

Homework questions: (10 points each). **These questions will be graded; do them alone. The accompanying sheet has (practice) questions that you should do with a group.**

1) (10 points) Where is the following sequence from (what organism?) Does it encode a protein? If so, what is the likely function of that protein?

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>MysterySequence08
TGTCTCACTTTCTCTGTTGTCTGCCTTTCAATTAAATAATCTTAATAAAAAGACACTGTATGCAGATCA
GTGAAATTTGACCTCCTGTCTTACACCATATACAAAAATCAGCTTAGAATTGATTAATGACTTATATGTC
```

2) (10 points) The protein product of the yeast gene SNP1 (NP_012203) is homologous to two human proteins, [NP_003080](#) and [NP_851030](#). What Arabidopsis protein(s) are orthologous to NP_003080? What Arabidopsis protein(s) are orthologous to NP_851030?

Consider the three simpler photosynthetic organisms, each with a completed genome sequence.

[Physcomytrella patens](http://www.cosmoss.org/) (<http://www.cosmoss.org/>)
[Volvox carteri](http://genome.jgi-psf.org/Volca1/Volca1.home.html) (<http://genome.jgi-psf.org/Volca1/Volca1.home.html>) and
[Chlamydomonas reinhardtii](http://genome.jgi-psf.org/Chlre3/Chlre3.home.html) (<http://genome.jgi-psf.org/Chlre3/Chlre3.home.html>).

Which genomes have one ortholog (as is true for *S. cerevisiae*)?
Which have two or more orthologs (and do they have one or more for [NP_003080](#) and one or more for [NP_851030](#))?

What is the significance of this difference?