

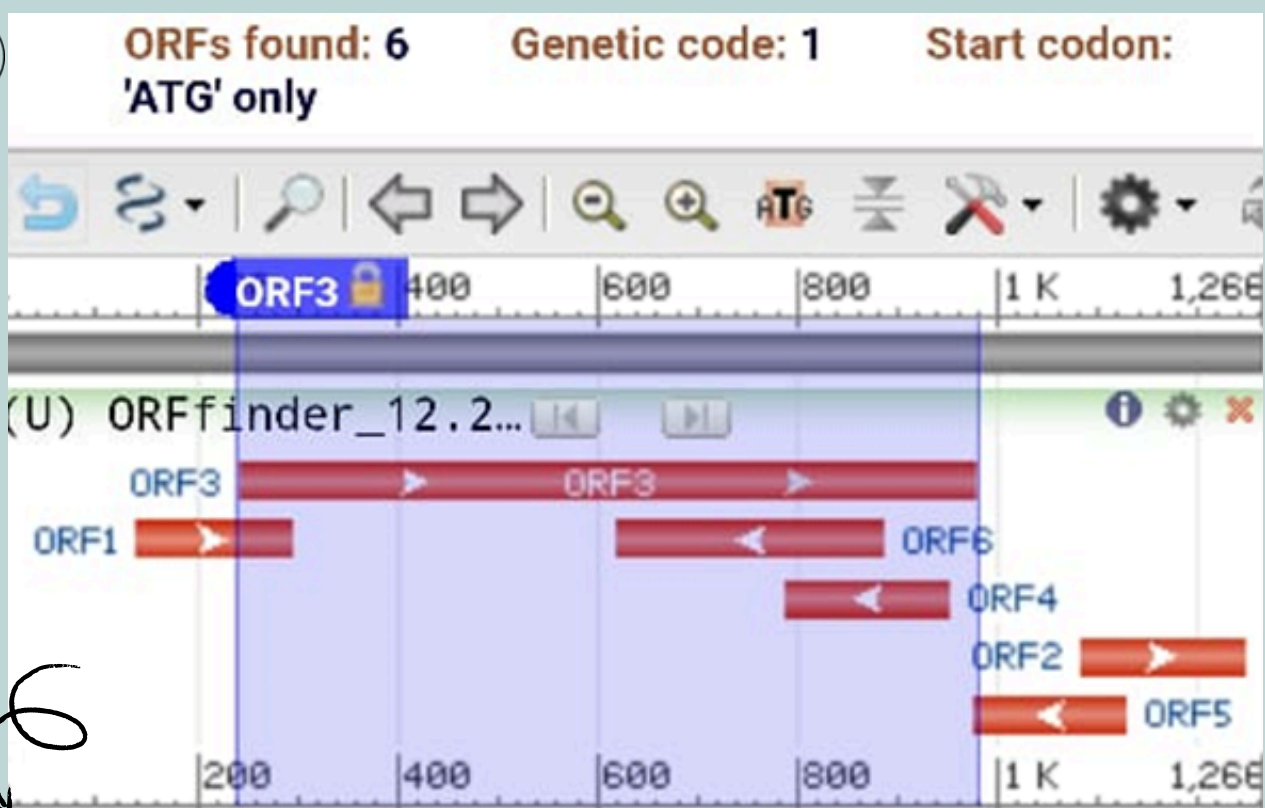
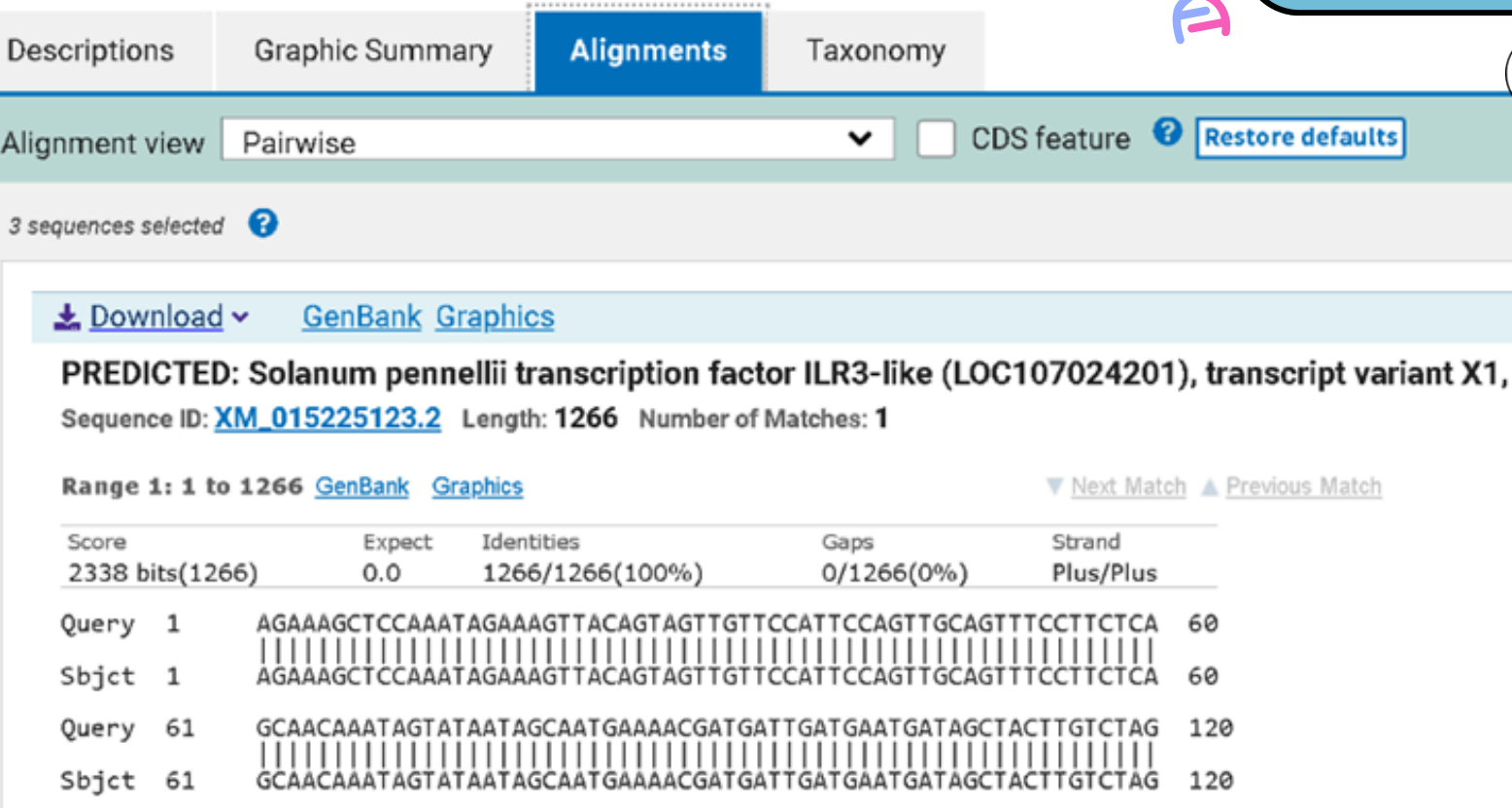
Computational Analysis of Unknown DNA Sequences Using Integrated Bioinformatics Tools

