

# Plant Cell Biology

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## *CSIRO Food Futures Flagship: Redesigning Grain Polysaccharides*

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The High Fibre Grains Collaboration Cluster combines the research capabilities of The University of Queensland, The University of Adelaide and The University of Melbourne with CSIRO's Food Futures National Research Flagship. The Cluster aims to develop new grain varieties with fibre content tailored to optimize health benefits and offer value to industry.

The fibre component of whole grains forms an important part of a healthy diet, with the potential to lower plasma cholesterol and glycaemic index, as well as to promote regularity and improve bowel health. Fibre can also ferment in the bowel to produce compounds that may help us resist cancers and chronic diseases.

Apart from cellulose, the largest source of fibre from grains are the non-starch polysaccharides (NSP) of their cell walls. In barley and wheat, two of the main constituents of endosperm cell walls are (1,3;1,4)- $\beta$ -glucan and arabinoxylan. The cluster will focus on understanding the synthesis and health benefits of these NSPs, and improving our ability to manipulate their levels and composition in grains:

### Program 1

Analysis and digestibility/health benefits of transgenic barley and wheat carrying over- and under-expressing mixed linkage b-glucansynthase and arabinoxylan arabinohydrolase.

## **Program 2**

Mechanisms underlying human health benefits of arabinoxylan and mixed linkage b-glucan.

## **Program 3**

Synthesis and properties of polysaccharides and cellulose-based networks with defined molecular structures.

### **Further information:**

<http://www.csiro.au/resources/HiFiCluster.html>

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