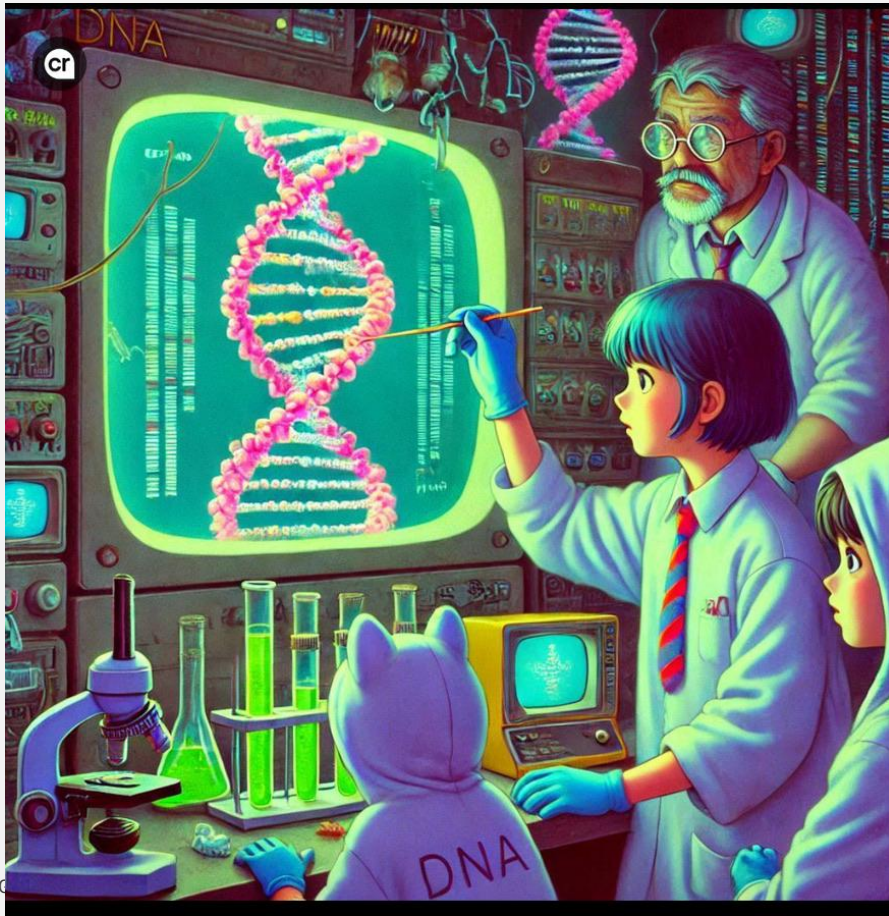


REVERT: for today and in the future....



Mir-193 mutant (top) and wild-type *Bicyclus anynana* butterflies

By Giuseppe Novelli

Sickness & Therapies

Health Outcome Variation

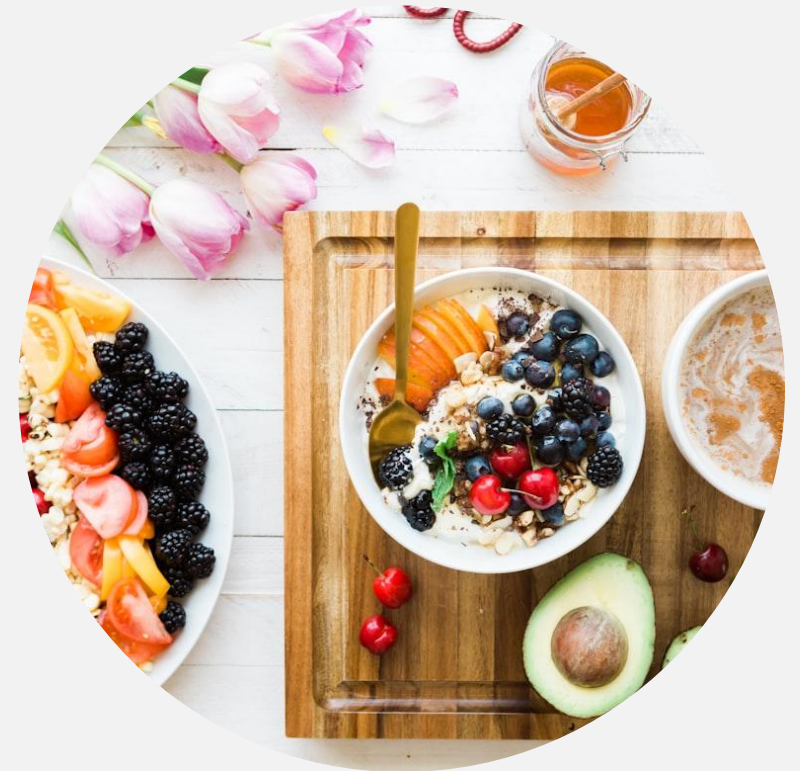
Various factors contribute to why some individuals become sick while others remain healthy, including genetic predispositions and environmental influences.

