



# THE FOOD CHAIN

THE *safefood* KNOWLEDGE NETWORK NEWSLETTER

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## IS FOOD PLAYING HAVOC WITH YOUR HORMONES?



**Dr. Lisa Connolly is a leading academic in Toxin Food Safety and an expert in the Bioassay Analysis of Endocrine Disruptors at the Institute for Global Food Security based in Queen's University Belfast. Lisa explains how chemicals found in food and the environment could be endangering our health.**



Dr. Lisa Connolly

area of endocrine disruptors. "I believe that many diseases today may originate from endocrine disrupting contaminants in our diet and environment. I firmly believe that we could prevent a lot of these diseases by improving our understanding and safety against the exposure of endocrine disruptors," explains Lisa.

The team of researchers working on PROTECTED will try to identify new and emerging endocrine disruptors and understand the complex effects of their mixtures. The new information can then be used to inform food production legislation and protect the

### WHAT ARE ENDOCRINE DISRUPTORS?

Endocrine disruptors are chemicals that can interfere with our endocrine or hormone system. Chemicals of concern include both man-made and natural sources which may contaminate the food chain, for example through the use of pesticides in crop production, chemicals that can leach from food packaging, as well as toxins produced naturally by fungi or algae. Endocrine disruptors can also enter the food chain through animals farmed for consumption which have been administered with illegal hormones or exposed to industrial chemicals that may be present in their feed.

**E**ndocrine disruptors are chemicals found in food that can affect our hormones and are linked to a host of health issues. These include cancer, infertility, obesity and diabetes.

Dr. Lisa Connolly, an internationally recognised researcher, is leading the

way in these studies. Having originally obtained a BSc in Biological Sciences at the University of Ulster in 1994, Lisa went on to be awarded a Ph.D in Biological Sciences specialising in cancer research at Dublin City University. It was at this time that her interest began to pique in the

**"WE NEED A NEW GENERATION OF EXPERTS WHO CAN TACKLE THIS GLOBAL PROBLEM"**

### WHAT IS THE PROTECTED PROJECT?

Queen's University Belfast is leading a €4m international project to investigate whether natural toxins (such as fungal toxins) and man-made chemicals (such as pesticides) are creating potentially dangerous mixtures that affect the normal balance of our hormones and increase our risk of cancer, obesity, diabetes and infertility.

The project, called PROTECTED, is funded by the European Commission and is being led by Dr. Lisa Connolly, a leading academic in Toxin Food Safety and an expert in the Bioassay Analysis of Endocrine Disruptors at the university's Institute for Global Food Security. Dr. Connolly will collaborate with global experts involving thirteen organisations across nine countries to tackle this worldwide challenge.

consumer. PROTECTED differs from previous research on endocrine disruptors. While most projects have focused solely on the effects of man-made chemicals on the endocrine system, Lisa and her team suspect that natural chemicals such as fungal toxins may be creating a mixture with man-made chemicals and the natural hormones in the body, causing adverse health issues.

Researchers working on this project will examine the effects of endocrine disruptors on cells, development and brain function, plus explore the links that these toxins may have with the rise in modern diseases.

The team will also work on developing effective communication strategies to the public. The social science aspect proves an ongoing challenge, so Lisa and her team will work closely to evaluate how much the consumer understands about endocrine disruptors.

"Once we know this, we can start developing tools by which we can explain the true risk of endocrine disruptors to the consumer, what they should be concerned about and how they could avoid them."

Traditionally, legislation has protected the consumer from individual compounds, but legislation hasn't always taken into account that on a daily basis we can be exposed to many different types of chemicals. We suspect that they may form mixtures in our body together with our own natural hormones, increasing the risk to our health. Legislation needs to consider the risk posed by mixtures of both man-made and natural endocrine disruptors. We hope to help this process through knowledge gained in the PROTECTED project.

While legislation is currently controlling the introduction of chemicals to our food chain,

the processes used to produce food is continually changing, meaning new risks.

