GENETICALLY MODIFIED ORGANISMS UNIT

SCIENTIFIC PANEL ON GENETICALLY MODIFIED ORGANISMS

MINUTES OF THE 134th MEETING

Held on 27-28 November 2019, Parma

(Agreed on 13 December 2019)

Participants

- Panel Members:

  Jean-Louis Bresson, Tamas Dalmay, Ian Dewhurst, Michelle Epstein, Leslie George Firbank[1], Philippe Guerche, Jan Hejatko, Francisco Javier Moreno, Ewen Mullins, Hanspeter Naegeli, Fabien Nogué, Nils Rostoks, Jose Juan Sanchez Serrano, Giovanni Savoini, Eve Veromann and Fabio Veronesi

- Hearing expert:

- European Commission and/or Member States representatives:

  Ilaria Ciabatti and Béatrice Marquez-Garrido (DG SANTE)

- EFSA:

  GMO Unit: Fernando Álvarez, Michele Ardizzone, Giacomo De Sanctis, Yann Devos, Antonio Fernández Dumont, Silvia Federici, Andrea Gennaro, José Ángel Gomez Ruiz, Anna Lanzoni, Sylvie Mestdagh, Franco Maria Neri, Henna Moilanen, Konstantinos Paraskevopoulos, Nikoletta Papadopoulou, Tommaso Raffaello and Elisabeth Waigmann

- Observers

  - Observers attending the discussions on-site: Eliana Silva de Moraes (SMA), Maica Martinez (BASF), Kudryk Ilona (Belarusian State Veterinary Center), Anna Sandul (Ministry of Agriculture and Food of the Republic of Belarus), Gaston Legris (Corteva), Natallia Dalhina (Scientific Practical Centre of Hygiene), Ekaterina Fedorenko (Sergej Sychik), Pascale Delzenne (Bayer CropScience), Elisabeth Andersen (University of Freiburg), Sara Nigro (Syngenta), Joann Sy (Independent Consultant), Hermann Broll (German Federal Institue for Risk Assessment - BfR), Nicolas Laarman (POLLINIS), Seungha Baek (Aarhus University), Ryuichi Ono (National Institute of Health Sciences), Alessia Cagnetti (Polo di

[1] Participated via web conference.
[2] As defined in Article 17 of the Decision of the Executive Director concerning the selection of members of the Scientific Committee, the Scientific Panels, and the selection of external experts to assist EFSA with its scientific work: http://www.efsa.europa.eu/en/keydocs/docs/expertselection.pdf

innovazione di Genetica Genomica e Biologia), Hrvoje Fulgosi (Institute Rudjer Boskovic), Alan Mackie (EFSA Contractor), Frederiks Coen (EuropBio).

- Observers following the discussions remotely: Justin Overcash (APHIS BRS), Shoshana Griffith (USDA), Hoa Chang (Food Standards Agency), Rocío Fernández Cantón (Bayer Crop Science), Nancy Podevin (Pioneer Overseas Corporation), Valerie Sert (Corteva AgriSciences), Ana Martin Camargo (Leiden University), Gijs Kleter (Wageningen Food Safety Research), Francesco Visioli (University of Padova), John Mumford (Imperial College London), Wolfram Reichenbecher (BfN - Federal Agency for Nature Conservation), Oana Dima (VIB-UGent Center for Plant Systems Biology), Romaan Raemaekers (Syngenta), Danika Martyn (Intertek), Rong Wang (Bayer Crop Science), Simona Antonella Lamorte (Ministero delle Politiche Agricole Alimentari e Forestali), Marjan Bovers (COGEM), Giulia Dowgier (public researcher), Hector Quemada (Western Michigan University), Samantha Saunders (PETA International Science Consortium Ltd.), Adinda De Schrijver (Sciensano), Dhruval Chaudhary (Ferrara Candy), Elena Maria Hurtado Olmo (Veterinary inspector), Greet Smets (Perseus Bvba), Fabio Niespolo (Outreach Network for Gene Drive Research), Ana Judith Martin (Head of Area), Lene Irene Olsen (DTU Food), Irantzu Garmendia (Cefic), Onorati Antonio (Associazione Rurale Italiana), Magdalini Chatzikamari (Aristotle University of Thessaloniki), Thomas Anderson (USDA Foreign Agricultural Service), Lucia Roda (Ministry for Ecological Transition).

