

These articles deal with different, although related, aspects of species and genomic diversity:

- Barcode of life. Stoeckle MY, Hebert PD. Scientific American, 2008 Oct;299(4):82-6, 88.
 - *Genome 10K: a proposal to obtain whole-genome sequence for 10,000 vertebrate species*. Genome 10K Community of Scientists. Journal of Heredity 2009 Nov-Dec;100(6):659-74. Epub 2009 Nov 5.
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1. What is a DNA barcode?
2. What are three of the taxonomic challenges that barcoding would help to resolve?
3. What are two properties that a gene should have to make it a promising candidate as a barcode? What are two advantages of using mitochondrial DNA for barcodes?
4. The authors list eight applications of barcoding. Give an example from public health, an example from agriculture, and an example from biodiversity and taxonomy.

5. A better understanding the evolution of the vertebrate gene complement and evolution of vertebrate non-coding, regulatory DNA and how these related to “stunning innovations” in morphology and physiology are primary benefits of the Genome 10K (G10K) project. Name three other areas in which the authors predict that G10K will make dramatic contributions in knowledge.
6. The G10K project plans to collect tissue samples for DNA extraction. What additional materials will be collected? Name three.
7. What biomedical benefit might sequencing amphibian genomes offer?
8. The authors hope that this project will help resolve two alternate hypotheses with respect to convergent adaptations. One of these hypotheses is referred to as the “same adaptation, same loci” hypothesis. What is meant by this? What is the alternate hypothesis?