

WELCOME

CONFIDENCE Open Day

World Aquaculture, Natal, 9 June 2011

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Outline of the Open Day

| <i>WAS Conference 2011, Natal, Brazil</i> | | | |
|--|--|--|---------------|
| Lectures | Title | Presented by | |
| 1 | Rapid tests for chemical contaminants in seafood and fish feed - The CON#IDENCE research project | Dr. Jacob de Jong - RIKILT - Institute of Food Safety, the Netherlands | 15:30 - 15:45 |
| 2 | Rapid tests for chemical contaminants in feed: industrial needs | Dr. Ronald Barlow - Nutreco, Chili | 15:45 - 16:00 |
| Drinks | Poster presentation and discussion | | 16:00 - 16:45 |
| 3 | Simplified and Rapid Determination of PCBs, PBDEs and PAHs in fish and seafood integrated into a single method | Prof. Jana Hajslova - Institute of Chemical Technology, Prague, Czech Republic | 16:45 - 17:00 |
| 4 | Speciation of Heavy Metals - an important parameter for risk assessment of feed and food safety in aquaculture | Dr. Jens J. Sloth - National Food Institute (DTU Food), Denmark | 17:00 - 17:15 |
| Closing remark | | Dr. Jacob de Jong; Coordinator of CON#IDENCE | 17:15 - 17:30 |

Rapid tests for chemical contaminants in seafood and fish feed – the CONFIDENCE research project

Jacob de Jong, RIKILT – Institute of Food
Safety, Wageningen UR (NL)

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Introduction (1)

- Public concerns about presence of chemical contaminants in food and feed
 - Melamine in dairy products (China, 2008)
 - Dioxins in fatty acids (Germany, 2011)

Introduction (2)

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Gulf Seafood Officially Safe, But Questions and Oil Linger

Testing of shrimp, crabs and fish, among other seafood harvested in the Gulf of Mexico, continues

By David Biello | April 21, 2011 |  5

Introduction (3)

The screenshot shows the BBC News website interface. At the top, there's a red navigation bar with the BBC News logo, a 'LIVE' indicator, and the 'BBC NEWS CHANNEL' text. To the right, there are links for 'Low graphics' and 'Accessibility help', and a 'News services' section with the tagline 'Your news when you want it' and an icon of a laptop. Below the navigation bar, the main content area features a 'News Front Page' section with a 'World' sub-section. A world map is visible, with 'Europe' highlighted. The main headline is 'French oyster deaths investigated', with a sub-headline: 'The French authorities have launched an investigation following the death of two people who had eaten oysters in the town of Arcachon, south-west France.' To the right of the text is a photograph of a man in a red shirt, with a caption: 'Oyster farmers are angry at the ban'. Below the main text, there are several paragraphs of news content. On the right side of the article, there are sections for 'SEE ALSO' (listing related stories with dates and locations), 'RELATED INTERNET LINKS' (with a link to Arcachon), 'TOP EUROPE STORIES' (listing various European news items), and 'MOST POPULAR STORIES NOW' (with sub-sections for 'MOST SHARED' and 'MOST READ', listing top stories like 'Sack rape row Clarke - Miliband'). A quote box from the 'French health ministry' states: 'We should not jump to conclusions'. The left sidebar contains a list of regional and topical categories like 'Africa', 'Americas', 'Asia-Pacific', 'Europe', 'Middle East', 'South Asia', 'UK', 'England', 'Northern Ireland', 'Scotland', 'Wales', 'Business', 'Politics', 'Health', 'Education', 'Science & Environment', 'Technology', 'Entertainment', and 'Also in the news'.