1. Welcome and apologies for absence

The Chair welcomed the participants. Apologies were received from Ian Dewhurst.

2. Presentation of the Guidelines for Observers

The Chair of the GMO Panel warmly welcomed the observers who travelled to Parma to participate to this plenary meeting. Members from the GMO Panel and the GMO Unit as well as on-site observers briefly introduced themselves through a tour de table.

The Chair also welcomed the observers who will follow the discussions through web-streaming.

The Head of the GMO Unit presented the guidelines for observers.

3. Adoption of agenda

The agenda was adopted without changes.

4. Declarations of Interest of Panel members

In accordance with EFSA's Policy on Independence[3] and the Decision of the Executive Director on Competing Interest Management[4], EFSA screened the Annual Declarations of Interest filled out by the Working Group members invited to the present meeting. No Conflicts of Interest related to the issues

[3] http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/policy_independence.pdf
[4] http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/competing_interest_management_17.pdf

discussed in this meeting have been identified during the screening process, and no interests were declared orally by the members at the beginning of this meeting.

5. Report on written procedures since the 133rd GMO Plenary meeting

The minutes of the 133rd Plenary meeting were adopted by written procedure on 2 October and published on the same day at http://www.efsa.europa.eu/en/events/event/133rd-plenary-meeting-gmo-panel.

6. Scientific topics for discussion

6.1. Synthetic biology developments in plants, environmental risk assessment aspects (ERA) (EFSA-Q-2018-01000)

A scientific officer of the GMO Unit introduced the overall concept and definition of synthetic biology as well as the terms of reference of the mandate received from the European Commission (link to EFSA Register of Questions). The European Commission tasked EFSA to issue scientific opinions on synthetic biology developments in plants (for agri-food uses) to inform the EU position in international negotiations for synthetic biology (e.g. Convention on Biological Diversity). EFSA and its GMO Panel shaped their work considering agri/food/feed products about to enter the EU market over the next decade. EFSA established two multidisciplinary *ad hoc* Working Groups (WGs) to address the terms of reference: one focusing on microorganisms within the remit of the EFSA Scientific Committee and the other addressing plants falling under the GMO Panel (EFSA website).

The current scientific opinion covers genetically modified plants and the risk assessment aspects for their molecular characterization and the environmental risk assessment for products deliberately released into the environment. In response to the mandate of the European Commission, the existing guidance documents concerning molecular characterisation for food and feed, and environmental risk assessment of GM plants were evaluated for their adequacy.

In order to prepare the GMO Panel to adopt the final outcome of this lengthy and complex query, the GMO Unit regularly updated the Panel about the progress made by the aforementioned WG focusing on plants. The GMO Panel discusses the draft text of the scientific opinion for the first time at the present meeting. The GMO Panel scrutinized and, where appropriate, revised the text of the draft opinion. Further discussion is needed.

The draft scientific opinion will be endorsed by the GMO Panel at its next meeting before being posted for a public consultation scheduled in Spring 2020. EFSA is expected to deliver a final scientific opinion by the end of 2020.

6.2. Scientific opinion on plants developed using type 1 and type 2 Site-Directed Nuclease and Oligonucleotide Directed Mutagenesis (EFSA-Q-2019-00297)

A scientific officer of the GMO Unit presented the terms of reference and provided background information on the mandate from the European Commission. EFSA is tasked to advise whether the assessment methodology described in the 2012 scientific opinion of the GMO Panel addressing the safety assessment of plants developed using Zinc Finger Nuclease 3 and other Site-Directed Nucleases

with similar function[5], may be applicable, in whole or in part, to plants developed with type 1 and type 2 Site-Directed Nucleases and with oligonucleotide directed mutagenesis. If the answer is yes, EFSA is requested to advise whether the conclusions of the 2012 scientific opinion are valid, in whole or in part, to plants developed with type 1 and type 2 Site-Directed Nucleases and with oligonucleotide directed mutagenesis.

