1010-05-129 **Christine E Heitsch*** (heitsch@math.wisc.edu), University of Wisconsin – Madison, Genome Center / Biotechnology Center, 425 Henry Mall, Madison, WI 53706-1580. *Random De Bruijn Sequences and the Design of DNA Codewords.* Preliminary report.

There are many instances in which we wish to reliable decode a message which has been transmitted over a noisy channel, such as understanding the information encoded in genomic DNA. In this biological setting, however, the existing theories of codes and information apply imperfectly, at best. I will describe the problem of designing "DNA codewords" and illustrate a promising new solution using random De Bruijn sequences. This combinatorial approach leads to many interesting new questions regarding the distribution of substrings in De Bruijn sequences and cycles in the De Bruijn graph. (Received August 23, 2005)