Introduction (4)

- Globalisation of trade in food and feed ingredients



- Fast and cost-effective screening for contaminants is important for economic reasons:

- Product acceptance
- Official control



CONFIDENCE in a nutshell

CONTaminants in *food* and *feed*:
Inexpensive DETection
for Control of Exposure



CONFIDENCE passport

- FP7 Collaborative Project first call “Food, Agriculture & Fisheries, and Biotechnology”
- Duration: May 2008 – April 2012
- 16 partners from 10 countries, representing universities, research institutes, industry and SMEs
- Budget: 7.5 Mio €
- Coordinator: RIKILT - Institute of Food Safety, part of Wageningen UR (NL)

The commodities

Food

&

Feed

➤ **Fish/shellfish**

Fish feed

➤ Cereals

Cereal-based feed

➤ Potatoes/vegetables

➤ Honey

➤ Eggs

➤ Meat

➤ Dairy products



The target contaminants

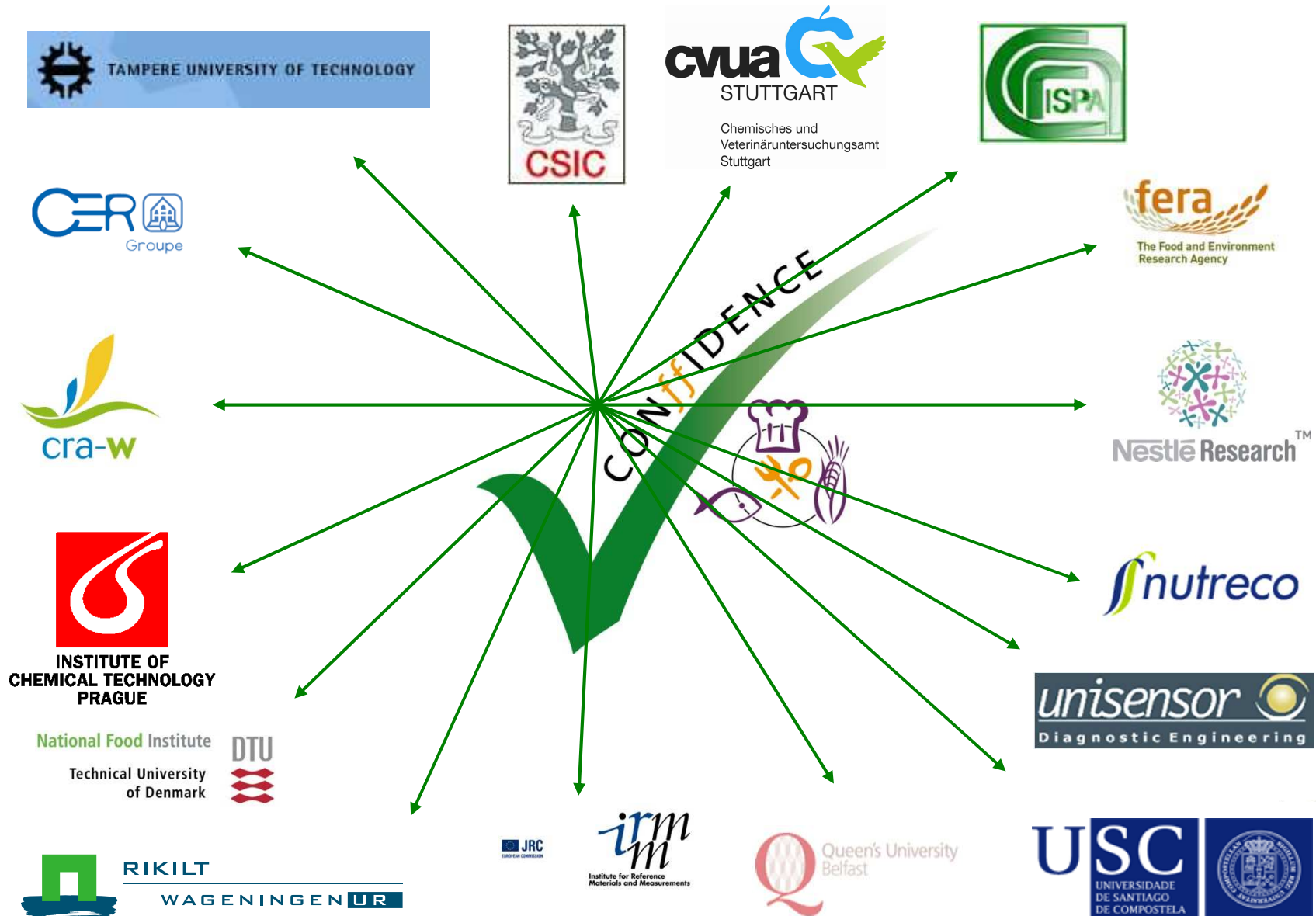
- POPs: - dioxin-like PCBs + metabolites
- brominated flame retardants
- polycyclic aromatic hydrocarbons (PAH)
- Perfluorinated compounds (PFCs)
- Pesticides
- Veterinary drugs: - antibiotics
- coccidiostats
- Heavy metals speciation: inorganic arsenic, methyl mercury
- Biotoxins: - alkaloids
- marine biotoxins
- mycotoxins

