

Bob Barrett: This is the podcast from '*Clinical Chemistry*'. I am Bob Barrett. The International Union of Pure and Applied Chemistry, and the United Nations Educational, Scientific, and Cultural Organization have designated 2011 as the International Year of Chemistry. Under the unifying theme of Chemistry - our life, our future, the international year of chemistry aims to enhance the public appreciation of chemistry in meeting world needs, increasing young person's interest in chemistry, and promoting the creative future of chemistry.

The journal, '*Clinical Chemistry*', is participating in a very special manner by publishing several articles, and new features prepared by inspiring scientists and award-winning writers that highlight various aspects of our profession as outlined in an editorial in the December issue. Joining us to discuss this exciting venture is a co-author of the editorial, Dr. Nader Rifai, a professor of pathology at Harvard Medical School, and the Editor-in-Chief of '*Clinical Chemistry*'.

Dr. Rifai, what is the rationale behind dedicating 2011 as the International Year of Chemistry and who's behind that decision.

Dr. Nader Rifai: Well, the International Union of Pure and Applied Chemistry or IUPAC, and the UNESCO have decided to designate 2011 as the International Year of Chemistry under the banner, Chemistry - our life, our future.

This program has actually three goals. It meant to enhance the public appreciation, awareness of chemistry, and meeting world needs in terms of the food we eat, the medicine we use, the energy we consume, etcetera, and also to increase the young persons interest in chemistry, working with high schooler, with middle schooler to introduce them to chemistry with the hope that they will take it as a profession in the future and also to promote the creative future of chemistry and stimulate research and funding in this very important area.

Bob Barrett: Why do you feel it's important for clinical chemistry to participate in this celebration?

Dr. Nader Rifai: Well, as you know chemistry itself, it's a very old discipline. You can go back to the Egyptian times, about 4000 years ago, and you will see some vivid description of application of synthetic chemistry, and since that time chemistry has evolved into a very complex discipline with multiple sub-disciplines; organic, inorganic, analytical, physical chemistry. When you look at the clinical chemistry, it is a relatively young discipline.

In fact, the actual name of clinical chemistry we are not sure exactly who coined it. It seems like there was a physician who was working at the London Hospital in the 19th century with the name of Charles Henry Ralfe used that term for the first time as a title for his 1883 books. Perhaps that's where the term was coined and if you look at clinical chemistry in the 19th century, you will see that it started as a mere intellectual curiosity.

Clinicians really were not sure about its true value to the way they diagnosed their disease and manage their patients. If you look at some of the quotes from very famous physicians at the time like Robert James Graves who was a very famous Dublin physician, I am going to quote directly from him now. "Few and scanty, indeed, are the rays of light which chemistry has flung on the vital mysteries." End of quote.

And that was not only him; also very famous German clinician like Johann Schröder, Max Pettenkofer also were very suspicious about the real contribution of chemistry to medicine and they thought that was only a tool that physicians used to embellish their clinical lecture. But over the last 100 years, clinical chemistry has evolved into a very sophisticated profession, and it is now an integral part of the contemporary practice of medicine.

So we want to take this opportunity to celebrate really the progress that they have managed to make in the last 100 years in this profession and also take this opportunity to work with some of our sister organizations like the Chemical Heritage Foundation, the Ecole Supérieure de Physique et de Chimie Industrielles in Paris, and also with the AACC History division on some of the activities that we will be celebrating and featuring throughout the year.

Bob Barrett: Well, could you describe to us some of those activities that the journal is planning?

(00:05:02)

Dr. Nader Rifai: Well, we have developed a very exciting program with multiple features that will appear throughout the year. So I am just going to take a moment to describe some of these features to you.

We are going to have an article on the history of Clinical Chemistry, and this is an article that would be prepared by two prominent clinical chemists; John Savory and Larry Kricka, who are professors at the University of Virginia and University of Pennsylvania respectively.

If you go back in history, you will see examples of Clinical Chemistry that date back to the Greeks' time, 400 BC, where they noticed that urines from certain individuals attract insects while others don't.

And if you travel over the next two millennia to where we are now, you will see now we are entering the era of proteomics, genomics, and personalized medicine. So it would be wonderful to reflect on where we came from and that will help us to determine where we will be heading to.

These two prominent scientists will have the challenge of presenting and addressing this article, hopefully, in a different way from others who wrote about the history of Clinical Chemistry. So I am very eager to see the product of their work.

The other activity that we will be celebrating this year is we are going to be honoring Madame Curie, Marie Curie. As you know that 2011 also happens to mark the 100th anniversary of Marie Curie receiving the Nobel Prize in Chemistry for her work on radium and polonium, and the latter named after her native country, Poland, and as you know, this is her second Nobel Prize.

The first Nobel Prize indeed was in Physics and she shared with her husband, Pierre, and with Henri Becquerel for their work on radioactivity, a term that she also coined. She was absolutely a remarkable scientist and a remarkable woman and her achievements are incredible to science and to humanity.