"We need a new generation of experts who can tackle this global problem and come up with innovative ways and strategies to control these threats and protect our health now and in the future.

"Human health will be our main focus over the coming months. An added advantage of hosting this project internationally is that the results will be different in each country due to differing factors like climate, the natural environment and temperature. We're looking at chemicals that can gain entry into the environment, water resources, soil and food chain and how these can affect the health of the consumer. We are ultimately developing a new generation of researchers with the innovative capabilities of producing research tools to tackle this ongoing problem now and in the future."

Having just launched the PROTECTED project, Lisa acknowledges that a collaborative effort is required to protect the public: "The overall difficulty is that it's very hard to individually warn a consumer on what they can do. So I think we need a combination of consumer practice, scientific research and informed legislation to control the overall problem.

"In four years time, we hope to have produced an army of innovative and expert world leaders in the area of protecting the consumer against endocrine disruptors."

PROTECTED has received its funding from the European Union's Seventh Framework Programme for research, technological development and demonstration.

**For further information please see the PROTECTED project website on: [Protected.eu.com](http://Protected.eu.com)**

## LATEST EUROPEAN ZOOONOSIS REPORT



The European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC) publish a report annually which details the trends and associated sources of foodborne illness reported in 32 European countries (specifically, 28 member states and four non-member states). The 2015 report named 'The European Union summary report on trends and sources of zoonosis, zoonotic agents and foodborne outbreaks', was recently published and here are some of the findings for 2015:

- *Campylobacter* continued to be the most common cause of bacterial food poisoning in the European Union with 229,213 confirmed cases.
- 26 member states reported a total of 4,362 foodborne outbreaks, including waterborne outbreaks.
- Overall, these outbreaks caused 45,874 cases of illness, 3,892 hospitalisations and 17 deaths.
- Most foodborne outbreaks reported were caused by bacterial agents (33.7% of all outbreaks), in particular *Salmonella* (21.8% of all outbreaks) and *Campylobacter* (8.9% of all outbreaks).
- Bacterial toxins ranked second amongst the causative agents in foodborne and waterborne outbreaks and were reported in 19.5% of the total outbreaks.
- Viruses accounted for 9.2% of total outbreaks.
- Parasites and other agents, in particular histamine, were reported in less than 3% of the outbreaks.

**For more information, please visit: <https://www.efsa.europa.eu/en/efsajournal/pub/4634>**

# KEEPING THINGS SIMPLE WITH CLEAN LABELLING

**Joe Ahern, Innovation Manager of Food Systems at the Kerry Group, explains what clean labelling is and why the food industry is getting behind it.**

Over the last number of years, consumers have become increasingly preoccupied with what ingredients are in the foods they are eating. To satisfy this growing desire for less processed foods, manufacturers are embracing the trend known as clean labelling.

Clean labelling is essentially about making the ingredients in food products as natural and simple as possible, replacing any additives, chemicals or preservatives with a naturally-occurring ingredient or the closest natural form without compromising the flavour, safety or shelf-life of the food.

As Innovation Manager, Joe Ahern's role is to research such alternatives and provide solutions to assist clean labelling, a process that has been brought about by public demand.

"Generally speaking, I think people are concerned about certain E-numbers and preservatives based on the comments from the World Health Organisation on processed meats...People want to trust what they're eating," he explains.

## "THE ISSUE OF REPLACING E-NUMBERS HAS BEEN GOING ON FOR A NUMBER OF YEARS, WHICH MEANS THAT THE DRIVE FOR CLEAN LABELLING IS NOT NEW"

As well as regaining the trust of the public, another desired outcome of clean labelling is that, one day, we could potentially have food that is free from E-numbers. Joe argues: "The reality is saying a product is free of E-numbers changes people's mindset from a food being processed to thinking of a product as food they have prepared or would cook themselves.

"One of the goals of clean labelling is to change public perception that foods are heaped with chemicals and preservatives, which removes it far away from the authentic product. The ultimate aim for anyone in my role is to have no E-number preservatives in a product."