Target contaminants for fish (feed)

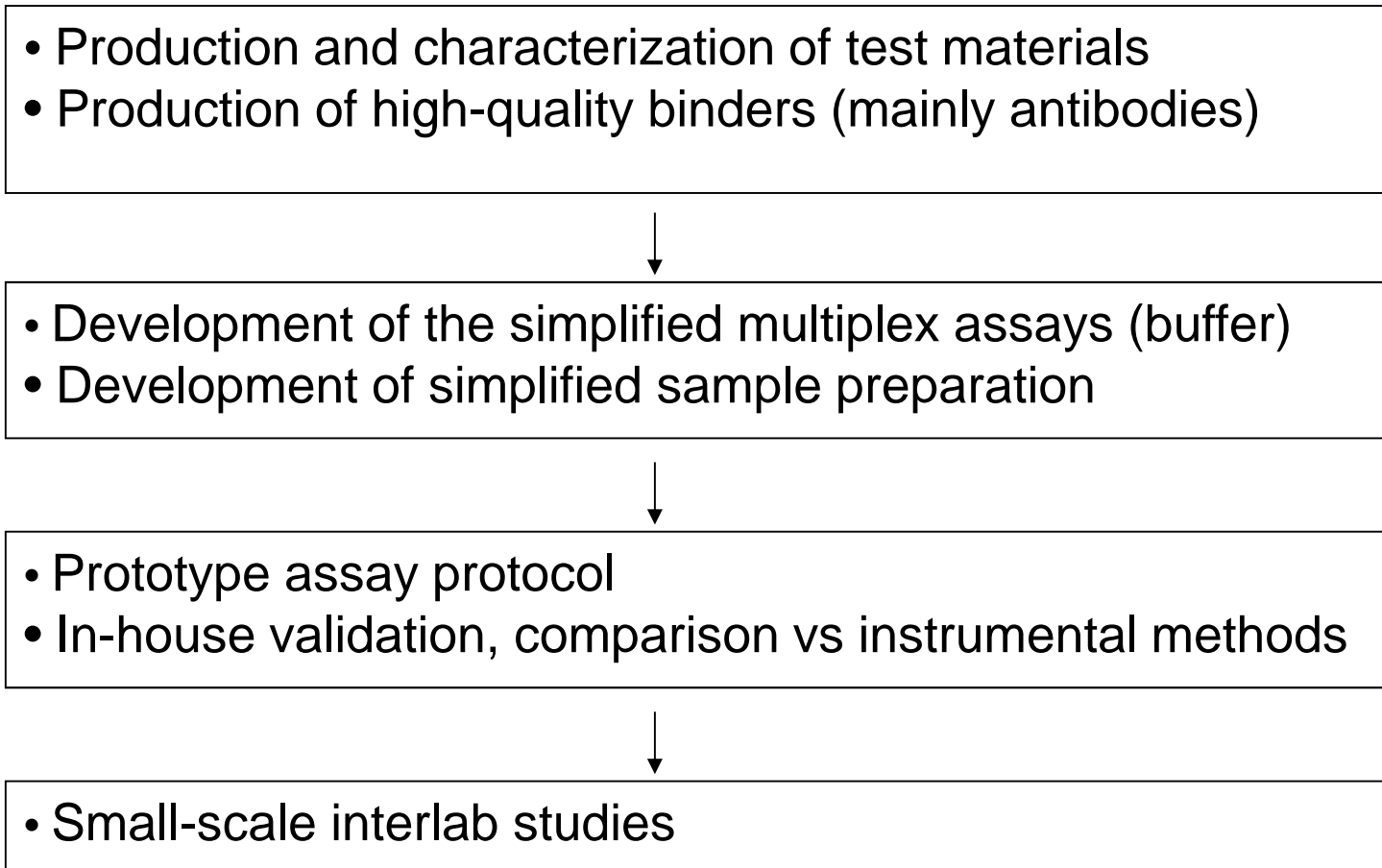
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The consortium