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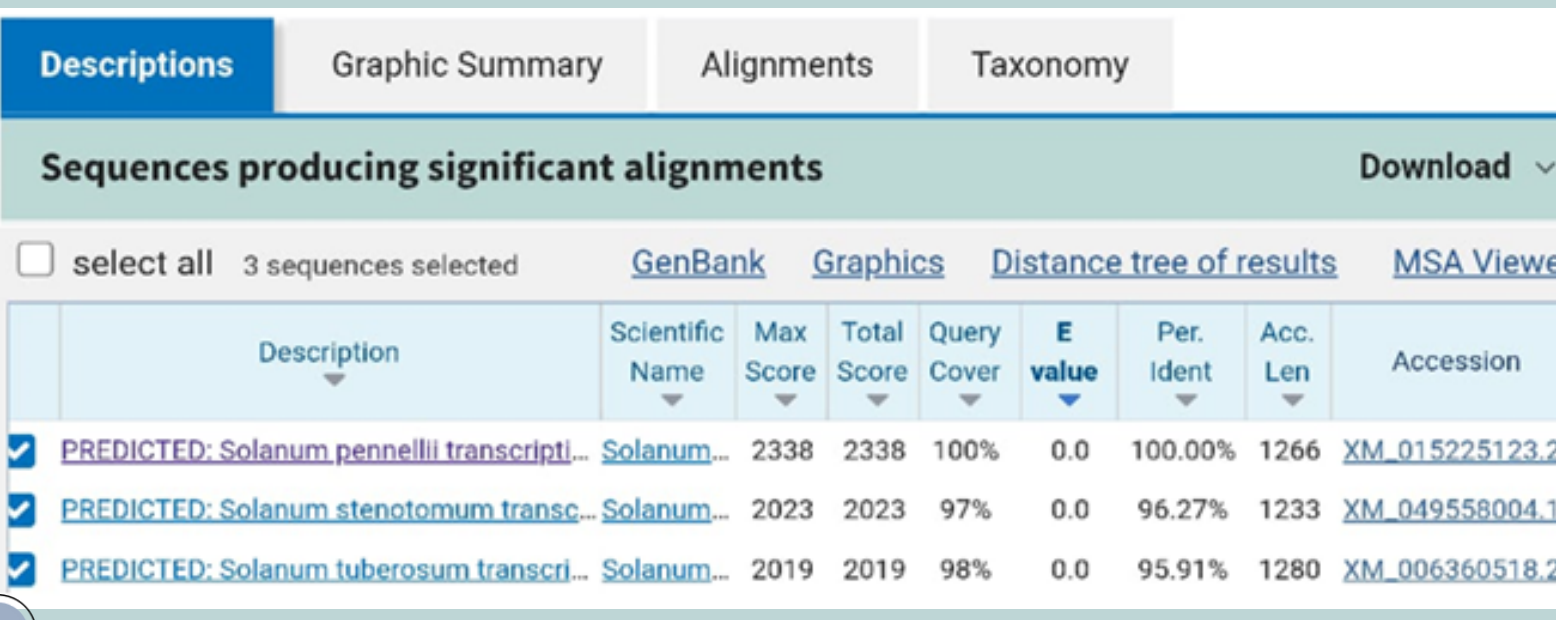
NCBI BLASTn alignment

