

the Analytical Scientist

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Emily Hilder

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the Analytical Scientist
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2016

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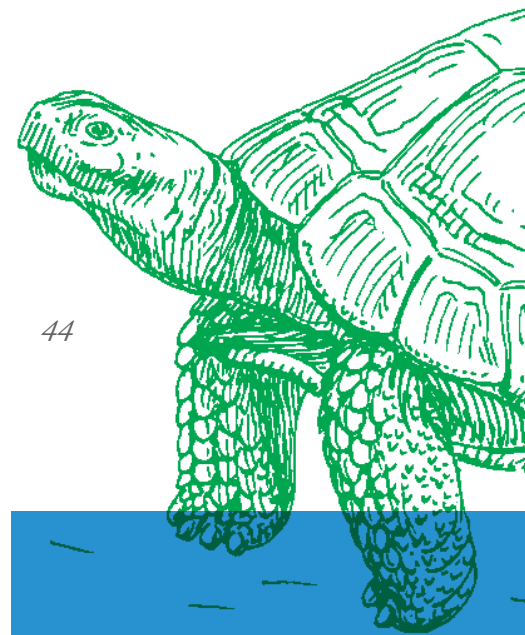
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In My View

- 18 **Ann Van Eeckhaut** asks if UHPLC-ESI-MS/MS could be the best method for quantifying neuropeptides
- 19 Does 2D-FT-ICR MS have the same potential that 2D NMR did in the 1980s? asks **Christian Rolando**
- 21 **Elia Psillakis** believes that sample preparation deserves more attention in academia – but that unlocking the black box of microextraction is a good start
- 22 The development of well-organized protocols for tiny samples is a pressing analytical challenge, says **Takayuki Kawai**

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Feature

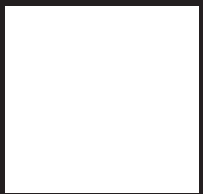
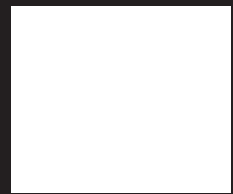
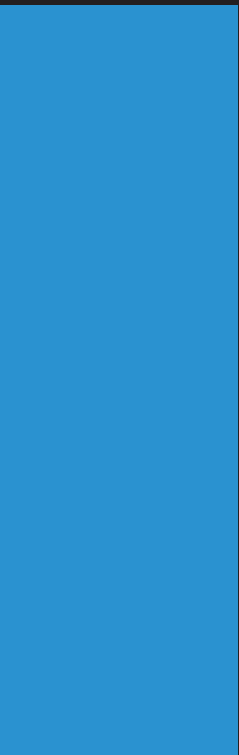
- 24 **The Power List 2016**
The results are in! Meet the Top 50 women who are shaping the future of the analytical sciences.

Departments

- 44 Solutions: What if Aesop's Tortoise Was Smarter? by Fred Regnier

Sitting Down With

- 50 **Emily Hilder**, Director, Future Industries Institute, University of South Australia, Australia

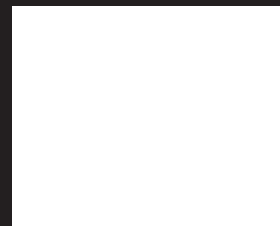
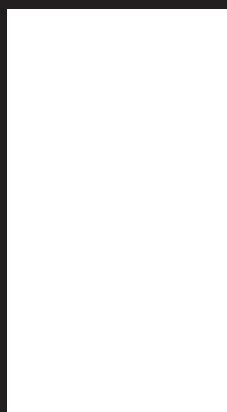
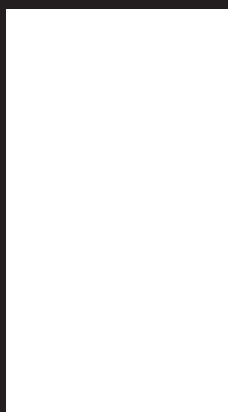




the
Analytical Scientist

Power List

2016



With three somewhat provocative Power Lists behind us (but certainly not forgotten), we once again forge ahead with our mission: to prove just how impactful and diverse our field is by sharing the passions, pivotal moments and predictions of brilliant scientists who continue to shape our future. Welcome to the 2016 Power List and the Top 50 most influential women in the analytical sciences.





CHIARA CORDERO

ASSOCIATE PROFESSOR
OF FOOD CHEMISTRY,
DIPARTIMENTO DI SCIENZA E
TECNOLOGIA DEL FARMACO,
UNIVERSITÀ DEGLI STUDI DI
TORINO, TURIN, ITALY

Passion: As a food chemist, I like to contribute to revealing the “magic” and the “logic” beneath food preferences, hedonic value and nutritional impact. The ultimate aim of our work is to understand the intriguing – and rather complex – crossroads between what we eat and why, and what we are. ‘What we eat’ relates to the need to understand

food composition in (chemical) detail to differentiate high quality from mass-produced products, enable its authentication or assist technologists during industrial processing with a view to defining a quality benchmark. ‘What we are’ relates mainly to the interaction of food components within our body. It goes beyond the nutrition domain and includes the effect of non-nutrients and bioactive compounds that may promote health and wellness (nutraceuticals). Sensory pleasure drives food choice, which is fundamental for industry competitiveness and production chain sustainability. Quality food improves our health and wellness, which is crucial for our society.

Pivotal moment: I began my research career in a joint project with a private company on food safety; it was the first step toward a fruitful and exciting interaction that still today inspires our research activity. In academia, we are free to decide what, why, when, and how. However, if we lose contact with real life and the needs of society, our findings are useless. Food production sustainability and benchmark quality are the real challenges for the future in this field. It is

no coincidence that my research interests have changed direction from food safety to advanced food quality concepts, after experiencing the excitement of sensomics at the Technical University of Munich with Peter Schieberle, and more recently working in the food metabolomics domain.

Predictions: Within foodomics investigations, we readily adopt the best technology (LC×LC as well as GC×GC coupled with MS) and our community is quite open-minded when it comes to new approaches. However, thanks to the rapid evolution of mass spectrometry and the growth of multidimensional separation techniques, the risk is to undervalue their informative potential, limiting data mining to specialists and their complicated software. I foresee that more intuitive and user-friendly approaches will be the next step. It would be beneficial for all consumers and, of course, for science itself.

As a woman, mother and university teacher, most of my efforts in daily life are devoted to making complex concepts clear, simple and affordable; data mining and data elaboration approaches should follow this simple logic.



KELLY FLOOK

SENIOR MANAGER,
PURIFICATION R&D,
THERMO FISHER SCIENTIFIC,
BEDFORD, MA, USA

Passion: The application of separation science towards higher quality biotherapeutics.

Pivotal moment: The realization of the broader applications of analytical chemistry beyond the traditional means of analysis.

Prediction: DNA-based therapies and virus based delivery systems.



CATHERINE FENSELAU

PROFESSOR, DEPARTMENT
OF CHEMISTRY AND
BIOCHEMISTRY, UNIVERSITY
OF MARYLAND, USA

Passion: I have always been passionate about mass spectrometry and currently I am most passionate about top down analysis of intact ubiquitinated proteins.

Pivotal moment: One pivotal moment came early in my PhD research when my thesis advisor Carl Djerassi advised me never to ask the men in the lab to lift my heavy solvent bottles... Excellent advice!

Prediction: Technologies that provide good chromatographic fractionation of intact and modified proteins are badly needed for the development and production of protein therapeutics and in proteomic-based studies of immunology, cancer and other biomedical areas. Commercial production of a rugged and automated capillary electrophoresis-mass spectrometry system is a good start.