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# Landes Highlights

## Peptibodies

### A new alternative to monoclonal antibodies?

The authors of this review, all current and former employees of Amgen, present the development of "peptibodies" as an alternative format to monoclonal antibodies in therapeutic settings.

Peptibodies are biologically active peptides grafted onto an Fc domain. Increased affinity is conferred through the dimerization of 2 Fcs. Also, plasma half life is significantly increased due to higher molecular weight, and therefore glomerular filtration in the kidneys, and recycling through the neonatal Fc receptor. Peptibodies can be produced biotechnologically in *E. coli*. The manufacturing process as described in the article, which involves fermentation and downstream processing, results in overall yields and quality suitable for commercial development. Two successful examples and one peptibody which failed in clinical phase I trials are discussed.

**Reference**

1. Shimamoto G, Gegg C, Boone T, Queva C. Peptibodies: A flexible alternative format to antibodies. mAbs 2012; 4:586-91; http://www.landesbioscience.com/journals/mabs/article/21024/.


## miRNA

### A new method for crop-optimization

In this mini-review, the authors provide an update on microRNAs and their involvement in stress response in rice.

Rice is one of the most important food crops in the world. A great deal of research has been carried out in the recent past on the molecular biology, genomics and biotechnology of rice. By employing recombinant DNA technology, remarkable progress has been made toward the production of rice plants with increased yield, improved nutritional quality and resistance to various diseases. In recent years, miRNAs have been reported to control a variety of biological processes, such as plant development, differentiation, signal transduction or stress responses. miRNAs are small, non-coding, single stranded RNAs that are abundantly found in prokaryotic and eukaryotic cells and can trigger translational repression or gene silencing by binding to complementary sequences on target mRNA transcripts. Under these circumstances, the study of microRNAs can contribute to new discoveries in the field. A section of this review is specifically dedicated to the genetic engineering perspectives regarding the miRNAs applications in rice tolerance to stress conditions.

**Reference**

1. Macovei A, Gill SS, Tuteja N. microRNAs as promising tools for improving stress tolerance in rice. Plant Signaling & Behavior 2012; 7:1296-1301; http://www.landesbioscience.com/journals/psb/article/21586/.

# Economic impact of GM crops

This analytical report updates the findings of earlier analyses of the global economic impact of genetically modified (GM) crops since their commercial introduction in 1996. The current study concentrates on farm income effects and also considers more indirect farm income or non-pecuniary benefits and quantifies the (net) production impact of the technology. According to the report, GM technology has had a significantly positive impact on farm income derived from a combination of enhanced productivity and efficiency gains. In 2010, the direct global farm income benefit from biotech crops was $14 billion. This is equivalent to having added 4.3% to the value of global production of the four main crops of soybeans, maize, canola and cotton. Since 1996, farm incomes have increased by $78.4 billion. Half of this has been derived by farmers in developing countries. Examining the cost farmers pay for accessing GM technology, it shows that across the four main biotech crops (cotton, corn, canolam and maize), the total cost in 2010 was equal to 28% of the total technology gains (inclusive of farm income gains plus cost of the technology payable to the seed supply chain).

**Reference**

1. Brookes G, Barfoot P. The income and production effects of biotech crops globally 1996–2010. GM Crops & Food 2012; 3:265-72; https://www.landesbioscience.com/journals/gmcrops/article/20097/.