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Supplementary Materials for

The Genome Project–Write

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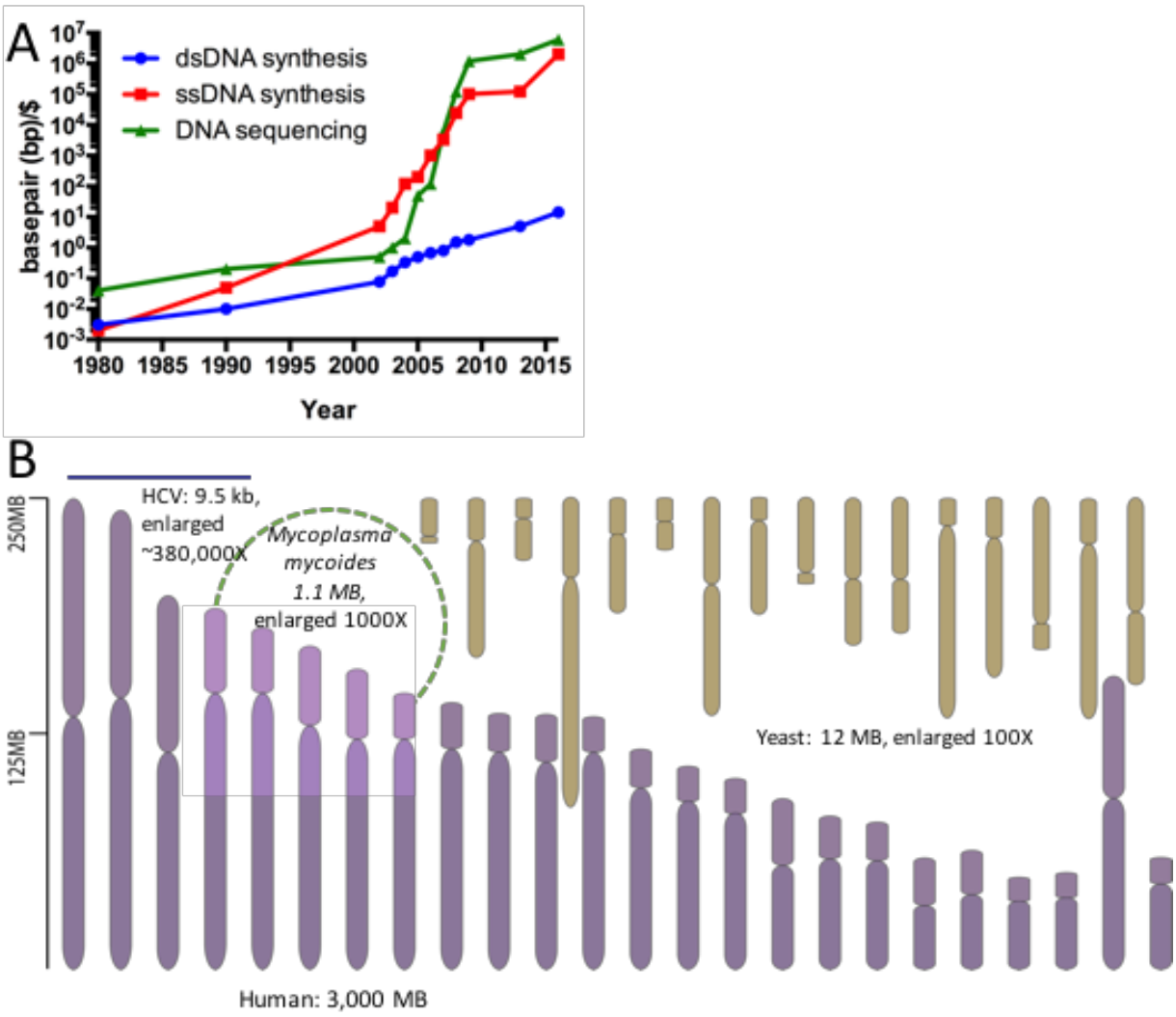

Fig. 1. Synthesizing synthetic or semisynthetic genomes. A. Efficiency trends in DNA sequencing (green) and synthesis of double-stranded DNA (dsDNA, blue) and single-stranded DNA (ssDNA, red) over the past ~35 years. Double-stranded DNA, or gene synthesis, has improved noticeably over the past ~10 years, but still lags behind sequencing and ssDNA synthesis. The disruptive improvement in sequencing and ssDNA (oligonucleotides) synthesis technologies has improved from multiplex and miniaturization technologies in high-throughput DNA sequencing and oligo microarray technologies, respectively. Commercial gene synthesis technologies relies on both oligo synthesis (building blocks) and sequencing (validation of synthesis) technologies. **B.** Graphical representation of four representative genomes benchmarked to the size of the 3,000 MB human chromosomes: 9.5 kb hepatitis C virus (HCV) enlarged ~380,000-fold, 1.1 MB Mycoplasma mycoides enlarged ~1,000-fold, 12 MB yeast enlarged 100-fold.

Bibliography

As further support for the arguments in our paper, this is a (non-comprehensive) sampling of precedents for projects that could take advantage of radical reduction in cost of genome-scale synthesis and high-throughput cellular/organismal testing of consequences. As with HGP-read, this effort need not be restricted to human but could and should include mouse, pig, *Drosophila melanogaster*, *Caenorhabditis elegans*, *Arabidopsis thaliana*, *Saccharomyces cerevisiae*, etc.

The bibliography, along with proposals for pilot projects, maybe found online at the project web site www.hgpwrite.org

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