ABOUT THE AUTHOR OF COPE

Some people like to know more about who is behind COPE - strangely enough. Since what follows is longer than a common garden variety tweet, you must be a mutant if you follow me through to the end! COPE's entries "Horst Ibelgaufts" and "Some personal remarks" might also be of interest.

STUDYING WITH GUSTO I studied biology, which on the whole, I thoroughly enjoyed. The assorted greenery in botany would have delighted cows and probably some vegetarians. It did not delight me, and I, er, suffered more or less silently through this. It is only now that I'd like to reread - leisurely - the prescribed botany textbook, the "Strassburger", my horror book in those days. Oh well ....

Very soon in the first semester I realised that being able to identify animals, plants, and micro-organisms by name, albeit of importance, and I don't deny this, was too much on the descriptive side of things for me. I wanted to understand how things work. The beautifully multidisciplinary ways in which molecular biology and genetics addressed just this question seemed exactly the thing for me.

By training and inclination, therefore, I am a molecular biologist. Work in "classical" bacterial genetics that I found highly fascinating and did at a time when genetic engineering was just around the corner, gave me my Master's degree. After that, I switched to "higher" things and ended with a Ph.D for work in neuro-oncology. Gladly I left descriptions of the virus-induced tumours that were the subject of my studies to the histology boffins, and enjoyed the excitement of trying to understand what a virus does to turn cells into tumour cells.

LUXURY LAB LIFESTYLE Lab life was a lifestyle. I realised that when once I came home at 11 pm and a neighbour still about asked "are you coming from work only now?"

Without thinking, I answered "No, I am coming from the lab". My then girlfriend hammered home to me this lifestyle aspect even more. Turning up in the lab one day, all she saw were lots of test tube racks and me doing hundreds of 1: 1,000,000 serial dilutions of bacterial overnight cultures. For her that was as boring as standing at the conveyor belt in a tinning factory (cannery for Americans, I believe), cutting out the bad parts from carrots passing by in a never-ending stream (I did that once as a teenager; we annoyed the foreman with rows of neatly carved carrot soldiers - anything to kill boredom. It had no consequences, of course, as all soldiers were chopped to pieces anyway at the end of the belt). I learned one important thing: work at a conveyor belt of your own making, and it just ceases to be a man-eating, dehumanising, robotising monster. And what a great luxury that is, and how few have it!

WORDMASTERY I confess to several non-scientific books under a pen name. Writing these I considered 'recreational' and relaxing, especially as it allowed me to "play with words". "Paralektikon" in old-fashioned German is about travels in the islands of Langerhans. The other is a "Dictionary of Medicynical Terms" (sic!). The COPE entry LOVE IN CYTOKINELAND will give you an idea what "playing with words" means.

I write such things, or make cartoons, whenever the knowledge holes I encounter with my more serious work become too deep and a diversion is needed. I don't mind if these stories remain on the hard disk and did not even try to find a publisher for the love story from cytokineland.

The remark of one publisher about another 90-page story "Alanine and the Magic Lamp" (in German) is memorable enough and says it all: "Too brainy. Won't sell!" Besides, the way I have come to see publishers is not a favourable one and for more reasons than the following. When I announced many years ago that I wanted to continue the Dictionary of Cytokines online without the publishers, their lawyer told me that my book contract gave them all rights to my work until 70 years after my death - short of adding that this included even a conversion of the dictionary into a musical or opera to be performed and sung rocky horror picture show-style on stage. An expert in copyright law I happened to know showed them their limits and freed me from publisher's shackles.

LUDENS RULES OK Of course I let people in the lab see my Langerhans Island travelogue; happy author, you know.

One young technician who had always struck me as having aged prematurely with an inflexible and rigid frame of mind worthy of a stubborn octagenarian took a look at it and said "Horst, when will you ever grow up?" I decided then and there that I did not want to grow up and never showed them the "medicynical" stuff.
For me, those who stop being *homo ludens* and go all for *homo faber*, are more like, well, empty human shells to be pitied - yes, I know, they are useful. Almost the only adults I know who still "play" are artists; and look at their often miserable lives - unless, of course, the artist is a Warhol or Lichtenstein who duped critics and public into thinking their work was great art, and managed to turn craftsmanship into very profitable items for investors.

Many cultures - predictably enough - actively promote and support the *faber* approach to life. Only children play, and youngsters take pains to stop playing to make up for lost time. I did science journalism for a bit of medical journalism, apart from a bit of medical journalism, and somehow that pleases me. 