Of course, it must be noted that the safety of consuming E-numbers has been verified and moreover, they have allowed us to avail of a wide variety of foods.

Joe acknowledges this: "The materials that are being used, the E-numbers, have been proven to be effective at their job and up to a certain level their general safety has been proven as well. But that's not sufficient for consumers. They want more, they want better, they want a food ingredient rather than a chemical."



In other words, the ingredient list of a food product is paramount in terms of a consumer's priorities when buying food. While the push for clean labelling continues to spread, it's not exactly a new phenomenon and is something that the Kerry Group has been investing in for many years.

"The idea here was to create a better perception when launching products, and a better degree of safety of the foods being supplied," Joe reveals.

Of course, it's not just processed meats that are being looked at, confectionery is another product that has come under scrutiny over the past few decades, particularly in relation to the effects of the levels of E-numbers and colouring it contains. In the European Union, the response to this was legislation, meaning that companies now have to notify the public clearly on the label when such colours are included.

Going one step further, Joe and his colleagues are trying to find suitable and safe alternatives: "In the lab, we decide what can really be done to replace particular E-numbers, and with ingredients like colours. They need to be able to do the same job as E-numbers but also be more acceptable to consumers."

An example of where clean labelling has worked effectively is in the confectionery industry, specifically in relation to food colouring. Companies have embraced the trend by swapping E-numbers with natural alternatives. For example, the synthetic red food colour E122 can be replaced with natural red cabbage extract.

Even still, there are challenges facing food businesses hoping to adopt a clean labelling approach, namely cost and sustainability. While manufacturers can take pride at the idea of taking raw ingredients from sustainable sources, it has to be affordable and long-lasting. However, Joe believes that it's worth the effort and is a process that all companies will inevitably have to get on board with. In the long term, clean labelling will be beneficial to both food businesses and the consumer.

## WHAT ARE E-NUMBERS AND FOOD ADDITIVES?

E-numbers are code numbers used to identify food additives that have been approved for use in foods within the European Union. Food additives can be used to preserve food, enhance flavour and/or improve appearance.



# FOOD PREP FOR SAFE FOOD

## Environmental Health Officer Sinead Smith explains why planning is the key to success when it comes to food businesses.

As an Environmental Health Officer (EHO) for the Health Executive Service, one of Sinead Smith's main duties includes ensuring food safety. Based in Co. Meath, Sinead carries out advisory visits to start-up food businesses.

"For me, it's all about helping them get their food safety systems into place. Sometimes it's to break down and clarify legislation, sometimes it's more to make sure they have all their paperwork and plans ready.

"A lot of the time, when people feel they're ready to produce food, they come to ourselves. Then when we ask for a food safety management system, traceability system, or to see their labelling, we realise they might not have thought there were so many background areas to cover."

For Sinead, planning is crucial for any food start-up business. By working with EHOs as early as possible, businesses can later avoid problems and save themselves unexpected costs.

"We like to work with people when they're at the early stages, before they commit to premises or put in any structural facilities. The process is really to contact us, plan ahead and do the research," Sinead explains. Following years of experience, Sinead is confident that when looking at floor plans or storage, an EHO will spot potential pitfalls for a new business and their possible expansion.

Speaking about the early stages of design, Sinead says, "If we can see floor plans of say a proposed unit, or even the premises of a restaurant or shop and we know their plans, we can identify if they'll need more storage or floor space for food safety in the future – before they invest any considerable amount of money.

"I think the one lesson I've learned from watching start-ups is to plan ahead."

## "THE FOOD PRODUCT IS ONLY AS GOOD AS ITS INGREDIENTS"

EHOs have a two-pronged approach when it comes to food safety; compliance and enforcement. To achieve compliance, EHOs will work with food businesses and make them aware of the supports and resources that are available to them. Where there are serious non-compliances and risks to public health, EHOs can take enforcement action. There are a number of enforcement actions available to EHOs under current legislation, such as the options to seize, remove or detain foodstuffs suspected of contamination. They can also issue improvement notices, prohibition notices and closure orders.

