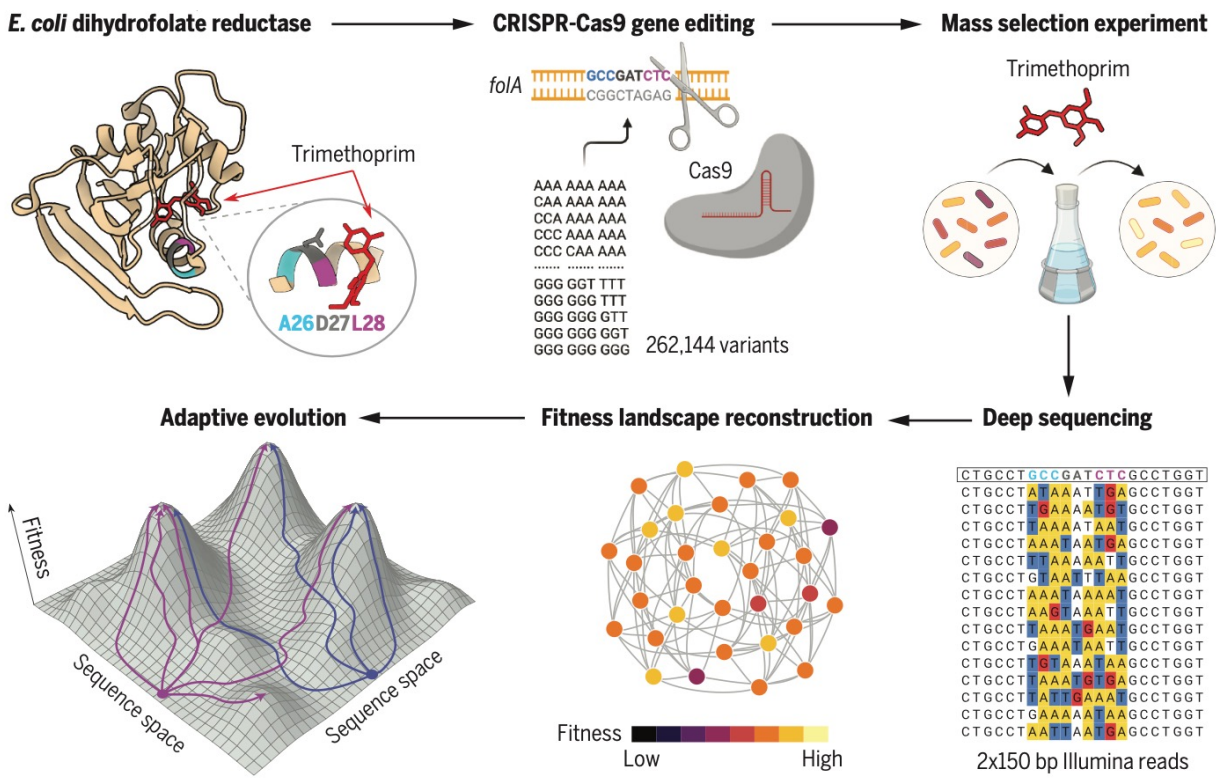
https://doi.org/10.1093/molbev/msz086

Fitness Landscape

EVOLUTIONARY BIOLOGY

A rugged yet easily navigable fitness landscape

Andrei Papkou, Lucia Garcia-Pastor, José Antonio Escudero, Andreas Wagner*



Empirical fitness landscape of dihydrofolate reductase. We edited the *E. coli* genome to create a fitness landscape of all 64^3 codons encoding three consecutive amino acids (A, Ala; D, Asp; L, Leu) of the protein dihydrofolate reductase. We measured the fitness of each genotype in this landscape in the presence of the antibiotic trimethoprim using a mass selection experiment and deep sequencing. Even though the landscape is highly rugged, adaptive evolution can find the highest peaks from most starting locations via short and abundant fitness-increasing paths. [Created with BioRender.com]

