

# WHO IS THE GREATEST TOXICOLOGIST OF ALL TIME?

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*At the TIAFT Conference in Birmingham in September I posed the question, "Who is the Greatest Toxicologist of All Time?". The following is a summary of some of the possible nominations for the Greatest Toxicologist of All Time from my keynote lecture.*

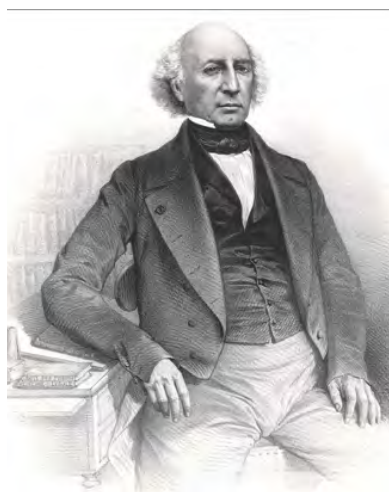
## The Father of Toxicology

There are two toxicologists who are often given this title. Paracelsus (1493-1541, full name Philippus Aureolus Theophrastus Bombastus von Hohenheim, Figure 1) has the earlier claim to the title and was a Swiss physician, alchemist and astrologer. He is most famous for saying, "All things are poison and nothing is without poison; only the dose makes a thing not a poison". He also theorised that materials which are poisonous in large doses may be curative in small doses and advocated accurate clinical diagnosis of a disease before using a specific chemical treatment to cure it. He introduced the use of mercury to treat syphilis and is often credited with introducing opium to Western Europe. In 1526 he was appointed Professor of Medicine at the University of Basel, Switzerland.

Mathieu Joseph Bonaventure Orfila (1787 – 1853, Figure 2) was a forensic toxicologist born in Spain some 300 years later. He wrote, "Treatise on Poisons, Drawn from the Mineral, Vegetable, and Animal Kingdoms, Considered as to their Relations with Physiology, Pathology and Medical Jurisprudence" published in 1814 which was the leading textbook for forensic toxicology for decades. He encouraged the use of chemical analyses in forensic medicine and instituted rigorous examination procedures. He became a French citizen and became dean of the Faculty of Medicine at the Athénée of Paris in 1830.

## Authors of books on Forensic Toxicology

"Poison Detection in Human Organs", written by Alan



ABOVE (FROM LEFT): PARACELSUS, MATHIEU ORFILA AND ALAN CURRY



ABOVE (FROM LEFT): IRVING SUNSHINE, HANS MAURER AND PASCAL KINTZ

Curry, was first published in 1963 and went to four editions. Alan was one of the founding members of TIAFT, was its first Secretary and completed two terms as its President. The most prestigious award given by TIAFT is named after him: The Alan Curry Award. He worked at the Forensic Science Laboratory at Harrogate and became Director of the Home Office Forensic Science Laboratory at Nottingham. Later, he was appointed as the first Director of the Home Office Central Research Establishment which aimed to find methods that would enable the regional laboratories to obtain evidence not previously available, to increase the value of scientific evidence and to increase productivity. He later became Controller of all of the Home Office Forensic Science Laboratories. His greatest piece of advice to forensic toxicologists was, "If one does not look, one does not find. Toxicologists should write this message on a mirror above their desks".

One of Irving Sunshine's most memorable quotes was: "*Learning Forensic Toxicology is easy. It only takes two lessons to become an expert. Each lesson takes ten years*". He thoroughly enjoyed his work and said, "I never did a day's work in my life, it was always fun". He was the Chief Toxicologist at the Cuyahoga County Coroner's Office, Cleveland, Ohio, and Professor of Toxicology and Clinical Pharmacology, Case Western Reserve University School of Medicine. He was the author of the widely used "Handbook of Analytical Toxicology", was the author or editor of some 20 books and published more than 150 scientific papers. He too was one of the founding members of TIAFT.

George Clarke was the first professor of toxicology in the UK at the Royal Veterinary College in London and the first president of TIAFT. He is probably best known for his editorship of what is now the leading textbook on Forensic Toxicology and now bears his name – "Clarke's Analysis of Drugs and Poisons".

### Contemporary Forensic Toxicologists

We are spoilt for choice for contemporary forensic toxicologists, who have greatly advanced the science of our profession, and here are two of my favourites.

