STRUCTURAL AND FUNCTIONAL DIVERSITY OF THE EUKARYOTIC GENOME
Brno, Czech Republic, October 14-16, 2010

Further reading for "**Metaptation: Metaphors for Genome Evolution**," by David G. King

Simple sequence repeats / indirect selection for "tuning knobs"
(listed by date)

King DG (1985) Metaptation: A descriptive category for evolutionarily versatile patterns of genetic and ontogenetic organization. *Evol Theory* 7: 222. (Abstract only; introduces the word "metaptation.")

Trifonov EN (1989) The multiple codes of nucleotide sequences. *Bull Math Biol* 51: 417–432.

Gerber H-P *et al*. (1994) Transcriptional activation modulated by homopolymeric glutamine and proline stretches. *Science* 263: 808-811.

Rosenberg SM et al. (1994) Adaptive mutation by deletions in small mononucleotide repeats. *Science* 265: 405-407.

Kashi Y, King DG, Soller M (1997) Simple sequence repeats as a source of quantitative genetic variation. *Trends in Genetics* 13: 74-78.

King DG, Soller M, Kashi Y (1997) Evolutionary tuning knobs. *Endeavour* 21: 36-40. (Introduces the "tuning knob" metaphor.)

King DG, Soller, M (1999) Variation and fidelity: The evolution of simple sequence repeats as functional elements in adjustable genes. In: S.P. Wasser, ed., *Evolutionary Theory and Processes: Modern Perspectives*, Kluwer Academic Publishers, Dordrecht, pp. 65-82. (Includes an explanation of indirect selection.)

Fondon III JW, Garner, HR (2004) Molecular origins of rapid and continuous morphological evolution. *PNAS* 101(52): 18058-18063.

Li Y-C et al. (2004) Microsatellites within genes: Structure, function, and evolution. *Mol Biol Evol* 21: 991-1007.

Verstrepen KJ *et al*. (2005) Intragenic tandem repeats generate functional variability. *Nature Genet* 37: 986–990.

Kashi Y, King DG (2006a) Simple sequence repeats as advantageous mutators in evolution. *Trends Genet* 22: 253-259.

Kashi Y, King DG (2006b) Has simple sequence repeat mutability been selected to facilitate evolution? *Isr J Ecol Evol* 52: 331-342. (Includes an explanation of indirect selection.)

King DG, Trifonov EN, Kashi Y (2006) Tuning knobs in the genome: Evolution of simple sequence repeats by indirect selection. In: LH Caporale, ed., *The Implicit Genome*, Oxford University Press, pp. 77-90.

King DG, Kashi Y (2007a) Mutability and Evolvability: Indirect selection for mutability. *Heredity* 99: 123-124.

King DG, Kashi Y (2007b) Mutation rate variation in eukaryotes: evolutionary implications of site-specific mechanisms. *Nature Rev Genet* 8 (doi:10.1038/nrg2158-c1).

Vinces MD, Legendre M, Caldara M et al. (2009) Unstable tandem repeats in promoters confer transcriptional evolvability. *Science* 324: 1213-1216.

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Evolutionary Protocols (other than "tuning knobs")
(listed by first author)

Arber W (2005) Gene products with evolutionary functions. *Proteomics* 5: 2280-2284.

Barry JD (2006) Implicit information in eukaryotic pathogens as the basis of antigenic variation. In: Caporale LH, ed. *The Implicit Genome*. Oxford: Oxford University Press, pp. 91-106.

Bayliss CD, Moxon ER (2006) Repeats and variation in pathogen selection. In: Caporale LH, ed., *The Implicit Genom*e. Oxford: Oxford University Press, pp. 54-76.

Caporale LH (1999) Chance favors the prepared genome. In: Caporale, L. H., ed. *Molecular Strategies in Biological Evolution, Ann. N. Y. Acad. Sci*. 870: 1-21.

Caporale LH (2000) Mutation is modulated: Implications for Evolution. *Bioessays* 22: 388-395.

Caporale LH (2003) Foresight in genome evolution. *Amer. Sci.*. 91: 234-241.

Caporale LH. (2003) Natural selection and the emergence of a mutation phenotype: An update of the evolutionary synthesis considering mechanisms that affect genomic variation. *Ann. Rev. Microbiol*. 57: 465-485.

Caporale LH (2006) *The Implicit Genome*. Oxford: Oxford University Press, pp. 91-106.

Csete M, Doyle J (2002) Reverse engineering of biological complexity. *Science* 295: 1664-1669.

Doyle J, Csete M, Caporale LH (2006) An engineering perspective: The implicit protocols. In: Caporale LH, ed., *The Implicit Genom*e. Oxford: Oxford University Press, pp. 294-298.

Doyle J, Csete M (2007) Rules of engagement. *Nature* 446: 860.

Kirschner M, Gerhart J (1998) Evolvability. *Proc. Natl. Acad. Sci. USA* 95: 8420-8427.

Mihola O *et al*. (2009) A Mouse Speciation Gene Encodes a Meiotic Histone H3 Methyltransferase. *Science* 328:373-375. (A speciation protocol?)

Oliver KR, Green WK (2009) Transposable elements: powerful facilitators of evolution. *BioEssays* 31: 703–714.

Shapiro JA (1983) Variation as a genetic engineering process. Pp. 253-270, in D.S. Bendall, ed. *Evolution from Molecules to Men*, Cambridge University Press, Cambridge.

Shapiro JA (1997) Genome organization, natural genetic engineering and adaptive mutation. *Trends Genet* 13:98-104.

Thaler D (1994) The evolution of genetic intelligence. *Science* 264: 224-225.

Contrary literature (listed by date)

Bridges CB (1919) Specific modifiers of eosin eye color in Drosophila melanogaster. *J Exp Zool* 28(3): 37-384. (Defines "mutation", establishes the expectation that most mutations are deleterious.)

Sturtevant AH (1937) Essays on evolution. I. On the effects of selection on mutation rate. *Q Rev Biol* 12: 464-467. ("Mutation are accidents.")

Williams GC (1966) *Adaptation and Natural Selection*. Princeton: Princeton University Press, 1966. (A classic text; includes a strong argument that natural selection must always prefer minimal mutation rates.)

Sniegowski PD, Gerrish PJ, Johnson T et al. (2000) The evolution of mutation rates: separating causes from consequences. *Bioessays* 22: 1057-1066. (Reiterates the old argument that natural selection favors minimal mutation rates.)

Sniegowski PD, Murphy HA (2006) Evolvability. *Current Biology* 16: R831-R834. (Argues that evolvability is not an adaptation.)