

ISLAMIC DEVELOPMENT BANK
MERIT SCHOLARSHIP PROGRAMME

Research Abstract
(For Post-Doc Research)

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2. Field of Study: Agriculture/Biotechnology
3. Institution (Country of study): University of Saskatchewan (CANADA)
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Abstract

Cloning & characterization of key genes in starch biosynthesis pathway in wheat

Starch biosynthesis occurs in the plastids of higher plants and involves a series of biosynthetic enzymes, including ADP-Glucose pyrophosphorylase, starch synthase, branching enzyme, and debranching enzyme. Starch typically consists of two classes of polymers: amylose, which is a linear or lightly branched molecule and amylopectin, a much larger polymer. With the aim of increasing amylose content of wheat grains for dietary purposes, we investigated cloning and characterisation of a gene encoding one of the starch biosynthetic enzymes from wheat and its chromosomal location. From a genomic library for a certain wheat genotype, we selected several putative bacterial artificial chromosome (BAC) clones that carry the gene of interest. We confirmed three BAC clones carry all of the three alleles of the gene. Sequences for these BAC clones were aligned and variations found among alleles. This variation will be used for designing allele-specific primers to study effects of such variation among wheat genotypes on starch composition and hence amylose content.