DNA ANALYSIS

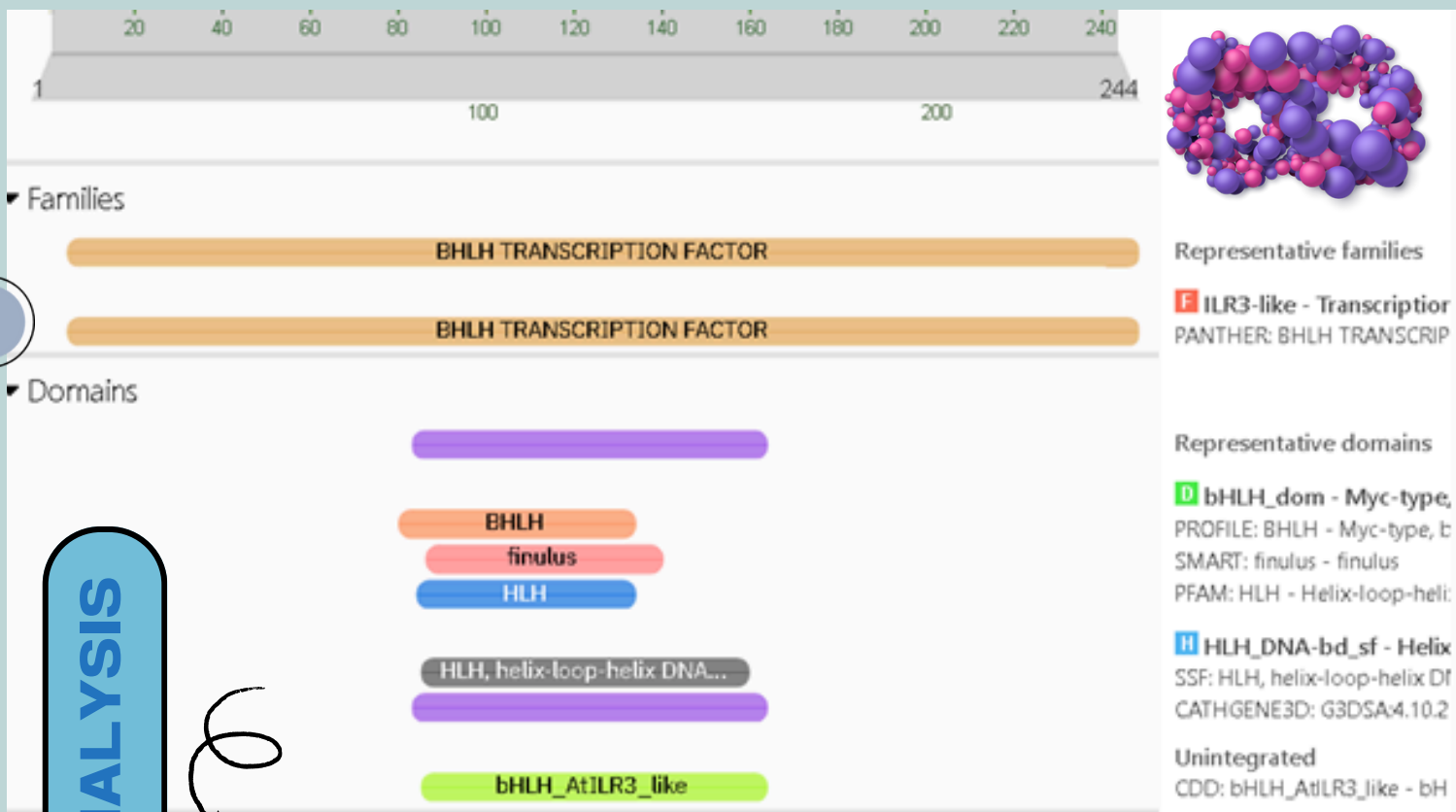
ORF map



Among 6 identified ORFs, ORF3 located on the forward strand (+3 frame) was the longest, spanning 735 nucleotides and encoding a 244 amino acid protein, so was selected as the most likely coding region. It contained a canonical start codon (ATG) and a valid stop codon with no internal interruptions.



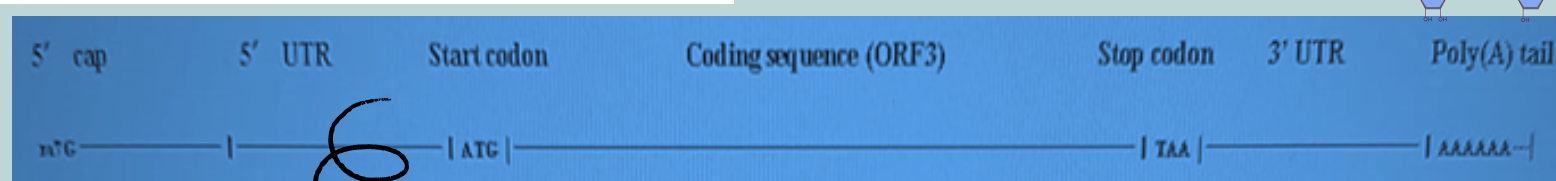
Domain Architecture



RNA Fold Image

- RNA is thermodynamically stable, but is structurally heterogeneous
- Collective contribution of multiple alternative conformations determines stability
- Biologically important for RNA function, interactions, or regulation.

RNA ANALYSIS



Annotated mRNA drawing

SUBCELLULAR LOCALIZATION PREDICTION

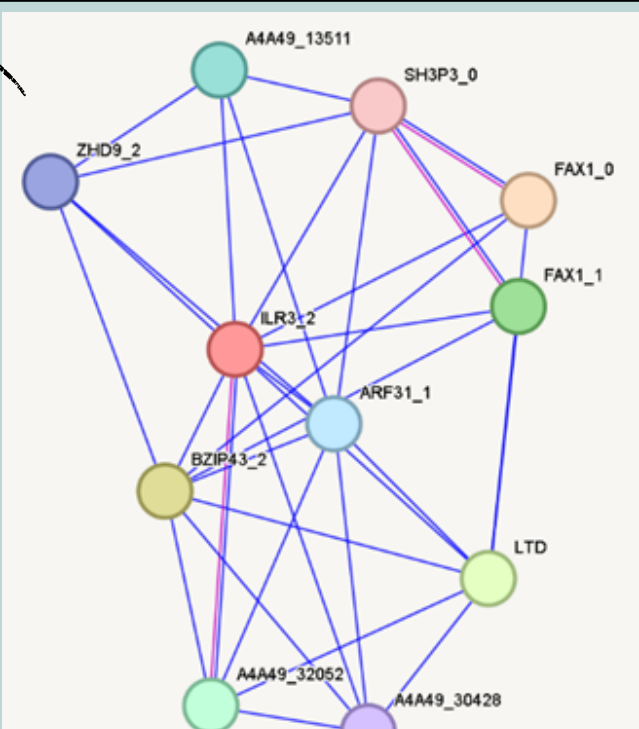
prediction for 176666846422687 is nuc (k=23)