While Sinead emphasises that EHOs do not want to close business premises, she stresses that protecting the public is always their number one priority.

"Food business closure is evaluated on a case-by-case basis. The closure, and how quick that happens, always depends on the risk to the public at that time."



When a business does pose a threat to public safety, Sinead explains that an EHO must follow a process of discussing the risks and the threat with a Designated Officer (a person appointed by the FSAI to ensure enforcements are performed in a transparent manner). In cases where the threat is immediate, an EHO will process a closure immediately.

Addressing the biggest obstacles that could derail their start-up success, Sinead advises food businesses to dig deep and research their supply chain.

Sinead explains, "One of the biggest challenges facing the food industry at the moment comes in the form of supplier control. By that I mean, careful selection of reputable and registered suppliers and stringent delivery intake procedures are essential. Inextricably linked to supplier control is food fraud, which has become one of the biggest emerging risks and is part of our daily control duties."

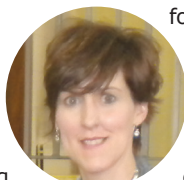
During inspections, Sinead and her team will routinely assess the proof of the origins of food products and in practical terms investigations may include sampling and analysis such as DNA testing and chemical analysis. Such investigations often involve cross-border and cross-agency co-operation with environmental health and control colleagues in Northern Ireland (NI) and other government officials in the Department of Agriculture and Revenue in the Republic of Ireland (ROI).

"Like any good building foundation, the food product is only as good as its ingredients," warns Sinead.

"The final trader, such as the local butcher or restaurant owner may unwittingly become the victim of food fraud. Without stringent supplier control procedures, each food business could be placing its reputation and its very survival in the hands of their suppliers."

"I think the main message to new business ventures is as always: do your research and plan ahead. Consult with your local EHO officer prior to commencing a food business."

*To contact your local EHO in ROI visit [www.hse.ie](http://www.hse.ie) and in NI visit the website of the local council for more information.*



Sinead Smith

### ABOUT SINEAD

**Hobbies/ Interests:** I'm very interested in keeping fit and my health. I do circuit training three nights a week. I also do some trekking and running.

**Favourite Food:** I'm a big fan of the new salad bars popping up. I love a really fresh salad.

# WHEN RESEARCH AND FOOD JOIN FORCES

**With over 70,000 local people employed in the agri-food sector in Northern Ireland, Agri-Food Quest Manager, Stephane Durand explains how collaboration and research will shape the future of the food industry.**

Stephane began his studies in Paris at the Pierre and Marie Curie University where he completed an undergraduate degree in Chemistry and Biochemistry, before undertaking an MSc in Food Science and Technology. Stephane has been working in the food industry for the last 10 years and is also a member of the **safe food** Knowledge Network Expert Facilitator Group, where he advises on current and emerging food safety issues. In 2015, Stephane took up the role of Agri-Food Quest Manager at the newly formed Northern Ireland Technology Centre at Queen's University Belfast.

As part of his role at the Agri-Food Quest Competence Centre, Stephane is responsible for encouraging research projects that focus on key issues facing the food industry. On these issues, he explains: "It could be anything such as shelf-life extension, food safety, security around food supply or looking at ways to add value to products."

However, the most important part of the entire process isn't identifying or even informing people about the challenges, it's finding the resources and finances to support research in these areas. Specifically, a minimum of three member companies have to combine forces with at least one university or research organisation to be considered for funding.

## "IT'S VERY REWARDING TO GET DIFFERENT AREAS OF INDUSTRY WORKING TOGETHER, SOLVING PROBLEMS"

This is where Stephane comes in, as he explains: "I'm the cement between the blocks. I'm not really a researcher, I'm a project coordinator who connects the industry to the right researchers in the areas of interest or expertise."

While getting this right requires time, it's often worth the effort. He admits: "It's exciting to watch the realisation for companies that, by working together, they can solve a big problem that they could not solve on their own. It's very rewarding to get different areas of industry working together, solving problems and looking at serious barriers like environmental issues and sustainability."