The discussion on the scientific content of the mandate is currently taking place in the GMO Panel's Molecular Characterisation WG[6]. The draft text of the scientific opinion on SDN-1 and -2 and ODM will be shared with the Panel at its next meeting. Further discussion is needed.

EFSA is requested to issue a scientific opinion by Spring 2020.

6.3. EFSA opinion on genetically modified organisms engineered with gene drives (gene drive modified organisms) and their implications for risk assessment methodologies (EFSA-Q-2018-00619)

A scientific officer of the GMO Unit introduced the terms of reference of the request received from the European Commission and how they are and will be addressed by EFSA and its GMO Panel. The European Commission mandated EFSA to deliver a scientific opinion on gene drive modified organisms and their implications for risk assessment methodologies.

According to the mandate specifications, EFSA was requested to identify potential risks in terms of impact on human and animal health and the environment that gene drive modified organisms could pose, including potential novel hazards of gene drive modified organisms, considering relevant comparators, where appropriate; to determine whether the existing guidelines for risk assessment are adequate and sufficient for gene drive modified organisms or whether there is a need for updated guidance. In case where a need for an updated guidance is found, EFSA was requested to identify the specific areas where such updated guidance is needed. Under the present mandate, EFSA is not requested to develop guidelines for the risk assessment of gene drive modified organism. EFSA is also requested to provide technical and scientific expertise on risk assessment of gene drive modified organisms to support the EU in the work under the Convention on Biological Diversity and the Cartagena Protocol on Biosafety.

EFSA established an *ad hoc* WG to address this mandate (link to EFSA Register of Questions). On 15 May 2019, EFSA also organized a Workshop on the problem formulation for the environmental risk assessment of gene drive modified insects to feed the discussions and contribute to the final output. EFSA met stakeholders and EU Member States to discuss plausible environmental risks associated with the release of gene drive modified insects into the environment. Comments raised at the Workshop were valuable inputs that contribute to the development of the draft scientific opinion presented today.

Since the establishment of the ad-hoc Working Group (WG)[7] dealing with this topic, the GMO Panel was regularly updated on the progress with this mandate received from the European Commission. The GMO Panel discussed the draft text of the scientific opinion for the first time at the present

[5] The scientific opinion is available at: https://www.efsa.europa.eu/en/efsajournal/pub/2943

[6] Minutes of the WG meetings are available at: http://www.efsa.europa.eu/sites/default/files/wgs/gmo/gmomc2019.pdf

[7] Minutes of the WG meetings are available at: http://www.efsa.europa.eu/sites/default/files/wgs/gmo/wg-gene-drive-era.pdf

meeting. The GMO Panel scrutinized and, where appropriate, revised the text of the draft opinion. Further discussion is needed.

The draft scientific opinion will be endorsed by the GMO Panel at its next meeting before being posted for a public consultation scheduled in Spring 2020. EFSA is expected to deliver a final scientific opinion by the end of 2020.

7. Scientific outputs submitted for discussion and possible adoption

7.1. Application for authorisation of genetically modified soybean SYHT0H2 for food and feed uses, import and processing submitted under Regulation (EC) No 1829/2003 by Syngenta (EFSA-GMO-DE-2012-111) (EFSA-Q-2012-00753)

The scope of application EFSA-GMO-DE-2012-111 covers the import and processing for all food and feed uses of soybean SYHT0H2 in the European Union. Soybean SYHT0H2 expresses the newly introduced genes avhppd-03, from *Avena sativa*, and pat from *Streptomyces viridochromogenes*, which confer tolerance to mesotrione and HPPD-inhibiting herbicides, and glufosinate-ammonium herbicides respectively.

