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HST.161 Molecular Biology and Genetics in Modern Medicine
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Questions on Selenocysteine papers
Allemand et. al.

1. Based on the information given in the figure legend for Figure 2 of Allemand et. al., explain why the rigid spinal muscular dystrophy patient whose protein extract is run in lane 5 of Figure 2 shows very little reactivity to the anti selN antibody at the 70kd position compared to a normal control.
2. Based on the information given in the figure legend for Figure 2 of Allemand et. al., explain why the rigid spinal muscular dystrophy patient whose protein extract is run in lane 3 of Figure 2 shows a similar level of reactivity to the anti selN antibody at the 70kd position compared to a normal control yet still has rigid spinal muscular dystrophy.
3. What would you expect the clinical phenotype of their children to be if the propositus in Allemand et. al. (Patient II-2) had married the patient whose protein extract is shown in Lane 8 of Figure 2. Explain your answer.

From minireview by Hatfield and Gladyshev

4. Explain how selenocysteine tRNA is produced in E.coli. How would the production of selenocysteinyl tRNA in E. coli be affected by the shift of a temperature sensitive E. coli mutant in the gene encoding seryl tRNA synthetase to the non-permissive temperature?
5. Explain the role of EfSec in the incorporation of selenocysteine into proteins in mammals.