https://doi.org/10.1126/science.adh3860

Deep Mutational Scanning

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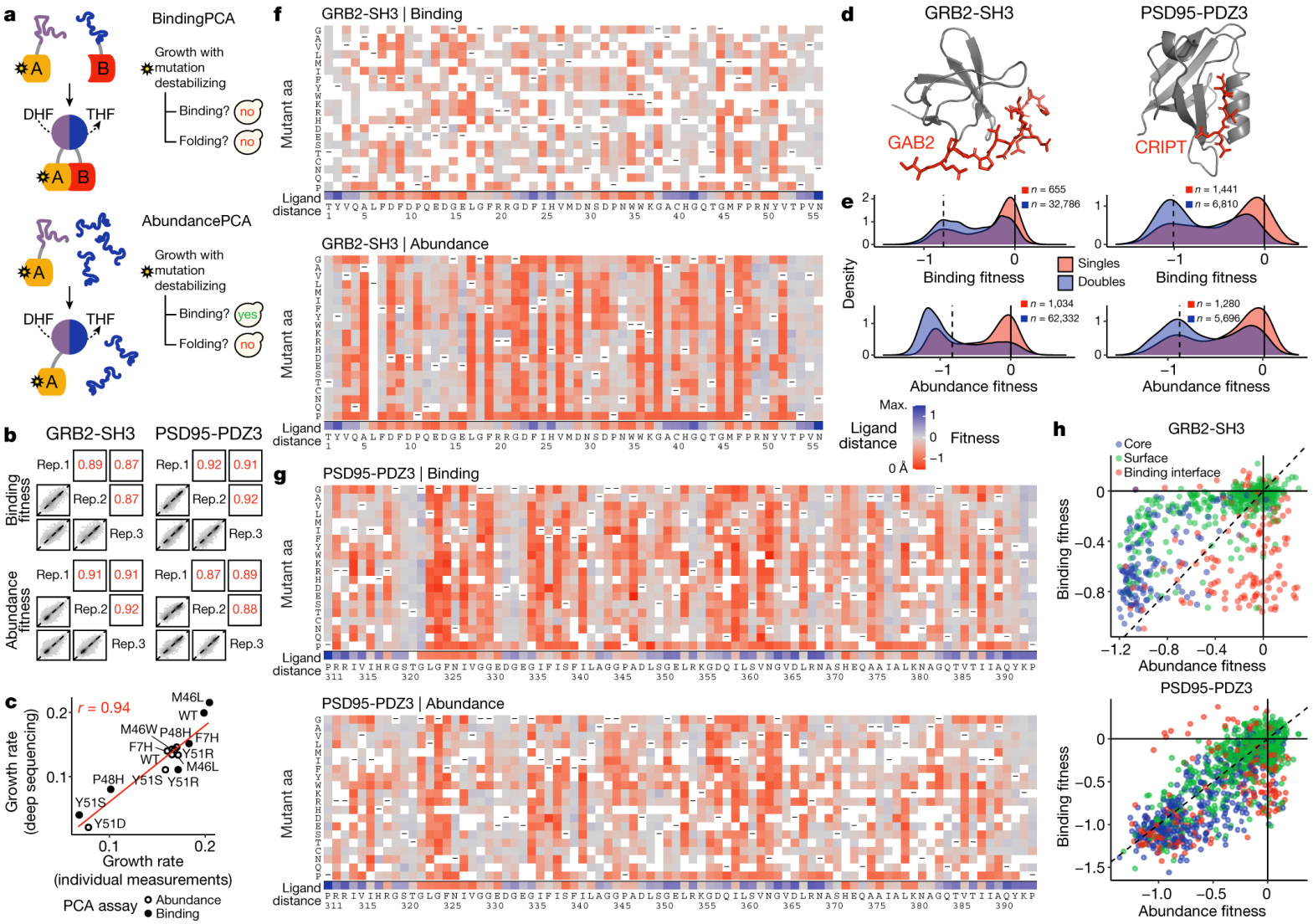
Article | Published: 06 April 2022

Mapping the energetic and allosteric landscapes of protein binding domains

Andre J. Faure, Júlia Domingo, Jörn M. Schmiedel, Cristina Hidalgo-Carcedo, Guillaume Diss & Ben Lehner ✉

Nature **604**, 175–183 (2022) | Cite this article

Deep Mutational Scanning



https://www.nature.com/articles/s41586-022-04586-4

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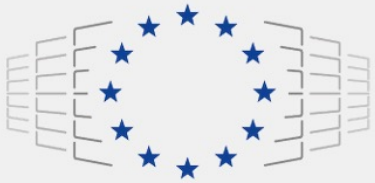
Thanks!

Co-funded by
the European Union



EuroHPC
Joint Undertaking

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