Scientific officers of the GMO Unit presented the outline of the risk assessment of soybean SYHT0H2 and explained the outstanding issues. This application was discussed by the three GMO Panel WGs on (1) Molecular Characterisation, (2) Food/Feed assessment, (3) Comparative analysis and Environmental Risk Assessment. The draft opinion is now brought to the attention of the GMO Panel for discussion and possible adoption.

In this meeting, the GMO Panel scrutinized and, where appropriate, revised the text of the draft opinion. Subsequently the GMO Panel adopted the opinion, which will be published on the EFSA website and in the EFSA Journal.

8. New Mandates

8.1. Applications under Regulation (EC) No 1829/2003

Since the last meeting of the GMO Panel, EFSA received the following:

- Application EFSA-GMO-NL-2019-161 submitted by Bayer Agriculture BVBA for placing on the market of genetically modified MON 87429 maize (EFSA-Q-2019-00628),
- Application EFSA-GMO-NL-2019-162 for placing on the market of Soy Leghemoglobin produced from genetically modified *Pichia pastoris* (EFSA-Q-2019-00651).

8.2. Annual Post-market environmental monitoring reports of GM plants

No new mandate was received.

8.3. Other Requests and Mandates

No new mandate was received.

9. Feedback from the Scientific Committee/the Scientific Panels, EFSA, the European Commission

9.1. Scientific Committee and other Scientific Panel(s) including their Working Groups

The Chair and vice-Chair of the GMO Panel reported on discussions at the last Scientific Committee meeting, on new mandates and ongoing EFSA activities during the September GMO plenary meeting (EFSA website).

9.2. EFSA including its Working Groups/ Task Forces

Not applicable.

9.3. European Commission

The representative of the European Commission provided feedback on recent meetings held at the European Commission and announced the next meeting of the PAFF committee on Genetically Modified Food and Feed and Environmental Risk on 9 December 2019. At that meeting, scientific officers of the GMO Unit will present the scientific opinions adopted by the GMO Panel at its September meeting (link to the meeting minutes).

The representative of the European Commission also informed that on 8 November 2019, the Council of the EU has approved a Council Decision, based on Article 241 TFEU, requesting the Commission to submit:

- a study, by 30 April 2021, regarding the status of new genomic techniques.
- if appropriate in view of the outcomes of the study:

  - submit a proposal (accompanied by an impact assessment), or

  - otherwise to inform the Council on other measures required.

The Commission is currently working to define the content of the study.

10. Other scientific topics for information and/or discussion

Not applicable.

11. Any other business

11.1. Procurement on 'Refined Protocol for *in vitro* digestion of proteins for allergenicity assessment'

In 2013 EFSA launched a call for tender to conduct an experimental laboratory study on '*in vitro digestibility tests for allergenicity assessment*'. The external contractor appointed to that task presented the final report that will be published on the EFSA website.

The contractor addressed the questions from the GMO Panel and GMO Unit on the outcome of their study and on considerations for the risk assessment of GM plants. Both GMO Panel and GMO Unit discussed also the next steps.

12. Questions from and answers to Observers

Observers were invited to submit questions to the GMO Panel at the time of registration. EFSA received the following questions from three observers ahead of the meeting:

