COST Action Network on RNAi - Meeting with stakeholders on RNAi socio-economic impact. Bruxelles, 17 October 2018

Venue: COPA-COGECA headquarter (Rue de Trèves 61, 1040 Bruxelles, BE)

The COST Action - iPLANTA network, http://www.cost.eu/COST_Actions/ca/CA15223 is organizing a stakeholders meeting on RNAi socio-economic impact on the 17th October, 2018, in Brussels, (http://iplanta.univpm.it/node/63). The aim of the meeting is to create links with stakeholders, inform them of the RNAi technology, introduce some pipeline results, open the discussion on the potential use of these new plants/products and how to solve problems related to public acceptance and product development.

MORNING SESSION 9:30-13:30

Meeting with stakeholders in order to present the main features of RNAi technology and its impacts and collate stakeholders' viewpoints on RNAi-based products.

Interventions:

Bruno Mezzetti, Jeremy Sweet
Università Politecnica delle Marche, Italy - Chair of the Cost Action
Introduction to the iPlanta network and RNAi technology

Huw Jones
Aberystwyth University, UK
RNAi, cisgenesis and gene editing: what a role in plant improvement

Guy Smagge , Olivier Christiaens
University of Gent, Belgium
Case study 1 – RNAi and insects

Vinay Panwar, Kostya Kanyuka & Kim Hammond-Kosack
Rothamsted Research, UK
Case study 2 – VIGS/HIGS in wheat.

Salvatore Arpaia, Antje Dietz-Pfeilstetter
ENEA - Research Centre Trisaia (IT)
Biosafety issues associated with RNAi (HIGS – SIGS)

Vera Ventura
Università degli Studi di Milano
Trends in RNAi- based innovation

12.30-13.30 *Discussion*

13.30- 14.30 *Light Lunch*

AFTERNOON SESSION 14:30-16.30

14.30-15.00
An industry perspective on sprayable RNAi. Wendy Maddelein Syngenta, Ghent Belgium

15.00-16.00
Short presentations from industries, SMEs and stakeholders

16.00-16.30
Final Discussion

We ask you to participate and possibly to give a contribution on the potential interest in this technology to be included in the afternoon session – *short presentation from industries, SMEs and stakehol*ders.

Please confirm your interest to attend the meeting ASAP. The official invitation from the Cost office will follow including indications on the reimbursement process for your travel and accommodation.

For more information, contact Dr. Vera Ventura – WG4 Chair, email vera.ventura@unimi.it.

RNAi: Key messages to stakeholders, policy and decision makers

New breeding technologies (NBT) can play an important role improving agriculture sustainability and products quality, security and safety.

Gene editing is the most advanced technology for precision breeding on target important genes. RNAi is a complementary technology that can switch on and off genes in plants and therefore remove gene products i.e. unwanted proteins like gluten or add/increase important nutrients such as Omega 3 fatty acids.

The additional potential and unique capacity of Double-stranded RNAi technologies is to induce resistance to pests and pathogens. In fact, small RNAs (sRNAs) that mediate cross-kingdom RNAi in plant hosts represent a novel class of pathogen effectors that inhibit host immunity for successful infection. e.g. sRNA trafficking from fungal pathogens to host plants. Plant transgene-derived artificial sRNAs can induce gene silencing in certain interacting pests and pathogens, a phenomenon called host-induced gene silencing (HIGS).

The use of RNAi technology, bidirectional cross-kingdom RNAi and two-way sRNA trafficking between pests/pathogens and hosts can offer new options in plant protection both with the production of new transgenic plants and the creation of new RNAi based products that can be applied on plants with a very target specific effect on pest and diseases.

However, information is needed on the specificity of silencing and whether the produced dsRNA may also trigger non-specific (off-target) effects that affect plant physiology or non-targets. Information is also required on the efficiency and specificity of RNAi systems so that they can be designed to maximize the desired gene silencing and minimize off-target effects.

It is already used as a treatment for bees to control varroa mite and viruses, with no effects on bees

It is therefore a much safer substitute for chemical and other biological pesticides.

RNAs can be introduced into plants using a range of breeding techniques and can be applied as sprays to crop plants to control plant growth, and pests and diseases.

It is a technology being extensively used in human and veterinary medicine for targeting pathogens, particularly viruses, cancer cells and correcting genetic defects.

We consume RNA every day from different animals and plants. There is some indication that it can be taken up by mammals/humans but we have been exposed to different RNAs for millions of years with no adverse effects.

Three ‘more punchy’ key points:

- Global agriculture faces significant, challenges and innovative plant breeding that protects the environment, including key pollinators such as bees, while also producing nutritious food is part of the solution.
- New breeding technologies (NBT) such as gene editing and gene silencing make breeding more predictable and these resilient/self-sufficient crops will play a key role in the future of sustainable farming.

- The EU will lose the advantages of this biological revolution unless it invests in R&D, consumer understanding and a proportionate regulatory framework.