# Does transgenic feed cause histopathological changes in rats?

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Dedicated to my Godmother,
Alina Wóycicka (1944 – 2016).
Ciociu, I wish you were still here
to hear that I had finally finished it.

Dedicated also to the friend
who asked for its completion.

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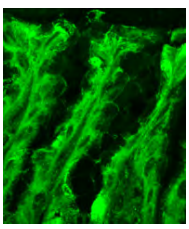
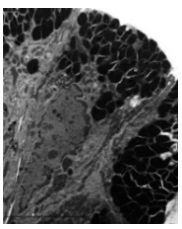
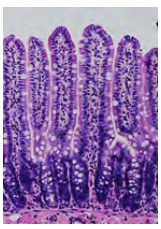
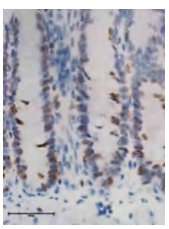
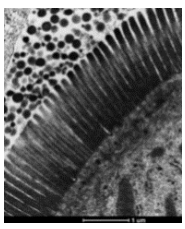

## Abstract

Genetically modified (GM) crops have been commercially available for human and animal consumption since the 1990s. The safety evaluations are based on the concept of substantial equivalence, which assumes that the toxicity of a product can be investigated by assessing the toxicity of individual components of the product and not the product as a whole. In other words, the test for substantial equivalence does not require animal feeding trials unless one or more of the individual components of the crop indicates a need. Such an approach does not take into account the changes, which may have arisen during, or following, the production of the GM crop. Furthermore, the few animal feeding studies that have been performed very rarely report results of any morphometric histological analyses.

The present study, aimed to investigate the effects of feeding a GM-corn diet to rats at two doses (60% and 30%) by studying the morphological features of the mucosa of the stomach and small intestine, both at light and electron microscopic levels. The morphological features were quantified using morphometric methods. In addition, tight junction proteins were investigated using immunohistochemistry and immunofluorescence confocal microscopy.

Both studies (60% and 30% of corn in the diet) showed changes in morphology and cell-counts that indicate that GM crops may have an effect on rat health. These findings support the importance of animal feeding studies and the need for morphometric analyses to evaluate the safety of GM-feed consumption on animal health.

## Declaration

The work described in this thesis, unless otherwise stated, has not been previously submitted for a degree at this or any other institution. No part of this work will, in the future, be used in a submission under the author's name for any other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

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