Questions from web-streamers	EC replies
How will the EU Commission make sure that the availability of a guideline for risk assessment doesn't undermine the necessity of a fundamental political (and societal) debate and decision about the desirability / appropriateness of gene drive technology as a means to a specific end.	The EU has a very strict GMO legislation, which must be implemented by all and enforced by Member States. EC tasked EFSA to ensure that the necessary tools are available to implement effectively the law.
Given recent technological developments blurring the boundary between genetic modification and related fields, would it not be timely to broaden the remit of the Panel, such as for "genetically modified and other synthetic organisms"?	The European Commission in 2014 requested an opinion on synthetic biology to three independent non-food Scientific Committees: they provided an operational definition of synthetic biology and considered that currently and in the foreseeable future, applications of synthetic biology are GMOs and fall under the GMO legislation. In the Commission's view there seems to be no reason to rename the Panel at this point in time.
Questions from a physical observer	**EFSA/Panel replies**
Is the current Risk Assessment (ECJ directive 2018) currently fit for purpose especially considering new gene editing and how well does the regulation deliver on its structured purpose?	The European Union Court of Justice (EUCJ) Case C-528/16[8] (July 2018) has affirmed that Directive 2001/18/EC which regulates the deliberate release of GMOs into the environment is applicable to plants obtained by mutagenesis techniques that have emerged since its adoption. The EUCJ ruling states that plants developed using new mutagenesis techniques are considered GMOs and are therefore subjected to the same risk assessment procedures as GM plants developed through traditional transgenesis. In 2012, the GMO Panel delivered a scientific opinion on plant developed using SDN-3 approach (EFSA, 2012[9]). In its opinion, the GMO Panel concluded that the current EFSA guidance on risk assessment of food and feed derived

[8] Judgment of the Court (Grand Chamber) of 25 July 2018, Confédération paysanne and Others v Premier ministre and Ministre de l'agriculture, de l'agroalimentaire et de la forêt, Case C-528/16, EU:C:2018:583

[9] EFSA Panel on Genetically modified organisms (GMO); Scientific opinion addressing the safety assessment of plants developed using Zinc Finger Nuclease 3 and other Site-Directed Nucleases with similar function. EFSA Journal 2012;10(10):2943. [31 pp.] doi:10.2903/j.efsa.2012.2943.

	from GM plants and on environmental risk assessment of GM plants (EFSA 2010[10], 2011[11]) are still applicable to plants developed using SDN-3 approach. In 2019, European Commission (EC) has requested EFSA to deliver a scientific opinion on GM plants developed using SDN-1, SDN-2, and ODM approaches. In particular, the EC requested EFSA to verify if the conclusions laid down in the 2012 scientific opinion on SDN-3 are also applicable to SDN-1, SDN-2, and ODM plants. EFSA is requested to issue a scientific opinion by Spring 2020.

During the meeting, in addition to the questions referred to above, on-site and online observers could also pose their questions on the discussion items. Questions received (exact quote from web-streamers) and replies given by Panel member or GMO Unit staff are reported in the table below.

Agenda items	Questions from observers	EFSA/Panel replies
6.1	Will the contractors' reports be posted with the draft output for public consultation?	Reports will be annexed to the draft output but are not subject to comments/revision. They are meant to serve as background/feeding material to the draft output by the GMO Panel.
	What will be the format of the public consultation?	EFSA will use the standard online tool for collecting written comments on the draft document.
	Mandate was about adequacy of current data requirements.	The answer is Yes.
	Thanks for the opportunity to follow the Panel meeting online. The current GMO guidance states that if transformation results in genetically unlined inserts that those would need to be assessed separately as single events first. I wonder	This is an aspect that is considered during the WG discussion. The concept of molecular stack was taken into account during the discussions.

[10] EFSA Panel on Genetically Modified Organisms (GMO); Guidance on the environmental risk assessment of genetically modified plants. EFSA Journal 2010;8(11):1879. [111 pp.]. doi:10.2903/j.efsa.2010.1879.

