In November of 2012, a paper titled “Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize” was published in the prestigious Food and Chemical Toxicology yearly journal. In it, the group led by Gilles-Éric Séralini explained a 2-year long study in which Sprague-Dawley rats were fed the genetically modified Monsanto maize crop NK603, as well as the herbicide Roundup. The corn percentages were 0% (for the controls), 11%, 22% and 33%. A different group was fed the NK603 and RoundUp, administered in their water. Finally, a third group was only fed glyphosate (RoundUp).

The authors concluded: “The results […] demonstrate that […] glyphosate herbicide formulations, at concentrations well below officially set safety limits, induce severe hormone-dependent mammary, hepatic and kidney disturbances. Similarly, disruption of biosynthetic pathways that may result from overexpression of the EPSPS transgene in the GM NK603 maize can give rise to comparable pathologies.”

These conclusions were heavily criticized, as was the protocol followed during said experiment. Scientists claimed that the conclusions were impossible to justify. Peers also criticized the fact that a book and a movie were released simultaneously with the paper and the fact that those who attended the press conference had to sign a confidentiality agreement.

After an exhaustive investigation from the EFSA concluded that the paper should be retracted, it was so on November of 2013.

References
If the two male groups fed on GM maize are combined, the incidence of early mortality (7/36) is actually lower than that of the control group. References are cited to support the nosieous effect of Roundup, but these data were obtained using isolated human hepatocytes, some originating from tumors. The scientific evidence offered by these models is limited by the artificial nature of assays using single cells under non-physiological conditions. Indeed, many compounds that affect such cells have no effect on whole organisms.

Failure to measure the water consumption
This makes it impossible to calculate the real exposure to glyphosate from the concentrations in the drinking water.

Unsubstantiated claims
For example, the authors attribute the potential effects of GM maize and Roundup to endocrine disruption and/or oxidative stress, without any empirical evidence. They also state that GM maize and Roundup can induce necrotic and/or apoptotic changes, but they do not show any evidence to support these statements.

Inadequate statistical analysis of survival and tumor incidence data (e.g. there is no analysis of time to tumor formation).

Data presentation deficiencies (e.g. histopathology incidence/severity data not Presented).

Low quality and erroneous histopathology analysis (grouping of dissimilar tumor types).

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