Current state of progress



Year 1

Year 4

Results for (shell)fish and fish feed

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- brominated flame retardants
- polycyclic aromatic hydrocarbons (PAH)
- Perfluorinated compounds (PFCs)
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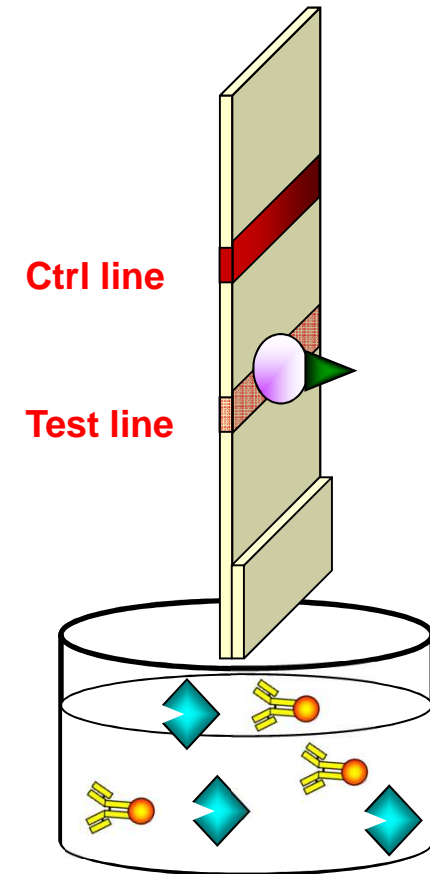
Oral presentation of prof. Jana Hajslova, ICT, Czech Republic

- Heavy metals speciation: inorganic arsenic, methyl mercury:

Oral presentation of dr. Jens Sloth, DTU Food, Denmark

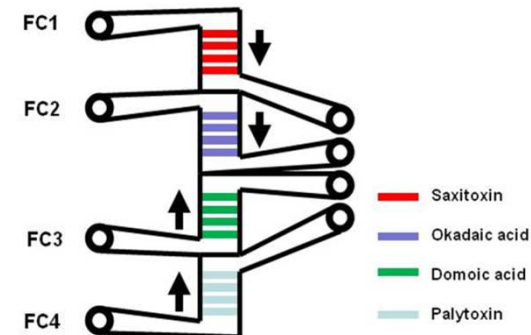
Results Antibiotics: Malachite green

- Dipstick approach
- See poster of V. Chabottaux et al.: Development of a rapid test for malachite green in fish: a comparative study between antibody, aptamer and receptor MG-binders



Results Marine Biotoxins

- Multiplex Immunoassay based on optical Surface Plasmon Resonance (SPR) biosensors
- Representatives from PSP / DSP / ASP shellfish toxin classes + Palytoxin (emerging): One test for all
- See poster of K. Campbell et al.: Progress towards the optoelectronic mouse for multi-shellfish toxin analysis



Results Perfluorinated compounds

➤ PFOS, PFOSA and PFOA

➤ Simplified LC-MS/MS method

➤ See 2 posters:

- [Marta Llorca et al.](#); Analysis of Perfluorinated compounds in fish: A comparison between farm and open sea fish
- [Jana Pulkrabova et al.](#); Analysis of Perfluorinated compounds in fish: A pilot study from the Czech Republic