[11] EFSA Panel on Genetically Modified Organisms (GMO); Guidance for risk assessment of food and feed from genetically modified plants. EFSA Journal 2011; 9(5): 2150. [37 pp.] doi:10.2903/j.efsa.2011.2150.

	if this requirement gives added value for homozygous plants and would it not be possible to assess frequency/impact of segregation as a potential hazard and not have separate single event applications first.	
	Why were these three case-studies chosen?	These case-studies were the outcome of an 'horizon scan'. The selection of the three case-studies was based on the state of the art and the representativeness of what agri-food products are likely to be developed and placed on the market over the next 5-10 years.
	Why not addressing test-case of endangered species?	The mandate is broad and for sake of time, we had to prioritize in the light of what is likely to be developed over the next years. The GMO Panel is of the opinion that an application on endangered species is not prominent and unlikely to reach the European market in a near future. From screening the scientific literature, such a case was not retained as a critical scenario that deserves immediate scrutiny.
	What about the weaknesses of these techniques such as fast resistance development?	This is indeed a well-known issue that is addressed in specific sections of the draft scientific opinion.
	How broad is your definition of plants? Are microalgae also included or they considered GMMs?	Microalgae were not excluded from the horizon scan but did not pop up as prominent case. Nevertheless, microalgae are considered by the *ad hoc* WG on SynBio-microorganisms of Scientific Committee (see agenda item 6.1, above).
	Supposedly, the question of interactions between the various simultaneous modifications will always be considered irrespective of whether we call it a stack or not?	The answer is Yes.
	Will for synthetic biology only the ORFs at the position as defined by the Implementing Regulation "created as a result of the genetic modification either at the junction sites with genomic DNA or due to internal rearrangements of the insert(s)" be considered and not the EFSA	Under discussion

	guidance definition. Example would be: in Crispr plants, there are no junctions.	
	ORFs: supposedly this is also relevant for edits if these cause indels, such as shifts in the reading frames hence forming partially novel sequences if still read?	Under discussion
	Are the guidance documents for biological relevance and weight of evidence not also applicable besides that on uncertainty?	Under discussion
	To what extent will the inability to trace specifically gene-edited crops impacts on post-market monitoring?	The Joint Research Centre of the European Commission together with the European Network of Reference Laboratories (EURL) issued recent reports on this aspect, including on the challenges in detecting genome-edited organisms. Representatives from the European Commission also mentioned that the traceability of such organisms does not rely only on detection but should be seen in a more holistic manner.
	in Crispr plant there are no junctions and no need for IR for ORF analysis. The latest document and communication on that is the IR and the EFSA 2010 guidance on the ORF is older than IR. After the only communication we received was from APdesk confirming that IR askes only to analyse the junctions as internationally is accepted	Acknowledgement
	Do genetic parts equate to e.g. BioBricks? As regards adequacy, is the possible need for lesser data also considered?	It is the same concept. In SynBio developments genetic parts are combined to deliver new properties to a product e.g. due to interactions (genetic parts libraries). Yes, on a case by case fewer data may need to be considered.
6.2	Does EFSA plan any public consultation on this mandate?	It is under discussion to consult our stakeholders and the public at large on this too. This decision might impact on the overall timeline for completing this task. The public consultation is likely to take place around April/May 2020

	Are RNA modifications also considered?	Whereas the answer is yes for modifications through Crispr/Cas system, the answer would be negative in case of RNA modifications *per se*.
6.3	Defining which MC data are needed on the basis of ERA seems a straightforward approach; The EFSA GD on animals (insects) has not been tested yet in practice for its adequacy yet. In how far will this be taken into account in the Gene Drive mandate?	Indeed, the 2013 Guidance on the environmental risk assessment of GM animals, including GM insects, has never been applied so far. To address the mandate, we therefore called for more evidences, e.g. through a comprehensive literature screening, the aforementioned Workshop with stakeholders (see agenda item 6.3, above) and by involving experts with scientific excellence in this domain.
	Has also the opinion of the French Haut Conseil on e.g. GM mosquitoes and Wolbachia been taken into account? They advise that Wolbachia be assessed with the same rigor.	Yes, this report was considered during the discussions and is even referred to in the draft scientific opinion. The advice related to Wolbachia was taken into account.
	Does the reference to special territories of the EU indicate that the Panel expects future applications to take place in the Caribbean and Pacific areas?	A Panel member explained that, in some situations like France and its overseas territories, the answer is yes.
	Biodiversity conservation: does this include either or both of 1) eradication of invasive/predatory/parasitic species threatening the ones to be protected; 2) protection of an endangered species (e.g. spreading disease resistance)?	It includes both.
	Might PMEM follow a tiered approach, starting with releases on a limited scale?	This might be an option among others.
	How to manage conflicting risk assessment definitions on GM in different EU Member States? How can we manage a consensus on risks? How to distangle (*sic*) culture from risk assessment definitions?	EFSA regularly engages with Member States (MS) to facilitate a shared understanding, e.g. MS network for GMOs that meets once a year provides a platform to MS to discuss issues of interest for the risk assessment, ad-hoc workshops on selected topics that MS attend. EFSA consults MS (1) through public consultation(s), and (2) the three-month consultation period for each GMO dossier as required by law. Comments from MS are taken into account during the risk assessment of GMO dossiers and are