She did a lot of highly unusual things. She was the first woman, for example, ever to teach at the Sorbonne in Paris, and in 1995, her ashes enshrined in the Panthéon in Paris, which is a memorial dedicated to the great men of France. She was not the very first woman to have that honor, but as François Mitterrand, who was the French President at the time, remarked at that occasion, that she was the first woman to gain that honor for her own merits, not because of family or societal reason.

This article will be done in collaboration with the Chemical Heritage Foundation and the École Supérieure de Physique et de Chimie Industrielles, and that is the research center in Paris in which she and her husband worked. In fact, her son-in-law, who happened to be a chemist, worked there as well and he went on to receive another Nobel Prize in Chemistry with her own daughter.

So it is quite a remarkable and highly unusual family. We were indeed fortunate to have Susan Quinn agreeing to write this article for us. Susan Quinn is considered the best

living biographer of Madame Curie. She is the author of *'Marie Curie: A Life'*, a book that was translated to eight languages, received numerous acknowledgements and awards; most notably the French award called the Grand Prix des LECTRICES DE ELLE. She received that in 1997.

And in this article she will not only highlight the scientific achievement and the contribution of Marie Curie, but reflect on her amazing determination and perseverance at a time, at the late 19, early 20th Century, where it was so difficult for a woman to be successful in science.

Another feature that we will be showing during the year is an article that reflects on science as a romantic journey, and this would be done by Richard Holmes, again, is an award-winning author.

(00:09:54)

Holmes will explore in this article how the artist and the scientists share common aims and ambitions to create the humanistic science that enriches our being.

And what he is going to do in this particular article, he is going to focus mainly on the romantic chemistry period of 1770 and 1820. Basically, he will be focusing on chemists like Davy, Lavoisier, Priestley, and talk about the imaginative impact of their work.

He has written 23 books and received numerous awards. In fact, they are too numerous to mention here.

One of the features that I worked on for the celebration of the International Year of Chemistry that gave me the greatest satisfaction was a series of correspondence with a gentleman named Roald Hoffmann. Hoffmann is a poet, philosopher, humanist, playwright, and he happened also to be a chemist and he happened to have shared the 1981 Nobel Prize in Chemistry with Kenichi Fukui for their theories that they developed independently concerning the course of chemical reaction.

Hoffmann wrote 11 books, 5 of which are in poetry. His poems are very different from anything I have read. The language is different, the structure is different, they are truly avant-garde poems, and we are indeed fortunate that he sent us a poem, which we will be publishing in the January issue, called *'Sustainable Development'*, that has not been published before. I hope people will enjoy reading it.

Another of our activity is a film entitled *'A Day in the Life of a Clinical Chemistry Laboratory'* that Peter Wilding, who is

now Emeritus Professor at the University of Pennsylvania, but at the time he made the movie, in 1966, he was an Assistant Professor at the University of Southern California and a young clinical chemist at the LA County Hospital. At the time, it was one of the largest hospitals in the United States, that has over 2,000 beds. He filmed this documentary in the hospital at the time and he recently added some narration.

So the film described the unbelievable journey of the profession and the changes that happened in the last half a century; the laboratories themselves, the setups, the reagent room, the instrument repair room, the Technicon AutoAnalyzer I, and not to mention the ladies' hairdos; it's an absolutely fantastic film that clearly will make your nostalgic and will give you a sense of pride about how far we came in the last 50 years.

Another feature called '*All Our Yesterdays*', and this is again something done in collaboration with the History division, because it is one of their activities, in which Larry Kricka and Peter Wilding establishing a comprehensive archival system of images, of clinical laboratory analyzers and point-of-care devices.

Another feature called '*Science and the Arts*', and this is something that Marek Dominiczak does, in which he explores the interplay between art and science in a series of paintings and sometime works of arts depicting chemists or having story related to chemistry.

So every month Dr. Dominiczak, who is not only a clinical biochemist, but a Professor of Medical Humanities at the University of Glasgow, will reflect in an essay on such artwork.

Of course last, but not least, we will have series of podcasts with the various contributors of these features, sharing with us some of the insights.

Bob Barrett: Well, tell us how these activities can be accessed and are they available to the general public?

Dr. Nader Rifai: Yes, clearly, these are all available to the general public, not only to the subscribers of '*Clinical Chemistry*'; they can be accessed either via the journal website or the AACC website, or they can be accessed directly from the official website of the International Year of Chemistry, that is hosted by the IUPAC and the UNESCO.

Bob Barrett: Dr. Nader Rifai is a Professor of Pathology at Harvard Medical School and the Editor-in-Chief of '*Clinical*

Chemistry'. He has been our guest in this podcast from
'*Clinical Chemistry*'.

I am Bob Barrett. Thanks for listening.

Total Duration: 15 Minutes