**MINDFOOD FOR THE ABLE-MINDED**

I did science journalism for a ‘respectable’ German political weekly and for the weekend science section of some newspapers for about 10 years, apart from a bit of medical journalism and quite a few translations.
In response to a rather longish piece about the biochemistry of schizophrenia - for which in preparation I did an immense lot of reading as the topic interested me - I got one letter from a warden in a mental asylum telling me that what I wrote was a lot of rot. The true cause of schizophrenia was tight underwear rubbing and exciting the 'private parts of the anatomy'.

The other article even appeared on the front page of one of the German daily newspapers (leftist but not radical).

I had written about the curious fact that, had we done lab work with milk available in Germany after the Chernobyl nuclear disaster, we would have had to dispose of the milk, contaminated as it was, as radioactive waste rather than pouring it into the sink and flush (for those who are either too young or don't remember: the whole of Europe was radioactive from the fallout). A day after the article appeared a television crew almost stormed the lab in the best tradition of an early Woody Allen film. I felt like a prize idiot, ordered to don the lab coat to look more like a respectable scientist, and to hold a 1-litre carton with milk in one hand, looking smart and say my thing. Never again (tv interviews, I mean).

I also published an autoradiograph of contaminated plants through the German Press Agency. A couple of days after the Chernobyl explosion everything was radioactive: the soil, the plants, the grass. Not having followed the news and having spent a relaxing day lying on the grass in Munich's Englischer Garten, I had become aware of all this only when I came to the lab the next day. The jeans I had worn made the Geiger counter go mad. And then came the memo from the university top radiation protection officer to his subordinates (of which I was one): would we please make sure that no one entered the isotope lab wearing street shoes? To avoid contamination of the isotope lab! Procedurally quite correct, but still sounded sort of farcical.

The traces that the radiation from radioactive leaves left on my X-ray film after a 1-day exposure were good enough for a botanist to identify the plants from which I had taken the leaves. A journalist from a major weekly magazine called me in the middle of the night and asked the moment he learned that I had no other images of plants having X-rayed themselves that they could publish exclusively. Suffice it to add that the photograph of the X-ray film appeared as an image for the entry term "fallout" in a dictionary and that a German art professor contacted me and wanted to use the original film in his exhibition on the topic "Prometheus and Modern Man".

TEACH-INS I also "did" a lot of teaching and enjoyed this immensely. I don't know if the students enjoyed it. Teaching is easy, I felt, if one is full of enthusiasm about the subject and knows more than just the ABC and puts in a lot of work; somehow - and strangely - I have not lost this enthusiasm yet and managed to keep it through the daily grind of life.

I was very lucky to have some teachers that were not boring (boring as in 'talking textbook' lecturers); their names, from grade school onwards, I still remember. The others who turned their subjects into something like a sticky gluey morass of facts to be memorised and forgotten are also forgotten.

My Ph.D supervisor, Walter Doerfler, had that enthusiasm, and this and his support I shall never forget. He was a true 'Doktorvater' as the Germans call it, a very good father for his budding scientist children and I am truly grateful for this.

It saddens me when some of my contacts tell me that lab life nowadays often resembles a little lab despot-tzar lording over serfs pressed into service to produce publishable data. What was the saying about 'all work and no play...?'
Yes, I did have some boring lecturers at the university also; I do remember at least the name of one other professor who read the textbook to us as if it were a bedside story. She may have been a good researcher, but an abomination as a teacher. I am a story teller, enthusiastic about the topics I teach and certainly don’t read even shorter texts from powerpoint slides - whether that makes me a good teacher, well, who knows. All I hear from medical students where I live is that biochemistry is the horrible subject and a passing grade of 75 much too high. I usually point out that a passing grade of 75 means they might kill 25/100 patients out of ignorance. Would they still grumble if they were the patient?

MENTAL MYOPIA WOES  More than a decade ago I left a permanent position at the Gene Center of Ludwig-Maximilians University, München, Germany. Until recently I taught biochemistry, molecular biology, and cytokine biology to medical students in a third world country. This brought problems of its own. First a correction: I tried to teach.

When one discovers a culture basically thriving on senseless memorisation of facts and a well developed attitude of ‘how to get by with as little input as possible’ one feels like having been abandoned in an intellectual desert and needs water and an antidote. As always with such statements, take them with a grain of salt. Of course, there are exceptions. If you care to be saddened also, read more about this in the COPE entry ‘Culture shock’.