Mycotoxins: products and compounds



WHEAT



OAT

Target toxins: **DON**, **ZEA**, **T-2** and **HT-2** toxins



MAIZE

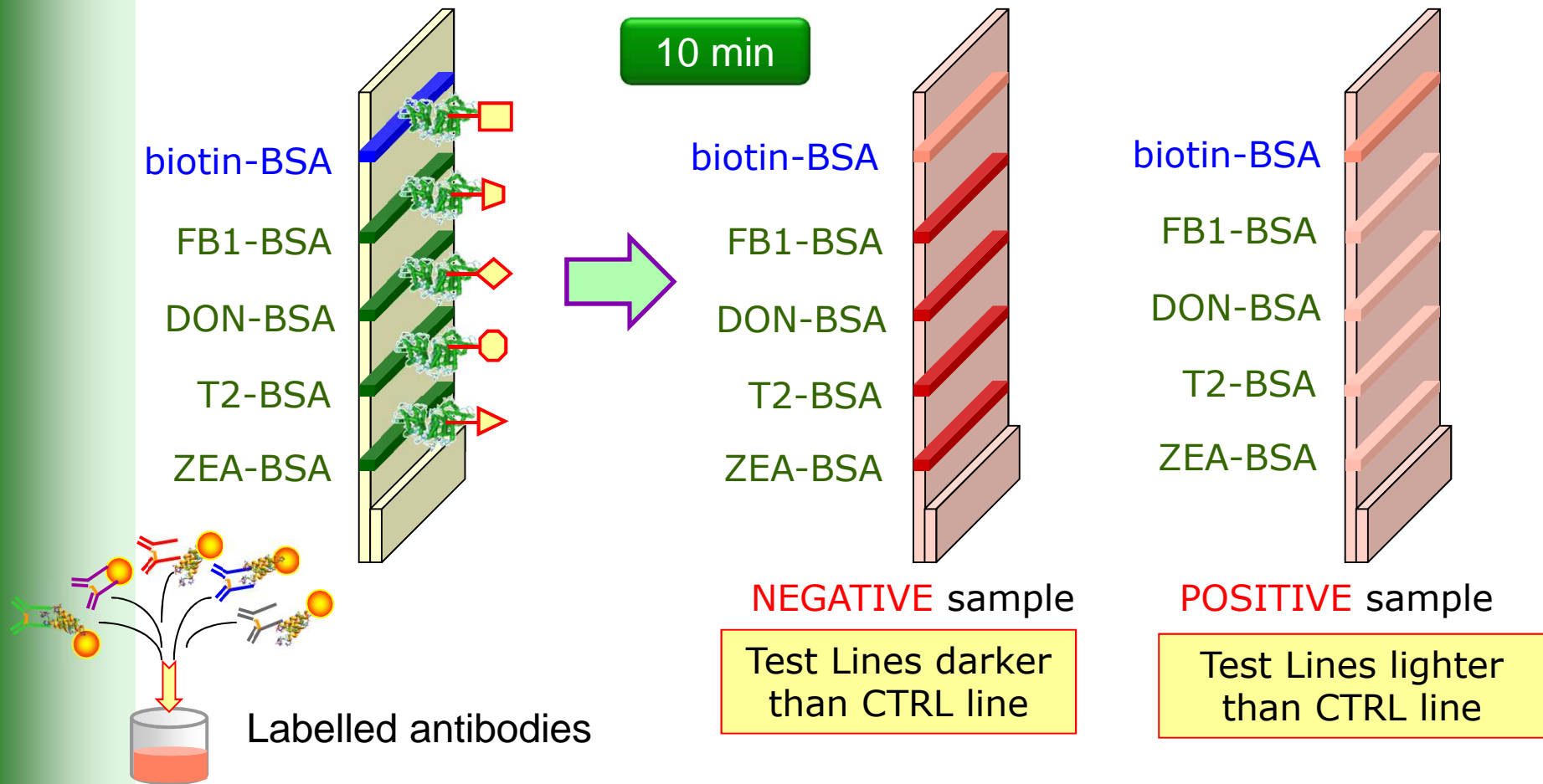


CORN GLUTEN FEED

Target toxins: **DON**, **ZEA**, **FB₁**, **FB₂**, **T-2** and **HT-2** toxins

Mycotoxins: prototype multi-dipstick

- Indirect competitive immunoassay; 10 min incubation at 40 °C



Mycotoxins: procedure for maize feed



**Total analysis
time: 30 min**



- ✓ Add water; 2 min blending
- ✓ Add methanol; 2 min blending



Dilution and
analysis

