In vitro gastrointestinal model system and uses thereof

A system utilizing cell immobilization in anaerobic continuous-flow cultures for modelling the gastrointestinal system is described. Microbial cells derived from flora, e.g. in fresh faecal samples, are used as the source of inocula for immobilisation in a mixed gel of gellan and xanthan. The beads produced are then introduced in a single or multi-stage chemostat fed with a nutrient media, and the composition and metabolic activities of the flora are monitored over time in reactors operated with conditions simulating the characteristics of different segments of the gastrointestinal tract. The conditions of this intestinal fermentation model are more akin to that for the gastrointestinal system, in which cells are naturally in the immobilized state, entrapped in fibrous particles or forming biofilms on the intestine epithelium. A use of such a system for studying various aspects of the gastrointestinal tract is also described.