Fine-mapping two QTL controlling fruit size and shape in tomato

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Tomato (*Solanum lycopersicum*) is an important crop in the Solanaceae family. Quality attributes such as fruit size and shape are important agricultural traits controlled by quantitative trait loci (QTL). Better understanding of the underlying molecular mechanism will be of great value to the fresh market and processing industry as well as enhancing our basic understanding of fruit development. Fine-mapping of two loci is being conducted. The first locus, *fw3.2*, controls fruit size in Yellow Stuffer (YS) variety (3). This locus also controls fruit shape in Banana Legs, Howard German and Rio Grande varieties (1, 2). The second locus, *lcn2.1*, controls locule number (3). For each locus, two F_2 plants derived from a cross between YS and wild species LA1589 were backcrossed to YS three times by marker-assisted selection. For the partial *fw3.2* NIL, progeny testing of 15 recombinant plants resulted in confirmation of this locus to an approximately 10 cM interval on the long arm of chromosome 3. These results were confirmed and led to further fine-mapping of the *fw3.2* to a 2.6 - 4.8 cM interval. To fine-map *fw3.2*, more markers are being developed at present time to identify one or more candidate genes. For the second locus, *lcn2.1*, a small-scale recombinant screen confirmed the position to approximate 19 cM region on the long arm of chromosome 2. We plan to screen more recombinants to further fine-map this locus and eventually isolate the underlying gene.

References

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