"Ordinary" closed minds are bad enough, but previous adverse school experiences that almost systematically murdered all curiosity, creativity, and playfulness, and seem to have created knowledge-proof impenetrable walls often leave minds impervious to any amount of enthusiasm trying to poke holes into these walls. In my first year here the students complained to the college president that I try to teach them more than is prescribed by the Commission on Higher Education! Thank goodness, I had (and still have) COPE, the continuously updated, enlarged electronic version of the highly successful Dictionary of Cytokines that is now out of print (and out of date anyway). COPE has been keeping me busy for nearly two decades. That is my water and antidote, and I mean to carry on for a while. Haven’t got Alzheimer’s yet.

The COPE logo, by the way, if it requires an explanation at all, is meant to reflect a tsunami of knowledge and to remind everyone of efficient ‘flood control’ needed to deal with it, which is what I try to do with my work on cell communication. I got the idea dreaming one night of Hokusai’s famous woodblock print and how the letter C of COPE would fit in neatly, so I rather shamelessly ‘refurbished’ his work for my own purposes.

INDIFFERENCE KILLS THE ABILITY TO COPE  COPE is an independent bioinformatics project written in the old-fashioned style. I always have done it privately and without back-up from a funding agency. There are many reasons for this but they are of no interest here.

Suffice it to say that those who are in a position to help with a bit of funding have decided not to do so (a German lab magazine had an editorial about this in 2017, shaming the so-called "scientific community". It was meant well but did not elicit any responses at all).

If you want to be positive about COPE, you can call it ‘hand-curated’. COPE does more than just clarifying nomenclature. It is, I believe, the only existing resource that puts the focus on highlighting the manifold interactions between individual cells types, and the messages exchanged between them. It is such relationships that give flesh to the bare bones of facts, put knowledge into perspective, and provide the value-added
information needed to understand cells and eventually enable clinicians to come up with treatments based on causalities rather than merely fiddling around with symptoms. If you want to belittle COPE, just listen to bioinformatics experts who swear that anything that is not electronic data mining or "computational mapping" is a complete waste of time, not "up to modern standards", and practically worthless. I could say a lot about this; again, I won't. Feedback received tells me that what I do, the way I organise and cross-connect complex knowledge is what helps most and that lists of articles selected by computer programmes because a specific term occurs somewhere in the abstract are pretty useless time-sinks - but tell that to the programmers and those who support them who probably never spent hours or days in medical databanks, sifting through information, relating it to other knowledge, mapping routes between knowledge islands and (hopefully) trying to make sense of it all.

CONGRATULATIONS Congratulate yourself on your staying power and attention span well above the average if you have reached this point. You qualify indeed as a "certified mutant". Have a friendly smile! I could end here, were it not for the fact that I feel compelled to answer one question, namely, "How does one become a dictionary maker?"

IS DICTIONARY MAKING NOT EVEN MORE BORING THAN LISTENING TO A POLITICIAN? Well, I don't find it boring at all, even if others do - and, unlike politicians, I should like to think that I have something to say! I know who is to blame for the path I took, and I believe that the story is worth sharing. It is a reflection of one of my pet beliefs: exposure and freedom to be curious versus mindless indoctrination and rote learning - but that is also another story.

As a teenager a neighbour who was a teacher left me with about 5 meters of old Reader's Digest magazines, a treasure trove for a 15-year old boy who read voraciously.

For want of space I tore out all articles that somehow interested me and was faced with the problem of creating some kind of index for the many folders of articles. What is the point, after all, of sitting on a heap of information when you can't find what you want or don't even know what you have? I numbered the articles, assigned "entry terms" under which I thought I might want to find the contents, and created a hand-written dictionary: all entry terms in alphabetical order with a cross-reference to the article number - an index to my personal general knowledge - a treasure trove. I learned a lot about "cross-connections" and "connecting the dots" even if I was not aware of this at that time. It seemed so natural to do it the way I did it.

At the University of Munich I translated and updated the first German Textbook of Genetic Engineering written by our head of department. During this work I realized that a textbook, useful as it might be, is very different from a dictionary. Textbooks enforce linear reading, but that is not what people usually do or even like, certainly not with the kind of withering deteriorating attention spans one observes nowadays.

Frequently, the first thing readers do is to look up a term in the index - a dictionary in itself where the keyword content is just page numbers. Then they go to that page, grumble when there are more pages to consult, and hope that what one finds there will be sufficient - and often it is not, or, worse, the index does not contain the term one is looking for.

During my work on the Dictionary of Genetic Engineering (in German only) I soon realised immediately that simple one-liner definitions are not enough. To be of use for students or people from other scientific disciplines entries should be self-contained and must cross-reference to other entries. As an example let me give you the term "Southern blotting". The definition in a pocket dictionary I found was something like "technique for transferring nucleic acids from resolving gels to filter membranes for further analysis" - technically correct but utterly useless in its brevity, making sense only to those who already know what the term means.

