Subversion of host cell signal transduction pathways by pathogenic *E. coli*

Microbial pathogens have developed a variety of strategies to manipulate host-cell functions, presumably for their own benefit. Cyclomodulins is a growing family of bacterial toxins and effectors that interfere with the eukaryotic cell cycle. Cyclomodulins, such as cytolethal distending toxins (CDT) and the cycle inhibiting factor (Cif), block mitosis and could constitute powerful weapons for immune evasion by inhibiting clonal expansion of lymphocytes. Cell cycle inhibitors could also impair epithelial barrier integrity and allow the entry of pathogenic bacteria into the body or prolong their local existence by blocking the shedding of epithelia. Conversely, cyclomodulins that promote cellular proliferation, such as the cytotoxic necrotizing factor (CNF), exemplify another subversion mechanism interfering with pathways of cell differentiation and development. The role of these cyclomodulins in bacterial virulence and carcinogenesis awaits further study and will delineate new perspectives in basic research and therapeutic applications.