

Bio-Bites!

Changes in US patent rules affect the biotech industry

In response to two recent decisions by the US Supreme Court, the US Patent and Trademark Office issued new rules in March 2014, which were open to public comment until July 31. The guidance now states that patentable inventions must be “significantly different” from any natural product. According to a survey, the US patent office had denied 40% of the approximately 1000 applications that fall into areas covered by

the guidance. Patents were rejected, for instance, for proteins intended for diagnosis, medicines extracted from marine organisms, and a test for detecting certain genetic traits in aquacultured fish.

References

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Erika Check-Hayden. Biotech reels over patent ruling [Internet]. New York (NY): Nature News: c2014 July 8 [cited 2014 August 25]. Available from: http://www.nature.com/news/biotech-reels-over-patent-ruling-1.15522?WT.ec_id=NATURE-20140710

Approval of genetically engineered salmon is delayed

In December 2012, the US Food and Drug Administration (FDA) released a draft assessment of AquaBounty Technologies genetically engineered salmon, which grow faster than normal, finding them to be environmentally benign. This was followed by a 120-day public commenting period, which ended on April 26, 2013. More than 35000

public comments were made in response to the draft assessment, delaying the market entry of the first genetically modified animal for human consumption.

References

Fishy business: Delays in approving genetically engineered salmon may be a taste of worse to come [Internet]. New York (NY): Nature: c2014 July 30 [cited 2014 August 25]. Available from: http://www.nature.com/news/fishy-business-1.15627?WT.ec_id=NATURE-20140731

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Increased yield through light resistance in tomatoes

A Dutch collaboration between industry (Monsanto) and the University of Wageningen, the Netherlands, has discovered the genetic basis for light tolerance in tomatoes. When exposed to continuous light, the leaves of modern tomato plants yellow and decay. This phenomenon does not exist in closely related species or even in wild tomato varieties: a dominant locus on chromosome 7 of wild tomato species that confers continuous light tolerance. Genetic evidence, RNaseq

data, silencing experiments, and sequence analysis led to the discovery of a single gene on chromosome 7 as the major factor for the tolerance: the type III light harvesting chlorophyll a/b binding protein 13 (CAB-13). In *Arabidopsis thaliana*, this protein is thought to have a regulatory role balancing light harvesting by photosystems I and II. Introgressing the tolerance into modern tomato hybrid lines resulted in up to 20% yield increase.

References

Velez-Ramirez AI, van Ieperen W, Vreugdenhil D, van Poppel PM, Heuvelink E, Millenaar FF. A single locus confers tolerance to continuous light and allows substantial yield increase in tomato. *Nat Commun* 2014; 5:4549; PMID:25093373

Jyoti Madhusoodanan. Light-Tolerant Tomatoes [Internet]. Midland, Canada: The Scientist: c2014 August 7 [cited 2014 August 25]. Available from: <http://www.the-scientist.com/?articles.view/articleNo/40711/title/Light-Tolerant-Tomatoes/>

Ebola outbreak: WHO agrees to unproven interventions

According to the World Health Organization (WHO), West Africa is experiencing the largest, most severe, and complex outbreak of Ebola virus disease in history.

Available treatment options have not yet been evaluated for safety and efficacy in human beings, however, given the particular

circumstances of this outbreak, a WHO panel reached consensus that it is ethical to offer unproven interventions.

Tekmira Pharmaceuticals’ RNA interference (RNAi)-based drug, and Mapp Biopharmaceutical’s Zmapp serum, are currently available in very limited quantities.

References

Ethical considerations for use of unregistered interventions for Ebola virus disease (EVD) [Internet]. Geneva, Switzerland; World Health Organization: c2014 August 12 [cited 2014 August 25]. Available from: <http://www.who.int/mediacentre/news/statements/2014/ebola-ethical-review-summary/en>