

## Project Summaries for 2000

**Dr S Bloom - Middlesex Hospital, London**

**Grant awarded £35,527 (1 Year)**

### ***Molecular analysis of colonic mucosal microflora associated with Inflammatory Bowel Disease***

Inflammatory bowel disease (IBD) is currently thought to occur as a result of one or more environmental factors acting in genetically predisposed individuals. Many studies have investigated the role of intestinal bacteria as causative factors in human IBD but almost all have been concerned with organisms that can be cultured from stool using conventional microbiological techniques. These organisms are separated from the bowel wall by a thick layer of mucus and may not be the same organisms that are in contact with the colonic mucosa. The techniques of molecular biology such as the polymerase chain reaction can be used to detect such uncultivable micro-organisms.

This application is concerned with investigating a) the differences in colonic bacteria isolated using conventional culture techniques and highly sensitive molecular techniques, and b) whether any particular difference occurs in patients with IBD compared with control patients.

We are particularly interested in two groups of organisms. Intestinal spirochaetes and Helicobacters have been linked to colitis in humans, and in animal models. Both groups of organisms are difficult to isolate from the faecal microflora and both are often mucosal-associated.

Although a systematic investigation of the uncultivable microflora of the colonic epithelium has not been performed to date, a recent study has reported an association between Crohn's disease and Helicobacter species, and this result needs confirming urgently.

The experimental approach involves firstly comparing species isolated using conventional culture and molecular techniques (polymerase chain reaction, PCR) which will detect any DNA from bacteria present in the sample, and looking for any differences in results for patients with IBD. Secondly, we will use probes for particular species to test the hypothesis that particular types of helicobacters or spirochaetes are associated with IBD.