# Article information:

Systematic evaluation of horizontal gene transfer between eukaryotes and viruses | Nature Microbiology  
<https://www.nature.com/articles/s41564-021-01026-3>

# Article summary:

1. Horizontal gene transfer (HGT) between viruses and eukaryotes is a key evolutionary driver that facilitates host manipulation and viral resistance. Host-derived genes are used by viruses for replication and cellular control, while viral-derived genes can supplement or supplant existing cellular components, providing novel functionality.

2. The lack of a systematic survey has hindered our understanding of the mode, tempo, and functional importance of viral-eukaryotic gene exchange. To address this gap, researchers developed a phylogenetic pipeline capable of screening thousands of evolutionary trees for HGT-indicative topologies while accounting for phylogenetic statistics and contamination.

3. The analysis identified 1,333 candidate virus-to-eukaryote transfers, 4,807 eukaryote-to-virus transfers, and 600 transfers with unknown directionality affecting 2,841 distinct protein families. These figures represent a conservative estimate of HGT events due to limitations in taxon sampling and homology detection.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

作为一篇科学研究论文，该文章提供了系统评估病毒和真核生物之间水平基因转移的结果。然而，在对其进行批判性分析时，我们可以注意到以下几个问题：

1. 偏见来源：文章中存在一些偏见，例如将病毒描述为“能够促进宿主操纵和病毒抵抗”的演化驱动力量。这种描述可能会让人们认为病毒是有意识地选择宿主来进行基因转移，而实际上这只是一个自然的过程。

2. 片面报道：文章中重点关注了从宿主到病毒的基因转移，但却没有探讨从病毒到宿主的情况。这种片面报道可能会导致读者对基因转移的整体情况产生误解。

3. 缺失考虑点：文章没有考虑到基因转移可能会带来的风险和负面影响。例如，某些病毒可能会通过基因转移获得更强的免疫逃避能力或更有效地感染宿主细胞，从而导致更严重的传染病爆发。

4. 主张缺失证据：文章中提出了一些关于基因转移对演化、生态和健康影响的主张，但并未提供足够的证据来支持这些主张。这可能会使读者对这些结论产生怀疑。

5. 未探索反驳：文章中没有探讨其他学者对该领域相关问题提出的反驳观点。这种做法可能会使读者认为该领域已经达成共识，而实际上仍存在争议和不确定性。

6. 宣传内容：尽管该文章是一篇科学论文，但其中也包含了一些宣传内容。例如，在介绍中就强调了“水平基因转移是一个关键的演化驱动力量”，并将其描述为“重要”的演化、生态和健康影响。这种语言可能会使读者认为该领域已经被广泛接受，并忽略了其他观点和证据。

7. 偏袒：在介绍中，作者使用了“host-derived genes”（宿主源基因）和“viral-derived genes”（病毒源基因）两个术语来区分不同来源的基因。然而，在实际操作中很难确定一个特定基因是来自宿主还是来自病毒，并且有时候一个基因可能同时具有两种来源。由于作者使用了这样的术语区分不同来源的基因，可能会导致读者认为其中存在着偏袒或歧视。

总之，在阅读科学论文时需要保持批判性思维，并注意到其中存在着各种潜在问题和限制条件。

# Topics for further research:

* Unconscious process of viral selection
* Lack of exploration of gene transfer from virus to host
* Potential risks and negative impacts of gene transfer
* Insufficient evidence to support claims
* Failure to address opposing viewpoints
* Promotion of a single perspective

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