So, my Southern Blot entry described what the technique is about, how it is done (without lab cookbook details), how the data obtained looks like, what they tell you and what they don't tell you, and what other methods are available to provide information that the blotting technique won't provide. I saw the dictionary as a vade mecum, a guide through the morass of complex knowledge, especially for newcomers into the field.
Whatever I learned about how to write dictionary entries also went into the Dictionary of Cytokines and subsequently into the COPE Encyclopaedia.

**WHEN IGNORANCE IS BLISS AND HELPFUL** I carried this concept of a *vade mecum* through when - in response to the success of the Dictionary of Genetic Engineering - a local Munich publisher asked me to write a short Dictionary of Cytokines. At that time I did not even know what Cytokines were! And before you wonder how arrogant and complacent one must be to engage oneself in such work with no background at all, let me explain.

Contrary to what one might think, having no knowledge about a subject and then write a dictionary has a lot of advantages if you really are willing to put in a lot of work: in my mind it probably is the best, most suitable, and most productive starting point.

Unlike "specialists" in the field who often are so engrossed in the subject that they have forgotten how it feels to be a struggling newcomer and how much knowledge is simply taken for granted when reading scientific articles, newcomers know well what they know and do not know, what they understand and what they do not. In a way they have a keen perception of what should be "look-upable".

The German cytokine dictionary evolved into an updated English edition for a different publisher. When that book came out, one reviewer called it "the Rosetta stone of cytokine research". What can one want more?

During this and subsequent work I developed an even keener sense of "cross-connections" and cross-references and thought that html pages were just the ideal medium for such a dictionary. The result is the automatically hypertexted COPE pages, which are generated in less than 8 minutes from the source text I write - being old-fashioned enough not to use a databank programme - and I achieved this long before Wikipedia came out to give people the illusion they "know" something after having read an article and decide they need know no more.

In my view such attitudes are about to lead to a rather precarious long-term development that, as far as I am aware, educators have ignored largely: I have met people already who gave up acquiring a good 'working knowledge' - why bother when things can be looked up easily. And it is not seen only in students who cram for an examination. I hear the silent prayers: "please God. Give me guidance so that I shall not forget things until after the examination". I have come to know too many people who miraculously seem to have passed the board examination and never ever seem to have read anything after that. Too many of those populate and infest schools and other places of higher learning as "performing liabilities".

**ALL WE NEED IS LOVE** Love of knowledge in its own right, I hasten to add, and of that I rescued enough. My experience as teacher and parent of children in college shows only too clearly how education kills this love softly and out of thoughtlessness, but often even deliberately; and if one has not given enough of that love to one's children so that some of that love can be killed without major wounds - the school won't create it. To me this is not a law yet but almost as sure as the Laws of Thermodynamics tell you that energy cannot be created from Nothing.

The topic of knowledge, knowledge consolidation, knowledge navigation, and the connectedness of individual "knowledge islands" fascinates me no end. It is especially relevant for a complex field like communication biology with its thousands of chemical messengers, hundreds of cells, and umpteen clinical conditions, including hundreds of different types of cancer cells, that all "talk" to one another - we are all on FB, they are all on CellBook, so to speak, and we need to understand this kind of social networking at the cellular level to arrive at holistic-integrative approaches to diseases by understanding the causalities.
I grew up with one motto: "Can one ever know enough?" Most decisively, the answer is "NO!" and should always be "NO, NO, NO"! (I don't mean nitric oxide, which certainly would deserve a COPE entry had I not made the decision a long time ago to deal with genes and proteins and even there are quite selective!)

Well, so I'll slog on! I'll never be an expert, but then, fearing to lose the keen perception of my own ignorance and the willingness to do something about it, I don't even want to try.

With which I remain, cytokineologically yours, adding yet another cartoon for your own enlightenment.

Be kind to your own cytokines and those of others, and practice random kindness.

Horst Ibelgaufts
my apologies to William Shakespeare, of course.
(the "horse", by the way, is from some bamboo I found at the beach)

To the best of my knowledge, COPE is the only research/teaching resource that highlights the manifold relationships between cell types and the cytokines/hormones they produce or respond to and, therefore, fills an important gap between existing more specialised databanks.

COPE needs more subscribers or a benevolent patron to avoid death from PNWCS [pernicious negative wallet content syndrome]. Hope springs eternal.

Note: The 49,500+ entries of COPE version 49.5 are ready for upload but, well, see above.