

Illustration of LLM prompt and output

Prompt:

Summarize whether bacterial gene K03712 is associated with amikacin. If no relationship is found, say "no direct relationship to resistance"; if there is a direct relationship, say "has direct relationship to resistance"; otherwise, estimate a probability, and append it to "has probable relationship to resistance with probability"

Gemini

Output:

KEGG orthology K03712 corresponds to the *marR* gene, which encodes a MarR family transcriptional regulator, also known as multiple antibiotic resistance protein MarR. Here's how MarR impacts antibiotic resistance:

Transcriptional Regulation:

MarR family proteins are transcriptional regulators. They typically act as repressors, meaning they bind to DNA and prevent the expression of certain genes.

Multiple Antibiotic Resistance:

MarR is associated with multiple antibiotic resistance.

It regulates the expression of genes involved in resistance to multiple antibiotics.

Efflux Pumps:

MarR can regulate multidrug efflux pumps, such as MexAB-OprM. These pumps actively transport antibiotics out of the bacterial cell, reducing their intracellular concentration and conferring resistance.



Prompt:

Based on the evidence provided, classify the relationship between the gene and antibiotic resistance using one of the following categories:

- "Strong evidence of resistance": Clear, unambiguous statements linking the gene to increased resistance.
- "Moderate evidence of resistance": Some indication of an association, but with qualifiers or limited detail.
- "Weak evidence of resistance": Hinted or ambiguous association without strong supporting data.
- "No direct evidence": No conclusive link is provided.
- "Evidence against resistance": Clear statements indicating the gene does not contribute to resistance or is linked to susceptibility.

Deepseek

Output:

Moderate evidence of resistance : While the *marR* gene (K03712) regulates multi rug eff lux pumps that can affect amikacin resistance, the direct link is not explicitly stated .