Therapy Responsiveness

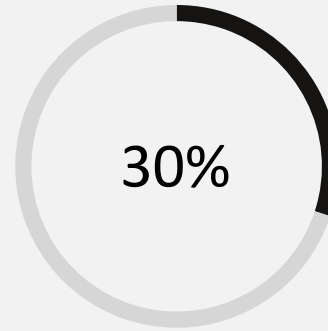
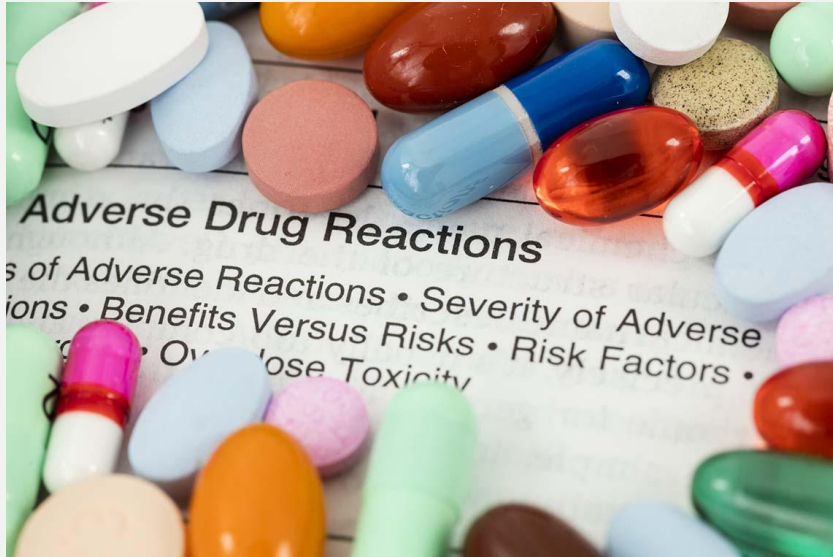
Not all therapies are equally effective. Genetic variations play a crucial role in determining why some patients respond positively while others do not.

Adverse Drug Reactions

Patient-specific factors, including genetics and history, can lead to adverse drug reactions, underlining the necessity for personalized treatment approaches.

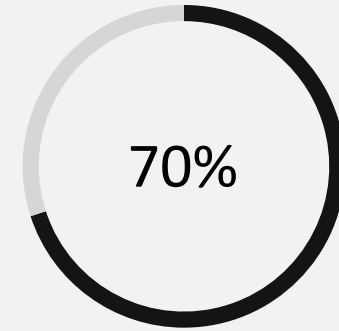


ADE Pharmacogenomics Impact



Genetic Guidance

Using pharmacogenomics to guide therapy can reduce the incidence of adverse events significantly.



Without Genetic Guidance

In the absence of genetic information, a majority remain at risk of adverse drug reactions.

Genomic Discoveries

FDA-approved Biomarkers

Currently, over 350 therapeutics include information related to specific pharmacogenetic biomarkers impacting treatment success.

Pharmacogenetic Variants

Research has identified over 70,000 distinct single nucleotide variants (SNVs) that affect drug metabolism and effectiveness.

Structural Variations

More than 200 structural variations (SVs) associated with pharmacogenes highlight the complexity of drug response among individuals.

Emerging Concepts

This table summarizes emerging categories in genomics that are reshaping our understanding of drug responses and genetic diversity.

Category	Description	Impact
Rare Alleles	Unique genetic variants	Can significantly affect treatment responses.
Noncoding RNAs	RNA molecules that do not code for proteins	May play crucial roles in gene regulation.
Dark Proteome	Uncharacterized proteins produced by non-canonical genes	Potentially vital for understanding disease mechanisms.

Importance of miniProteins

Non-canonical ORFs

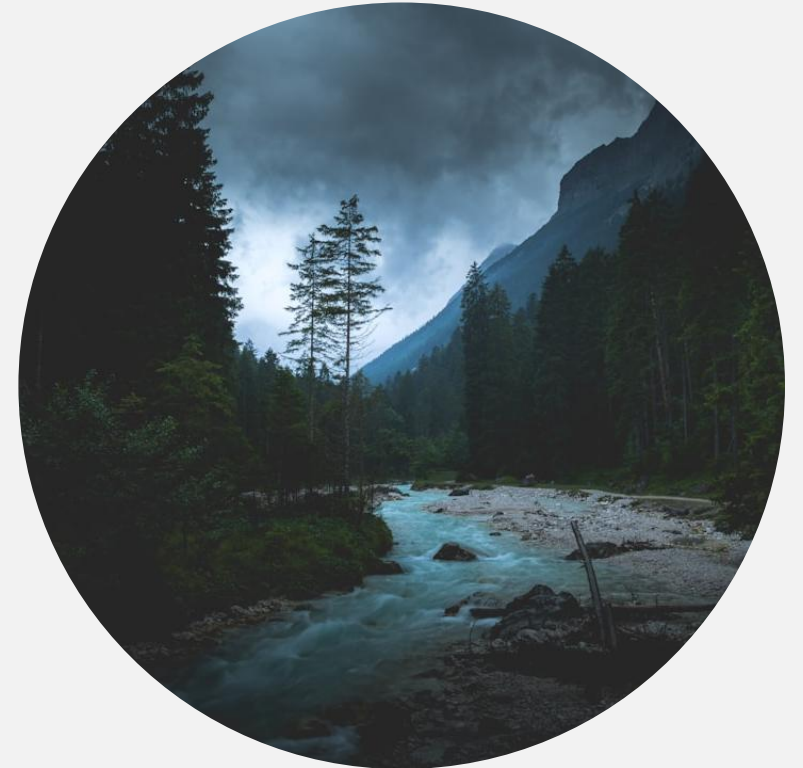
Recent research identified 7264 non-canonical open reading frames (ORFs) that may code for novel miniProteins.

Protein Production

About 25% of identified ORFs were found to produce proteins, indicating an underexplored aspect of the genome.

Impact on Medicine

Understanding miniProteins could advance our knowledge of human biology and lead to breakthroughs in disease treatment.



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“We are truly live in two worlds: one of discovery and wonder and the other of division”

Holden Thorp, Science, 2023

