

# Professor Robert Rastall



**Present appointment:** Professor of Biotechnology, Department of Food Biosciences, University of Reading.

**Duties:** Head of Department, Head of Food and Bioprocessing Sciences group

**Date of Birth:** 26 January 1962

## Education:

1980-84 Thames Polytechnic (now the University of Greenwich), BSc Applied Biology (2:1)  
1984-87 Thames Polytechnic, PhD “The Cell Surface Biochemistry of *Erwinia amylovora*”

## Employment:

1987-93 The University of Westminster, Post-doctoral research fellowships in biotechnology  
1993-present day Department of Food Biosciences, University of Reading

## Research activities

I currently have a team of three postdoctoral research fellows and eight PhD students funded by UK, European and US industry, BBSRC, overseas governments and the EU.

The main research activity is the development of biotechnological manufacturing methods for novel oligosaccharides for application as functional food ingredients and as pharmaceutical agents. This involves the following technologies:

- Development of enzymatic synthesis approaches for oligosaccharides based on the use of microbial and plant glycosidases as synthetic catalysts. The aim is to develop an economical manufacturing technology for novel and bioactive oligosaccharides.
- Production of microbial polysaccharides, polysaccharide degrading enzymes and bacteriophage by fermentation.
- Development of controlled enzymatic hydrolysis technology for manufacture of oligosaccharides. The aim is to develop enzyme reactors to perform controlled partial degradation of microbial and plant polysaccharides such as to allow control over the molecular weight of the oligosaccharide product.

Oligosaccharides manufactured using these technologies are being investigated for the following biological activities:

- Prebiotic activity. The ability of these molecules to selectively stimulate the populations of bifidobacteria and lactobacilli in the gut is being investigated. The aim is to create novel prebiotics with a range of functional enhancements over the current market leaders. Several disease states and vulnerable population groups are being targeted by this research.
- Anti-adhesive activity. The aim is to manufacture oligosaccharides that act as receptors for pathogenic micro-organisms and to evaluate the potential for using these to inhibit adhesion of pathogens to receptors *in vivo*.