On the topic of sustainability, Stephane adds: "The reality is we will have to produce more, but within the same amount of land. We need to examine how we do that in a sustainable way. If all the farmers and processors are thinking about this and choose to pool their resources, they will have a much better chance of actually solving those big societal problems."

A new challenge that the food industry in Northern Ireland (NI) is currently facing is the impact of Brexit. Along with food



resources and exports, a 'harsh Brexit' could potentially impact on cross-border trading between NI and the Republic of Ireland (ROI) as well as current EU trade agreements.

Stephane explains: "Brexit is really the key of uncertainty – nobody can control it, or how it will affect them. We don't know what is going to happen, so Brexit is by far the biggest risk in relation to the local food industry."

On the other hand, Stephane suggests that it could turn out to be beneficial by strengthening the willingness to collaborate across industries and borders: "I think that ROI and NI have been successfully collaborating for decades. I hope this can continue, as we are facing the same issues. The projects we are working on have been really successful because they have been across borders."

While the future remains uncertain now in terms of Brexit, joining forces is the way forward in terms of tackling issues and solving problems within the food industry, giving companies across the island of Ireland plenty of food for thought.



Stephane Durand

## WHAT IS THE AGRI-FOOD QUEST COMPETENCE CENTRE?

Agri-Food Quest is a membership-based centre which aims to grow the agri-food industry in Northern Ireland (NI) through research and innovation. Specifically, this involves encouraging interaction between researchers and the food industry. The centre is based at Queen's University Belfast and membership is open to all agri-food businesses in NI as well as those outside of NI that will contribute to the local economy. Currently, there are 26 companies involved with Agri-Food Quest and 10 projects have been signed up or are underway. Agri-Food Quest is funded by Invest NI, the NI business development agency. Funding also comes from industry and research funding resources.

## ABOUT STEPHANE

**Hobbies/ Interests:** I do a bit of running and a bit of walking. I also love to read – history in particular.

**Favourite Food:** As a French man, I like quite a lot of food – my absolute favourite is king scallops.



# HOW CLIMATE CHANGE IMPACTS ON THE DAIRY INDUSTRY ON THE ISLAND OF IRELAND



Climate change has the potential to impact almost every aspect of food production on the island of Ireland (IOI). In 2016, **safefood** commissioned research to find out how vulnerable the dairy industry on the IOI is to the effects of climate change. The research was headed by Prof. Thia Hennessy of University College Cork in collaboration with Teagasc and Queen's University Belfast. According to Prof. Hennessy, "stakeholders from right across the dairy supply chain demonstrated a high level of awareness of climate change as well as a commitment to collective action to avail of any opportunities climate change may bring."

Climate change is predicted to have both positive and negative impacts on food production worldwide. On the IOI, warmer temperatures will lead to a longer growing season but extreme weather events will take their toll and possibly lead to the spread of pests and diseases. This will have implications for the availability and price of animal

feed, for fodder production, and may lead to a change in consumer attitudes towards the food they buy, including dairy products.

The research identified a number of food safety risks involving disease, chemical contaminants and natural toxins. Of particular note is the potential for an increase in the range and occurrence of mycotoxins. These fungal toxins can cause disease in both humans and animals. Dr. Katrina Campbell of Queen's University Belfast explains "Climate change may also pose a threat for food safety as one of the most prevalent food safety hazards within the dairy industry are mycotoxins which can contaminate animal feed. Warmer and wetter climates, such as those projected for the IOI, would favour greater fungal growth and thereby increase the risk of mycotoxin contamination." To counter the potential impact of climate change on food safety within the dairy supply chain, new and innovative technology and monitoring systems are required to identify hazards

**Climate change is a growing concern for a number of industries, particularly the food industry. From the spread of disease to the possibility of contamination, a recent research project commissioned by safefood took a closer look at the potential risks facing those in the dairy industry.**

before they are transmitted through the food chain.