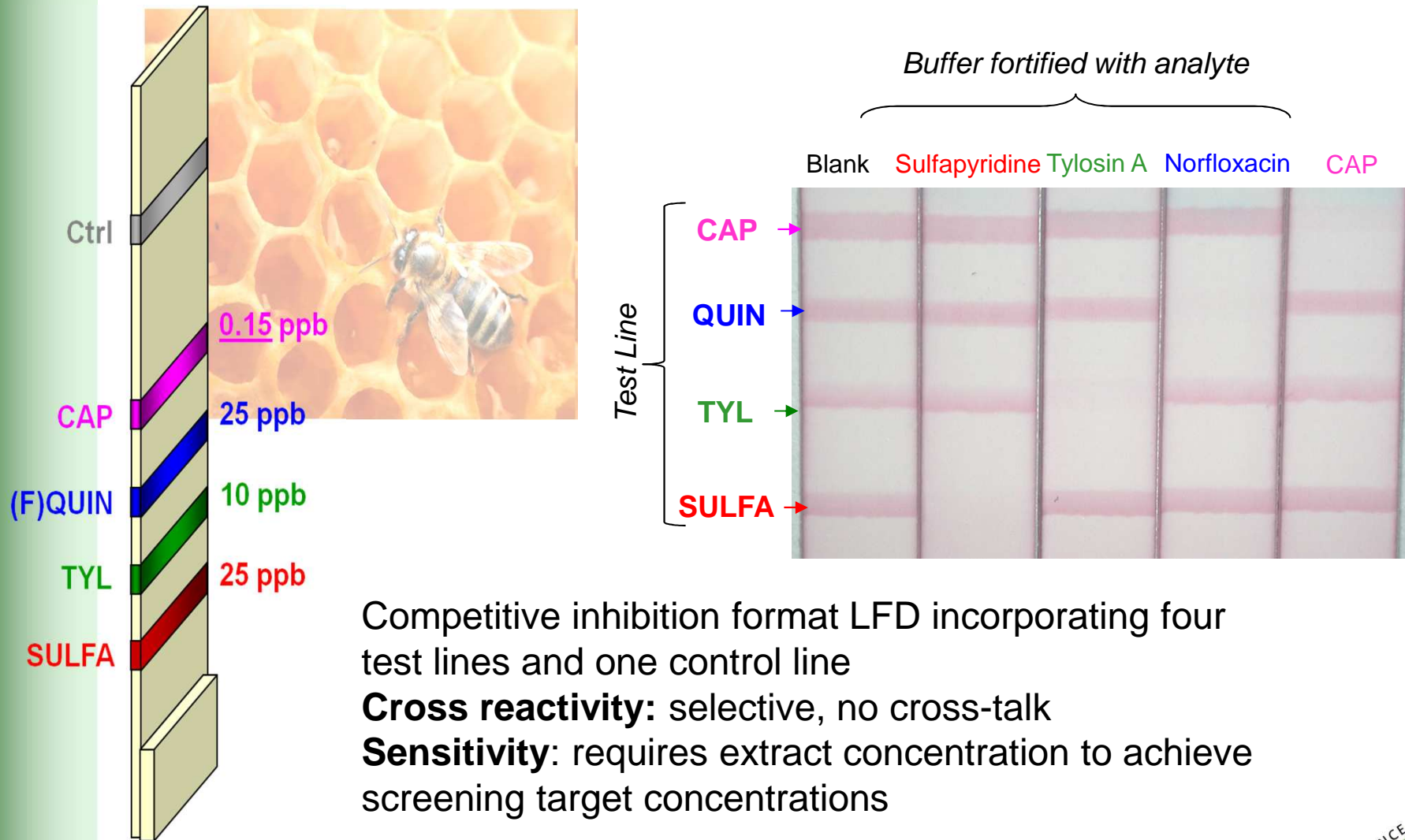


Incubation at 40 C, 10 min
Migration, 10 min

Negative sample
positive ZEA
Positive ZEA/T2
Positive ZEA/T2/DON
Positive ZEA/T2/DON/FB1



Antibiotics in honey: prototype dipstick



Antibiotics in honey: dipstick reader



Multiplex dipstick reader instrument in development to give numerical result



Acknowledgements

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More information

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Thank you for your attention !

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