**Hans Maurer** was until recently a professor of pharmacology and toxicology and head of the department of experimental

and clinical toxicology at Saarland University in Germany. He has a pioneering career and continues research into analytical toxicology and in-vitro and in-vivo toxicokinetics and is the author of more than 230 peer-reviewed original scientific papers. Professor Maurer did the profession of forensic toxicology a tremendous service when he and his colleagues published two essential libraries of mass spectra: "Maurer/Pfleger/Weber 2011 Mass Spectral Library of Drugs, Poisons, Pesticides, Pollutants and Their Metabolites" and "Maurer/Wissenbach/Weber LCMSn Library of Drugs, Poisons, and Their Metabolites". He also recognised the importance of interpreting drug concentrations and wrote in a recent TIAFT Bulletin, "Evidence-based case interpretation is more than comparing exactly determined blood levels with reference level lists", recognising the importance of considering all the clinical data available before coming to any conclusion.

**Pascal Kintz** from France is another forensic toxicologist of note, often referred to as the Father of Hair Testing due to his pioneering work in this area. He has been involved in 14 published books of which his most popular book, "Hair Analysis in Clinical and Forensic Toxicology", is an essential reference for toxicologists working in hair analysis. He has also published over 100 peer reviewed papers in this area. He was one of the founding members of the Society of Hair Testing in 1995 and President from 2008-2012. In his article, "Forensic Toxicology: A Difficult Job?" published in the TIAFT Bulletin December 2018 he gave this brilliant advice, "Always be modest, keep updated with the latest scientific papers, ask as much as possible the right questions ....". Great advice for us all.

We should not forget those eminent toxicologists who have, not only enhanced our profession by publishing their work and methodology to advance the science of forensic toxicology, but also done us great service by being Presidents of TIAFT. Some recent Presidents in chronological order are: Robert Wennig, Marilyn Huestis, Pascal Kintz, Olaf Drummer, Alain Verstraete, Heesun Chung and our current President Marc LeBeau.

If you want a list of other eminent forensic toxicologists, there are those who have won the TIAFT Alan Curry Award given on the TIAFT web site and those who are the subject of Wayne Jones' excellent series of articles, "Profiles in Forensic

Toxicology” published in the TIAFT Bulletin over the last few years.

### Authors of Fiction

There are many authors of books of fiction, but there are a couple worthy of mention. The first is Agatha Christie who wrote 66 detective novels and 14 short stories. She worked as a pharmacy assistant at University College Hospital in London and gained a good knowledge of poisons which feature in many of her novels. Her favourite poison was cyanide although strychnine and arsenic were also well used in her stories. One of her famous quotes was, “Give me a decent bottle of poison and I’ll construct the perfect crime”.

My other choice is J K Rowling who wrote the seven Harry Potter novels. One of her characters was Professor Severus Snape of Hogwarts School of Witchcraft and Wizardry. Not only was he the Potions Master, and therefore knew all about poisons, but was also a wizard. A handy combination for a toxicologist.

### My choice

For a bit of fun, my choice for the Greatest Toxicologist of all time is – Dr WHO. He is the Time Lord in the British BBC

television series “Dr WHO”. In the serial titled “The Face of Evil” broadcast in 1977, a woman named Leela is poisoned with a Janus Thorn which contains a muscle paralysing substance that is killing her. Dr WHO takes the Janus Thorn and puts it into a Bioanalyser which identifies the poison in 43 seconds. He then feeds that information to a Medikit which prepares an antidote in a further 18 seconds. He injects the antidote and Leela recovers. Thus Dr WHO analyses a poison and prepares an antidote in only 61 seconds. I don’t know of anyone else who can do that. Also, Dr WHO is a Time Lord and that means he can be in the past, present and future, ie “of all time”. So, “Who is the Greatest Toxicologist of All Time?” the answer is in the question – Dr WHO.

### Epilogue

Those I quote above are, in my opinion, just a few of the possible contenders for the title, “WHO IS THE GREATEST TOXICOLOGIST OF ALL TIME?”. However, If you consider that there is someone I have missed, why don’t you write a profile for publication by the TIAFT Bulletin so we can all benefit from your ideas.



BIRMINGHAM, UK (PHOTO BY ALAIN VERSTRAETE)