		published with each scientific opinion on a dossier. In terms of risk assessment requirements, EFSA and its GMO Panel must comply with the law, e.g. Commission Implementing Regulation (EU) No 503/2013 which has been adopted by a qualified majority of the MS. To conclude, the GMO Panel's aim is to conduct a scientifically sound independent risk assessment.
7.1	Could familiarity with the PAT protein allow for fast tracking assessments for such proteins?	Risk assessment of GMOs is conducted on a case-by-case basis. Nevertheless, the history of safe use of novel proteins is taken into account.
9.3	Does the EC plan a targeted consultation with stakeholders on this new study requested by the Council on new genomic techniques?	The European Commission will organise targeted stakeholders' consultation with EU stakeholders impacted by the issue. Stakeholders will be invited to provide contributions substantiating their views.
11.1	Does the persistence of proteins in infant and early adult gastric phases across the board for many proteins indicate other factors are more decisive in elicitation?	Difficult question to address based on the limited available info. Further work is needed to elucidate potential factors triggering the elicitation phase in food allergy.
	SGF was taken from the pharmaceutical world. How are these new systems implemented there and what can we learn from that?	The InfoGest protocol is worldwide used by the scientific community. The remarkable achievement has been the consensus reached with the use of this protocol and the subsequent implications, i.e. the possibility to compare results from a large number of experiments.
	Will additional enzyme in the pancreatin increase the digestion of a protein?	The answer is, Yes. However, there is currently no clear consensus on what additional enzymes or under what specific conditions they should be used.
	Please confirm that all proteins tested in this study were digested in the infant model. Will any proteins be expected to be resistant to the infant model?	We do confirm. But clear differences were observed in the infant model as compared to the other models and between the proteins. It is also important to remark that even though intact proteins are no longer visible in SDS-page gels after few minutes, a number of peptides are observed under all the different conditions.

	Small peptides with only 1 IgE epitope could actually de-sensitize given their inability to cross-link IgE on the surface of mast cells (at least 2 epitopes needed). Have the authors also looked at the numbers of epitopes on the residual peptides (e.g. Ara h 1)?	The contractor identified known epitopes for few of the proteins from the literature and confronted those with relevant resistant fragments derived from the early phase intestinal digestion obtaining a significant overlap for few of the proteins. It was a more challenge case for Ara h 1 protein because information from literature shows that there are epitopes spanning the entire amino acid sequence. The specific relevance of each of these epitopes were not analysed as it was not under the scope of this work.
	Which of the 3 conditions is most predictive to identify allergenic proteins and could cut-off values be used in RA as no protein was fully degraded?	No real prominence/preference among the three conditions.
	How could this be translated into a well-defined protocol?	Standardised and well-known protocols are already available in the scientific literature. In specific cases, such protocols might need to be amended/adapted.

13. Adoption of the minutes and next meeting

The minutes of the current meeting will be adopted by written procedure and published at http://www.efsa.europa.eu/en/events/event/134th-plenary-meeting-gmo-panel-open-observers.

The 135th GMO Plenary meeting will be held in Parma on 29-30 January 2020.