



## SNAIL VIRTUAL LAB RESTRICTION ENZYMES AND GEL ANALYSIS

**Learning objective:** To determine if the large snails are a different species than the small snails using one particular gene locus

**Part I:** Use restriction enzymes to cut the DNA sequence of a small snail and a large snail. Run the DNA fragments on a gel and use the banding pattern to determine the species.

**Part II:** BLAST the DNA sequences of both sizes of snail in order to verify the results of the gels.

**Procedure:** Part I:

1. Copy the large snail gene sequence from below
2. Open NEB cutter (<http://tools.neb.com/NEBcutter2/index.php>)
3. Paste the large snail gene sequence in the NEB cutter window
4. Click submit
5. Under the ‘main options’ menu, click on “custom digest”
6. Scroll down to choose Tsp509I
7. Click “digest”
8. Under the “main options” menu, click on “view gel”
9. Change the “gel type” to “2% agarose”
10. Sketch the banding pattern of the gel in the space provided
11. Repeat steps 1-9 for the small snail gene sequence
12. Compare your sequences to the given banding pattern

> DNA sequence of large snail

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GGAGTTTTTGGCTTTTACCTCCTGCTTTACTATTATTACTTTCTTCTGCAGCTGTAGAAAGGAGGAGTCGGAACAGGTT
GAAGTGTGTACCCTCCTTTAGCCGGAAATCTTGCACACGCAGGAGGCTCTGTAGATCTAGCAATTTTTTCCCTTCATTT
AGCAGGTGTTTCTCTATTTTAGGAGCTGTAAACTTTATTACAACATTTAATATGCGATGACGAGGAATGCAATTT
GAGCGTCTTCTCTTTTTGTTGATCTGTAAATTTACGGCGATTCTCCTTTTACTTTCACTTCCTGTTTTAGCGGGAG
CAATTACAATATTGTTAACTGATCGAAATTTCAATACTGCTTTCTTTGATCCTGCTGGTGGTGGAGATCCTATTTTATA
TCAACATCTATTTTGATTTTTTGGACATCCAGAAGTTTATATTTTGATTTTACCAGGATTTGGAATAATCTCCACATT
GTTAGTCATTATTCTTCTAAAAAAGAAACTTTTGGAACTAGGAATGATTTACGCTATATTAGCCATTGGTGTTTTAG
GCTTTATTGTTTGGAGCTCATCATATATTTACTGTTGGGATAGACGTAGATACTCGAGCTTATTTTACTGCAGCAACTAT
GATTATTGCTGTTCCAACGGGTATTAAAGTTTTTAGTTGATTGGCAACAATTCACGGAGCAAAAATTAATACGAAACC
CCAATGCTTTGAGCTCTGGGTTTTATTTTTCTCTTTACTGTTGGGGCCTTACTGGAATTGTTTTATCTAATTCTTCTT
TAGATATTACTTTCATGATACATACTATGTTGTTGCTCATTTCCACTACGTTTTATCTATAGGAGCTA
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> DNA sequence of small snail

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GAGTTTTTGGCTTTTACCTCCTGCTTTACTATTATTACTTTCTTCTGCAGCTGTAGAAAGGGGAGTCGGAACAGGTTGA
ACTGTGTACCCTCCTTTAGCCGGAAATCTTGCACACGCAGGAGGCTCTGTAGATCTAGCAATTTTTTCCCTTCATTTAG
CAGGTGTTTCTCTATTTTAGGAGCTGTAAACTTTATTACAACATTTAATATGCGATGACGAGGAATGCAATTTGA
GCGTCTTCTCTTTTTGTTGATCTGTAAATTTACGGCGATTCTCCTTTTACTTTCACTTCCTGTTTTAGCGGGAGCA
ATTACAATATTGTTAACTGATCGAAATTTCAATACTGCTTTCTTTGATCCTGCTGGTGGTGGAGATCCTATTTTATATC
AACACCTATTTTGATTTTTTGGACATCCAGAAGTTTATATTTTGATTTTACCAGGATTTGGAATAATCTCCACATTGT
TAGTCATTATTCTTCTAAAAAAGAAACTTTTGGAACTAGGAATGATTTATGCTATATTAGCCATTGGTGTTTTAGGC
TTTATTGTTTGGAGCTCATCATATATTTACTGTTGGGATGGACGTAGATACTCGAGCTTATTTTACTGCAGCAACTATGA
TTATTGCTGTTCCAACGGGTATTAAAGTTTTTAGTTGATTGGCAACAATTCATGGAGCAAAAATTAATACGAAACCCC
AATGCTTTGAGCTCTGGGTTTTATTTTTCTCTTTACTGTTGGGGCCTTACTGGAATTGTTTTATCTAATTCTTCTTTA
GATATTATGCTTCATGATACATACTATGTTGTTGCTCATTTCCACTACGTTTTATCTATAGGAGCTG
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