Proc. KMB International Symposium
June 24-26, 2003, Muju, Korea

Engineered Revision of the *E. coli* Genome

F. R. Balttner

University of Wisconsin-Madison, USA

E. coli K-12 is well established as a preferred host for commercial production of recombinant DNA products including enzymes, vaccines, metabolites and DNA itself. The complete genome sequence of the *E. coli* bacterium has now been determined and it shows the presence of many genes that are clearly unnecessary for production purposes and which are arguably detrimental. These include gens encoding phage remnants, adhesins, toxins and ORFs in pathogenicity islands which if activated could adulterate the recombinant product with dangerous substances. Transposible elements and other forms of selfish DNA that render the *E. coli* genome unstable could also cause difficulties with quality control. Some genes whose expression is simply unnecessary are therefore potentially wasteful. To improve the situation we have deleted these segments. The reduced genome strain grows at a normal rate in minimal medium. By design it lacks transposible elements, most candidates for toxic products and many seemingly unnecessary genes.