The findings of the research were presented at two seminars; the first was in partnership with Teagasc and was held at the Ashtown Food Research Centre in Dublin in February. The second event, in partnership with Queen's

Matthews, emeritus professor of European Agricultural Policy at Trinity College Dublin.

The seminars heard that science and technology can play a major role in mitigating climate change, but that there are obstacles getting technology from the lab to the farm. Stakeholders felt that

## "RESEARCH IDENTIFIED A NUMBER OF FOOD SAFETY RISKS...DISEASE, CHEMICAL CONTAMINANTS AND NATURAL TOXINS"

University Belfast was held at the Ramada Shaw's Bridge hotel, Belfast, in March. The seminars were attended by over 120 people, representing a broad range of stakeholders, particularly those working in the dairy industry. As well as presentations by the researcher collaborators, the Dublin programme also included a keynote presentation from Prof. Alan

technologies being developed to address greenhouse gas emissions should be discussed with farmers in the developmental stage to establish their practicality.

**To view the full research report please visit [www.safefood.eu/Publications/Research-reports.aspx](http://www.safefood.eu/Publications/Research-reports.aspx)**



# RECENT EVENTS

## FOOD SHELF-LIFE STUDIES WORKSHOP

**safefood**, in partnership with the Food Safety Authority of Ireland, held a food shelf-life studies event in Celbridge, Co. Kildare, on the 10th November 2016. This event was attended by 163 people from across the island of Ireland, from health agencies, regulatory bodies, food testing labs and the food industry. The event discussed legislation, what regulators expect from food businesses in terms of shelf-life studies and the options that are available to help estimate, set and verify the shelf-life of food. The planning, design and interpretation of laboratory testing methods (i.e. durability studies and challenge testing) were also addressed.



## safefood RESEARCH PORTFOLIO

**safefood** undertakes a programme of research in order to address scientific gaps related to food safety, food hygiene, nutrition and healthy eating.

Since 2000, **safefood** has commissioned over 117 research projects covering various disciplines including; microbiological and chemical risks and hazards, studies of dietary patterns, food intakes and attitudes among various population cohorts, food poverty, consumer psychology and food allergy and intolerance issues. All research reports can be found within the Research Portfolio on the **safefood** website, [www.safefood.eu/Professional/Research-Portfolio.aspx](http://www.safefood.eu/Professional/Research-Portfolio.aspx)



# CLEANING AND HYGIENE VIDEOS FOR FOOD BUSINESSES

In partnership with Teagasc, **safefood** has made a number of videos for food businesses. These videos cover the basics of hygiene and cleaning whilst dispelling some of the myths and answering some frequently asked questions. They also include some helpful cleaning and hygiene tips.

To view the videos, please visit our YouTube channel, [safefoodTV](http://safefoodTV). There you will find videos addressing the following topics:

## Effective Cleaning for Food Business Personal Hygiene in your Food Business



# UPCOMING EVENTS

In 2017, **safefood** will host a series of workshops for small and medium-sized food businesses in association with Teagasc and College of Agriculture, Food and Rural Enterprises (CAFRE). These workshops will provide practical advice on bacterial contamination, allergens, traceability and supply chain.

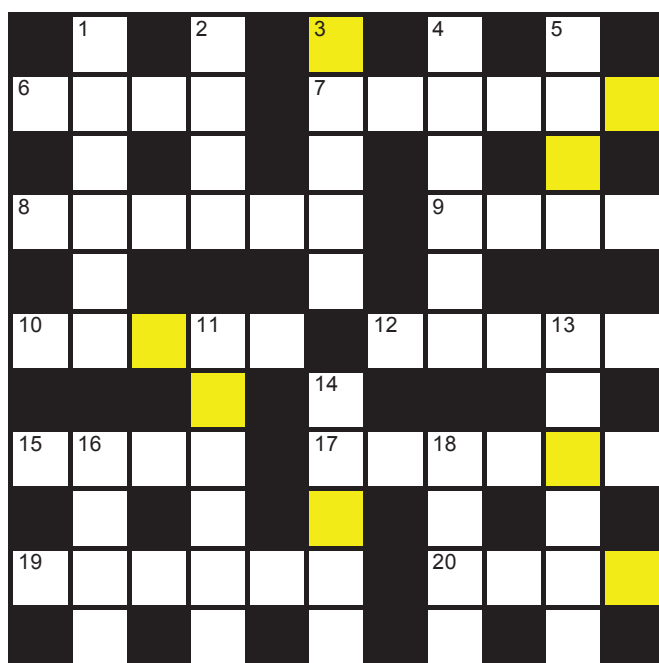
Workshops are **free**, but places are limited, and allocated on a first come, first served basis.