Protein type	Other	Signal peptide	Mitochondrial transfer peptide
Likelihood	1	0	0

- Predicted Localization to nucleus (PSORT)
- absence of targeting peptides (TargetP), and
- the presence of a bHLH transcription factor domain

STRING PROTEIN-PROTEIN INTERACTION ANALYSIS

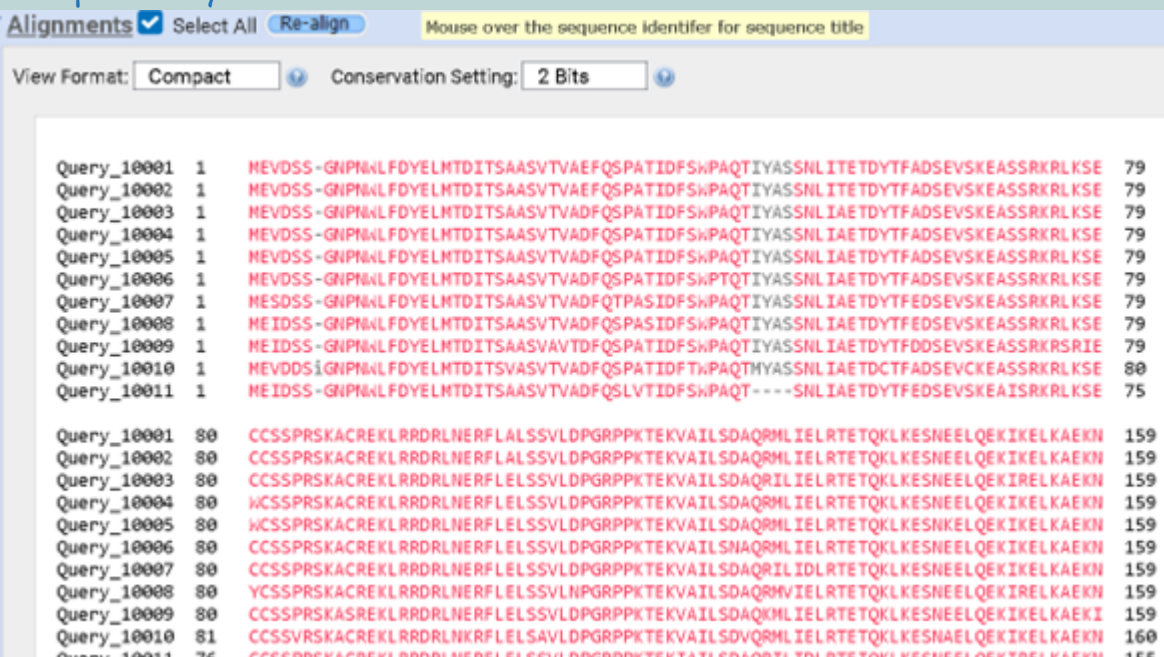
- a hub protein
- key regulatory transcription factor
- functional importance in plant physiology
- multiple interacting partners



Phylogenetic Tree

ILR3-like transcription factor is evolutionarily conserved, supporting its importance in plant growth, development, and stress response pathways.

Multiple Sequence Alignment





Writing for Different Audiences

PEERS / FRIENDS

Who They Are:

- People your age, friends, classmates.

What They Know:

- Similar background knowledge, current slang/interests.

Writer's Choices:

- Use casual language.
- Use humor or personal anecdotes.
- Can refer to shared experiences.
- Keep sentences engaging, maybe shorter.

ADULTS (FORMAL)

Who They Are:

- Teachers, principals, parents, other adults in authority.

What They Know:

- Educated, expect formal language, may know topic well.

Writer's Choices:

- Use formal and respectful language.
- Use correct grammar, spelling, and punctuation.
- Provide strong evidence and clear explanations.
- Be organized and logical.

YOUNGER CHILDREN:

Who They Are:

- Elementary school kids, younger siblings.

What They Know:

- Limited vocabulary, less background knowledge.

Writer's Choices:

- Use simple words and short sentences.
- Explain ideas very clearly.
- Use lots of repetition or simple examples.
- Include bright colors or fun pictures (if applicable).
- Focus on core concepts.

GENERAL PUBLIC

Who They Are:

- A diverse group of people

What They Know:

- Knows little to some, varying backgrounds

Writer's Choices:

- Define all specialized terms
- Use clear + accessible language
- Provide strong context