To register to attend, please visit [www.safefood.eu](http://www.safefood.eu)

- **Ennis:** 26th April, Treacys West County Hotel
- **Tralee:** 27th April, Manor West Hotel
- **Donegal:** 9th May, Harvey's Point Hotel
- **Westport:** 10th May, Wyatts Hotel
- **Athenry:** 11th May, Raheen Woods Hotel
- **Skibbereen:** 30th May, West Cork Hotel
- **Cork City:** 31st May, **safefood**, Little Island
- **Navan:** 12th September, Newgrange Hotel
- **Cookstown:** 13th September, Innovation Centre, CAFRE



# COMPETITION



**safefood** is delighted to offer one lucky crossword winner a luxury hamper of gourmet food from Arcadia Delicatessen in Belfast.

Simply find the hidden bacteria in the crossword, made up from the letters highlighted, and send the answer to [knowledgenetwork@safefood.eu](mailto:knowledgenetwork@safefood.eu) before 2nd June 2017. This competition is open to Knowledge Network Members on the island of Ireland only.

**CONGRATULATIONS TO THE WINNERS OF OUR LAST COMPETITION, JOHN GREEN AND LEONA HAWKES!**



The Knowledge Network team would like to wish Sarah Norberg a very fond farewell as her time in the **safefood** office comes to a close. Sarah has been instrumental in not only putting The Food Chain together over the past year, but also in working on the Knowledge Network as a whole. Thank you Sarah!

We want to hear from you! Have you got a personal announcement? Let us know. Email [knowledgenetwork@safefood.eu](mailto:knowledgenetwork@safefood.eu)

## ACROSS

- 6 Spanish bubbly (4)
- 7 Dining chair with arms: knife to cut cooked meat (6)
- 8 Bacon serving: more hasty (6)
- 9 Bakery item: sharp, sour (4)
- 10 Sauce: Latin American dance (5)
- 12 Soup or stew made by boiling meat and vegetables in water; stock for a gravy (5)
- 15 Hard Dutch cheese (4)
- 17 Meat once popular, particularly in a stew or a pie (6)
- 19 Pickled flower buds used as a relish in various dishes and sauces: gambols (6)
- 20 Condiment; preserving agent (4)

## DOWN

- 1 Starchy yellow fruit (6)
- 2 Dish of minced meat, onions and mashed or cubed potato: complete mess (4)
- 3 Cut into the skin of a piece of meat, like pork when making crackling (5)
- 4 Kitchen utensil for food preparation (6)
- 5 A sweet edible fruit which is wider at the bottom (4)
- 11 Slow cook below boiling point for certain foods: seethe (6)
- 13 Dessert of fruits, jelly, custard and cream on a sponge base, often laced with sherry: something of small importance (6)
- 14 Salad greenery (water and garden varieties) (5)
- 16 Measure of Scotch whisky, especially in Scotland: apothecary's weight (4)
- 18 Food fish of freshwater and sea varieties: lowest register of the male voice (4)

## Get involved with THE FOOD CHAIN

We'd love to hear from you. Would you like us to feature your research or industry sector? What else would you like us to cover in the world of food safety? Send your article ideas, feedback and suggestions to [knowledgenetwork@safefood.eu](mailto:knowledgenetwork@safefood.eu)

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